CJD

COMMONWEALTH OF MASSACHUSETTS

CONTRACT DOCUMENTS AND SPECIAL PROVISIONS

PROPOSAL NO.	613052-131228
P.V. =	$7,998,000.00
PLANS	YES

FOR

Federal Aid Project No. NHP (NHS)/ HSI-003S (871) X
Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive

in the Town of

MANSFIELD

In accordance with the STANDARD SPECIFICATIONS
for HIGHWAYS and BRIDGES dated 2025

This Proposal to be opened and read: **WEDNESDAY, SEPTEMBER 3, 2025 at 2:00 P.M.**

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DOCUMENT 00010

TABLE OF CONTENTS

DOCUMENT 00010
TABLE OF CONTENTS ..... 00010-1 through 4

DOCUMENT 00104
NOTICE TO CONTRACTORS ..... 00104- 1 through 4

DOCUMENT 00210
REQUIREMENTS OF MASSACHUSETTS GENERAL
LAWS CHAPTER 30 SECTION 39R; CHAPTER 30, SECTION 39O ..... 00210-1 through 4

DOCUMENT 00331
LOCUS MAP ..... 00331-1 through 2

DOCUMENT 00439
CONTRACTOR PROJECT EVALUATION FORM ..... 00439-1 through 2

DOCUMENT 00440
SUBCONTRACTOR PROJECT EVALUATION FORM ..... 00440-1 through 2

DOCUMENT 00710
GENERAL CONTRACT PROVISIONS ..... 00710-1 through 2

DOCUMENT 00715
SUPPLEMENTAL SPECIFICATIONS ..... 00715-1 through 8

DOCUMENT 00719
SPECIAL PROVISIONS FOR PARTICIPATION BY DISADVANTAGED
BUSINESS ENTERPRISES ..... 00719-1 through 18

DOCUMENT 00760
REQUIRED CONTRACT PROVISIONS FOR FEDERAL-AID
CONSTRUCTION CONTRACTS ..... 00760-1 through 14

DOCUMENT 00811
MONTHLY PRICE ADJUSTMENT FOR HOT MIX ASPHALT
(HMA) MIXTURES ..... 00811-1 through 2

DOCUMENT 00812
MONTHLY PRICE ADJUSTMENT FOR DIESEL FUEL AND GASOLINE ..... 00812-1 through 2

DOCUMENT 00813
PRICE ADJUSTMENT FOR STRUCTURAL STEEL
AND REINFORCING STEEL ..... 00813-1 through 4

DOCUMENT 00814
PRICE ADJUSTMENT FOR PORTLAND CEMENT CONCRETE MIXES ..... 00814-1 through 2

DOCUMENT 00820
THE COMMONWEALTH OF MASSACHUSETTS
SUPPLEMENTAL EQUAL EMPLOYMENT OPPORTUNITY,
NON-DISCRIMINATION AND AFFIRMATIVE ACTION PROGRAM ..... 00820-1 through 6

DOCUMENT 00821
ELECTRONIC REPORTING REQUIREMENTS
CIVIL RIGHTS PROGRAM AND CERTIFIED PAYROLL ..... 00821-1 through 2

DOCUMENT 00859
CONTRACTOR/SUBCONTRACTOR CERTIFICATION FORM ..... 00859-1 through 2

TABLE OF CONTENTS (Continued)

DOCUMENT 00860
COMMONWEALTH OF MASSACHUSETTS PUBLIC EMPLOYMENT LAWS ..... 00860-1 through 2

DOCUMENT 00861
STATE PREVAILING WAGE RATES ..... 00861-1 through 34

DOCUMENT 00870
STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY
CONSTRUCTION CONTRACT SPECIFICATIONS ..... 00870-1 through 8

DOCUMENT 00875
TRAINEE SPECIAL PROVISIONS ..... 00875-1 through 2

DOCUMENT 00880
MINIMUM WAGES FOR FEDERAL AND FEDERALLY
ASSISTED CONTRACTS ..... 00880-1 through 10

DOCUMENT A00801
SPECIAL PROVISIONS ..... A00801-1 through 202

DOCUMENT A00802
DETAIL SHEETS ..... A00802-1 through 24

DOCUMENT A00808
PROJECT UTILITY COORDINATION FORM ..... A00808-1 through 6

DOCUMENT A00810
MASS DOT HERBICIDE REPORT ..... A00810-1 through 2

DOCUMENT A00811
WATERING LOG FOR MASS DOT PLANTINGS ..... A00811-1 through 2

DOCUMENT A00816
RUMBLE STRIP DETAILS ..... A00816-1 through 2

DOCUMENT A00820
REQUEST FOR RELEASE OF MASSDOT AUTOCAD FILES FORM ..... A00820-1 through 2

DOCUMENT A00830
ARMY CORPS OF ENGINEERS
PERMIT APPLICATION ..... A00830-1 through 204

DOCUMENT A00831
ARMY CORPS OF ENGINEERS
GENERAL PERMIT ..... A00831-1 through 110

DOCUMENT A00832
FEDERAL HIGHWAY ADMINISTRATION
CATEGORICAL EXCLUSION (CE) DETERMINATION PROJECT NARRATIVE ..... A00832-1 through 94

DOCUMENT A00844
U.S. FISH AND WILDLIFE SERVICE
NLAA CONCURRENCE VERIFICATION LETTER ..... A00844-1 through 12

DOCUMENT A00860
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF INTENT ..... A00860-1 through 228

DOCUMENT A00861
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
ORDER OF CONDITIONS ..... A00861-1 through 50

TABLE OF CONTENTS (Continued)

DOCUMENT A00870
MASSACHUSETTS DIVISION OF FISHERIES AND WILDLIFE
NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM ..... A00870-1 through 44

DOCUMENT A00871
MASSACHUSETTS HISTORICAL COMMISSION
PROJECT NOTIFICATION FORM PROJECT NOTIFICATION FORM..... A00871-1 through 20

DOCUMENT A00875
POLICY DIRECTIVE P-22-001 AND POLICY DIRECTIVE P-22-002 ..... A00875-1 through 8

DOCUMENT A00891
TOWN OF MANSFIELD STANDARD PLANS AND SPECIFICATIONS..... A00891-1 through 98

DOCUMENT A00892
BORING LOGS AND TEST PIT DATA ..... A00892-1 through 26

DOCUMENT B00420
PROPOSAL.....B00420-1 through 26

DOCUMENT B00853
SCHEDULE OF PARTICIPATION BY DISADVANTAGED
BUSINESS ENTERPRISES (DBEs) .....B00853-1 through 2

DOCUMENT B00854
DISADVANTAGED BUSINESS ENTERPRISES (DBE) PARTICIPATION
LETTER OF INTENT.....B00854-1 through 2

DOCUMENT B00855
DBE JOINT CHECK ARRANGEMENT APPROVAL FORM.....B00855-1 through 2

DOCUMENT B00856
JOINT VENTURE AFFIDAVIT .....B00856-1 through 4

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DOCUMENT 00104

NOTICE TO CONTRACTORS

Electronic proposals for the following project will be received through the internet using www.bidx.com until the date and time stated below and will be posted on www.bidx.com forthwith after the bid submission deadline. No paper copies of bids will be accepted. All Bidders must have a valid vendor code issued by MassDOT in order to bid on projects. Bidders need to apply for a Digital ID at least 14 days prior to a scheduled bid opening date with www.bidx.com.

WEDNESDAY, SEPTEMBER 3, 2025 at 2:00 P.M. **
MANSFIELD
Federal Aid Project No. NHP (NHS)/ HSI-003S (871) X
Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive

****Date Subject to Change**

PROJECT VALUE = $7,998,000.00

Bidders must be pre-qualified by the Department in the HIGHWAY - CONSTRUCTION category to bid on the above project. An award will not be made to a Contractor who is not pre-qualified by the Department prior to the opening of Proposals.

All prospective Bidders who intend to bid on this project must obtain "Request Proposal Form (R109)". The blank "Request Proposal Form (R109)" can be obtained at: https://www.mass.gov/prequalification-of-horizontal-construction-firms.

All prospective Bidders must complete and e-mail an electronic copy of "Request Proposal Form (R109)" to the MassDOT Director of Prequalification for approval: prequal.r109@dot.state.ma.us.

Proposal documents for official bidders are posted on www.bidx.com. Other interested parties may receive informational Contract Documents containing the Plans and Special Provisions, free of charge.

Bids will be considered, and the contract awarded in accordance with statutes governing such contracts in accordance with Massachusetts General Laws Chapter 30 § 39M.

The Project Bids File Attachments folder for proposals at www.bidx.com shall be used for submitting at the time of bid required information such as the Bid Bond required document, and other documents that may be requested in the proposal.

NOTICE TO CONTRACTORS (Continued)

All parties who wish to have access to information plans and specification must send a "Request for Informational Documents" to MassDOTBidDocuments@dot.state.ma.us.

A Proposal Guaranty in the amount of 5% of the value of the bid is required.

This project is subject to the schedule of prevailing wage rates as determined by the Commissioner of the Massachusetts Department of Labor and Workforce Development, and the Division of Occupational Safety, and the United States Department of Labor.

The Massachusetts Department of Transportation, in accordance with Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby affirmatively ensures that for any contract entered into pursuant to this advertisement, all bidders, including disadvantaged business enterprises, will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, national origin in consideration for an Award.

This Proposal contains the "STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)". The goals and timetables applicable to this proposal for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all work, are contained in Appendices A and B-80 of the above specifications.

The Contractor (hereinafter includes consultants) will comply with the Acts and Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Federal Highway Administration (FHWA), as they may be amended from time to time, which are herein incorporated by reference and made a part of this Contract as contained in Appendices C and D of the above specifications.

NOTICE TO CONTRACTORS (Continued)

PRICE ADJUSTMENTS

This Contract contains price adjustments for hot mix asphalt and Portland cement mixtures, diesel fuel, and gasoline. For reference the base prices are as follows: liquid asphalt $635.00 per ton, Portland cement $425.13 per ton, diesel fuel $2.924 per gallon, and gasoline $2.449 per gallon, and Steel Base Price Index 342.1. MassDOT posts the **Price Adjustments** on their Highway Division's website at:
https://www.mass.gov/massdot-contract-price-adjustments

This Contract contains Price Adjustments for steel. See Document 00813 - PRICE ADJUSTMENT FOR STRUCTURAL STEEL AND REINFORCING STEEL for their application and base prices.

MassDOT projects are subject to the rules and regulations of the Architectural Access Board (521 CMR 1.00 et seq.)

Prospective bidders and interested parties can access this information and more via the internet at: WWW.COMMBUYS.COM.

BY: Monica G. Tibbits-Nutt, Secretary and CEO, MassDOT
Jonathan L. Gulliver, Administrator, MassDOT Highway Division
SATURDAY, JULY 12, 2025

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DOCUMENT 00210

REQUIREMENTS OF MASSACHUSETTS GENERAL LAWS
CHAPTER 30, SECTION 39R;
CHAPTER 30, SECTION 39O

July 1, 1981, updated October 2016

M.G.L. c. 30, § 39R. Award of Contracts; Accounting Statements; Annual Financial Statements; Definitions.

(a) The words defined herein shall have the meaning stated below whenever they appear in this section:

(1) “Contractor" means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a contract pursuant to sections thirty-eight A1/2 to thirty-eight O, inclusive, of chapter seven and any contract awarded or executed pursuant to section eleven C of chapter twenty-five A, section thirty-nine M of chapter thirty, or sections forty-four A to forty-four H, inclusive, of chapter one hundred and forty-nine, which is for an amount or estimated amount greater than one hundred thousand dollars.

(2) "Contract" means any contract awarded or executed pursuant to sections thirty-eight A1/2 to thirty-eight O, inclusive, of chapter seven and any contract awarded or executed pursuant to section eleven C of chapter twenty-five A, section thirty-nine M of chapter thirty, or sections forty-four A through forty-four H, inclusive, of chapter one hundred and forty-nine, which is for amount or estimated amount greater than one hundred thousand dollars.

(3) “Records" means books of original entry, accounts, checks, bank statements and all other banking documents, correspondence, memoranda, invoices, computer printouts, tapes, discs, papers and other documents or transcribed information of any type, whether expressed in ordinary or machine language.

(4) “Independent Certified Public Accountant" means a person duly registered in good standing and entitled to practice as a certified public accountant under the laws of the place of his residence or principal office and who is in fact independent. In determining whether an accountant is independent with respect to a particular person, appropriate consideration should be given to all relationships between the accountant and that person or any affiliate thereof. Determination of an accountant's independence shall not be confined to the relationships existing in connection with the filing of reports with the awarding authority.

(5) “Audit", when used in regard to financial statements, means an examination of records by an independent certified public accountant in accordance with generally accepted accounting principles and auditing standards for the purpose of expressing a certified opinion thereon, or, in the alternative, a qualified opinion or a declination to express an opinion for stated reasons.

(6) "Accountant's Report", when used in regard to financial statements, means a document in which an independent certified public accountant indicates the scope of the audit which he has made and sets forth his opinion regarding the financial statements taken as a whole with a listing of noted exceptions and qualifications, or an assertion to the effect that an overall opinion cannot be expressed. When an overall opinion cannot be expressed the reason therefor shall be stated. An accountant's report shall include as a part thereof a signed statement by the responsible corporate officer attesting that management has fully disclosed all material facts to the independent certified public accountant, and that the audited financial statement is a true and complete statement of the financial condition of the contractor.

(7) “Management", when used herein, means the chief executive officers, partners, principals or other person or persons primarily responsible for the financial and operational policies and practices of the contractor.

(8) Accounting terms, unless otherwise defined herein, shall have a meaning in accordance with generally accepted accounting principles and auditing standards.

(b) Subsection (a)(2) hereof notwithstanding, every agreement or contract awarded or executed pursuant to sections thirty-eight A 1/2 to thirty-eight O, inclusive, of chapter seven, or eleven C of chapter twenty-five A, and pursuant to section thirty-nine M of chapter thirty or to section forty-four A through H, inclusive, of chapter one hundred and forty-nine, shall provide that:

(1) The contractor shall make, and keep for at least six years after final payment, books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the contractor, and

(2) Until the expiration of six years after final payment, the office of inspector general, and the commissioner of capital asset management and maintenance shall have the right to examine any books, documents, papers or records of the contractor or of his subcontractors that directly pertain to, and involve transactions relating to, the contractor or his subcontractors, and

(3) If the agreement is a contract as defined herein, the contractor shall describe any change in the method of maintaining records or recording transactions which materially affect any statements filed with the awarding authority, including in his description the date of the change and reasons therefor, and shall accompany said description with a letter from the contractor's independent certified public accountant approving or otherwise commenting on the changes, and

(4) If the agreement is a contract as defined herein, the contractor has filed a statement of management on internal accounting controls as set forth in paragraph (c) below prior to the execution of the contract, and

(5) If the agreement is a contract as defined herein, the contractor has filed prior to the execution of the contracts and will continue to file annually, an audited financial statement for the most recent completed fiscal year as set forth in paragraph (d) below.

(c) Every contractor awarded a contract shall file with the awarding authority a statement of management as to whether the system of internal accounting controls of the contractor and its subsidiaries reasonably assures that:

(1) transactions are executed in accordance with management's general and specific authorization;

(2) transactions are recorded as necessary

i. to permit preparation of financial statements in conformity with generally accepted accounting principles, and

ii. to maintain accountability for assets;

(3) access to assets is permitted only in accordance with management's general or specific authorization; and

(4) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.

Every contractor awarded a contract shall also file with the awarding authority a statement prepared and signed by an independent certified public accountant, stating that he has examined the statement of management on internal accounting controls, and expressing an opinion as to:

(1) whether the representations of management in response to this paragraph and paragraph (b) above are consistent with the result of management's evaluation of the system of internal accounting controls; and

(2) whether such representations of management are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicant's financial statements.

(d) Every contractor awarded a contract by the commonwealth or by any political subdivision thereof shall annually file with the commissioner of capital asset management and maintenance during the term of the contract a financial statement prepared by an independent certified public accountant on the basis of an audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report. Such statements shall be made available to the awarding authority upon request.

(e) The office of inspector general, the commissioner of capital asset management and maintenance and any other awarding authority shall enforce the provisions of this section. The commissioner of capital asset management and maintenance may after providing an opportunity for the inspector general and other interested parties to comment, promulgate pursuant to the provisions of chapter thirty A such rules, regulations and guidelines as are necessary to effectuate the purposes of this section. Such rules, regulations and guidelines may be applicable to all awarding authorities. A contractor's failure to satisfy any of the requirements of this section may be grounds for debarment pursuant to section forty-four C of chapter one hundred and forty-nine.

(f) Records and statements required to be made, kept or filed under the provisions of this section shall not be public records as defined in section seven of chapter four and shall not be open to public inspection; provided, however, that such records and statements shall be made available pursuant to the provisions of clause (2) of paragraph (b).

M.G.L. c. 30, § 39O: Suspension, Delay, or Interruption or Failure to Act by Awarding Authority; Adjustment in Contract Price; Submission of Claims.

Section 39O. Every contract subject to the provisions of section thirty-nine M of this chapter or subject to section forty-four A of chapter one hundred forty-nine shall contain the following provisions (a) and (b) in their entirety and, in the event a suspension, delay, interruption or failure to act of the awarding authority increases the cost of performance to any subcontractor, that subcontractor shall have the same rights against the general contractor for payment for an increase in the cost of his performance as provisions (a) and (b) give the general contractor against the awarding authority, but nothing in provisions (a) and (b) shall in any way change, modify or alter any other rights which the general contractor or the subcontractor may have against each other.

(a) The awarding authority may order the general contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as it may determine to be appropriate for the convenience of the awarding authority; provided however, that if there is a suspension, delay or interruption for fifteen days or more or due to a failure of the awarding authority to act within the time specified in this contract, the awarding authority shall make an adjustment in the contract price for any increase in the cost of performance of this contract but shall not include any profit to the general contractor on such increase; and provided further, that the awarding authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.

(b) The general contractor must submit the amount of a claim under provision (a) to the awarding authority in writing as soon as practicable after the end of the suspension, delay, interruption or failure to act and, in any event, not later than the date of final payment under this contract and, except for costs due to a suspension order, the awarding authority shall not approve any costs in the claim incurred more than twenty days before the general contractor notified the awarding authority in writing of the act or failure to act involved in the claim.

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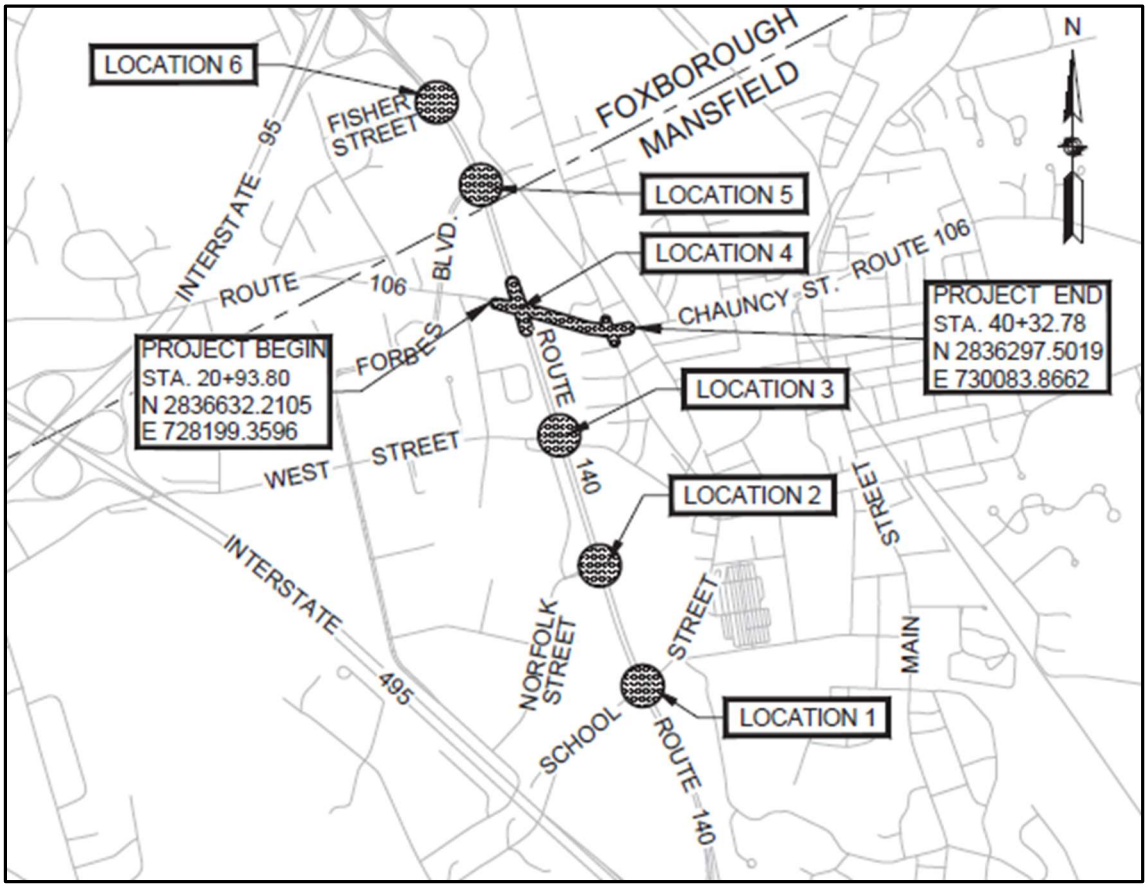
DOCUMENT 00331

LOCUS MAP

MANSFIELD
Federal Aid Project No. NHP (NHS)/ HSI-003S (871) X
Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive



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DOCUMENT 00439

massDOT Massachusetts Department of Transportation Highway Division

Final Report ☐

Interim Report ☐

CONTRACTOR PROJECT EVALUATION FORM

For instructions on using this form, see Engineering Directive E-10-002, Dated 4/20/2010

Date: _____

City/Town: _____ Contractor:_____

Project: _____ Address:_____

F.A. No. _____ Contract Number: _____

Bid Price: _____ Notice to Proceed: _____

Funds: State:_____ Fed Aid:_____ Current Contract Completion Date:_____

Date Work Started: _____ Date Work Completed*: _____

Contractor's Superintendent: _____

Division: (indicates class of work) Highway:_____Bridge:_____Maintenance: _____

*If work was NOT completed within specified time (including extensions) give reasons on following page.

	Excellent 10	Very Good 9	Average 8	7	Fair 6	5	Poor 4	% Rating
1. Workmanship								x 2=
2. Safety								x 2=
3. Schedule								x 1.5=
4. Home Office Support								x 1=
5. Subcontractors Performance								x 1=
6. Field Supervision/ Superintendent								x 1=
7. Contract Compliance								x 0.5=
8. Equipment								x 0.5=
9. Payment of Accounts								x 0.5=
(use back for additional comments)						**Overall Rating:**		

(Give explanation of items 1 through 9 on the following page in numerical order if overall rating is below 80%. Use additional sheets if necessary.)

_____ _____

District Construction Engineer's Signature/Date Resident Engineer's Signature/Date

_____

Contractor's Signature Acknowledging Report/Date

Contractor Requests Meeting with the District: No ☐ Yes ☐ Date Meeting Held:_____

Contractor's Comments/Meeting Notes (extra sheets may be added to this form and noted here if needed):_____

_____

_____

CONTRACTOR PROJECT EVALUATION FORM (Continued)

Date: _____ Contract Number:_____

INFORMATION FOR DISTRICT HIGHWAY DIRECTORS RELATING TO PREQUALIFICATION

A deduction shall be recommended for unsatisfactory performance if computed overall rating is under 80%.
A deduction may be recommended for this project being completed late due to the Contractor's fault.

RECOMMENDATIONS FOR DEDUCTIONS FROM CONTRACTORS' ASSIGNED FACTOR
(*Write Yes or No in space provided*)

I recommend a deduction for Contractor's unsatisfactory performance: _____

I recommend a deduction for project completed late:_____

Signed: _____
District Highway Director

EXPLANATION OF RATINGS 1 – 9:_____

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WORK NOT COMPLETED WITHIN SPECIFIED TIME: _____

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Revised: 04/28/17

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DOCUMENT 00440

Final Report ☐

Interim Report ☐

SUBCONTRACTOR PROJECT EVALUATION FORM

For instructions on using this form, see Engineering Directive E-10-002, Dated 4/20/2010

Date: _____

City/Town: _____ Subcontractor: _____

Project: _____ Address: _____

F.A. No.: _____ Contract Number: _____

Prime Contractor _____ Current Contract Completion Date: _____

Date Work Started: _____ Date Work Completed*: _____

Subcontractor's Superintendent: _____

Type of Work Performed by Subcontractor: _____

*If work was NOT completed within specified time (including extensions) give reasons on following page.

	Excellent 10	Very Good 9	Average 8	7	Fair 6	5	Poor 4	% Rating
1. Workmanship								x 2=
2. Safety								x 2=
3. Schedule								x 1.5=
4. Home Office Support								x 1.5=
5. Field Supervision/ Superintendent								x 1=
6. Contract Compliance								x 1=
7. Equipment								x 0.5=
8. Payment of Accounts								x 0.5=
(use back for additional comments)						**Overall Rating:**		

(Give explanation of items 1 through 8 on the following page in numerical order if overall rating is below 80%. Use additional sheets if necessary.)

_____ _____

District Construction Engineer's Signature/Date Resident Engineer's Signature/Date

_____ _____

Contractor Signature Acknowledging Report/Date Subcontractor Signature Acknowledging Report/Date

Subcontractor Requests Meeting with the District: No ☐ Yes ☐ Date Meeting Held: _____

Subcontractor's Comments / Meeting Notes (extra sheets may be added to this form and noted here if needed):

_____

_____

Contractor's Comments: _____

_____

SUBCONTRACTOR PROJECT EVALUATION FORM (Continued)

Date: _____ Contract Number:_____

INFORMATION FOR DISTRICT HIGHWAY DIRECTORS RELATING TO PREQUALIFICATION

A deduction shall be recommended for unsatisfactory performance if computed overall rating is under 80%.
A deduction may be recommended for this project being completed late due to the Contractor's fault.

RECOMMENDATIONS FOR DEDUCTIONS FROM CONTRACTORS' ASSIGNED FACTOR
(*Write Yes or No in space provided*)

I recommend a deduction for Contractor's unsatisfactory performance: _____

I recommend a deduction for project completed late:_____

Signed: _____
District Highway Director

EXPLANATION OF RATINGS 1 – 8: _____

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WORK NOT COMPLETED WITHIN SPECIFIED TIME: _____

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Revised: 04/28/17

*** END OF DOCUMENT ***

DOCUMENT 00710
GENERAL CONTRACT PROVISIONS
Revised: 04-16-25

NOTICE OF AVAILABILITY

The STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES dated 2025, the SUPPLEMENTAL SPECIFICATIONS, the 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS; the 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING and the CONSTRUCTION STANDARD DETAILS are available online at https://www.mass.gov/massdot-highway-division-manuals-and-publications

SPECIAL PROVISIONS FOR RIGHT-TO-KNOW ACT REQUIREMENTS

The Contractor's attention is directed to Massachusetts General Laws, Chapter 111F, commonly known as the Right-To-Know Act, and to the regulations promulgated pursuant thereto. Among the provisions of the Right-To-Know Act is a requirement that employers make available to employees Materials Safety Data Sheets (MSDS) for any substance on the Massachusetts Substance List (MSL) to which employees are, have been, or may be exposed.

To ensure prompt compliance with these regulations and legislation, the Contractor shall:

1. Deliver to the Department, prior to the start of any work under this contract, copies of MSDS for all MSL substances to be used, stored, processed or manufactured at the worksite by the Contractor.

2. Train employees of the Department, who may be exposed to MSL substances as a result of the Contractor's work under this contract, with regard to those specific substances in accordance with requirements of the Right-To-Know Act.

3. Observe all safety precautions recommended on the MSDS for any MSL substance to be used, stored, processed, or manufactured at the worksite by the Contractor.

4. Inform the Department in writing regarding specific protective equipment recommended in the MSDS for MSL substances to which employees of the Department may be exposed as a result of the Contractor's work under this contract.

The Department shall not be liable for any delay or suspension of work caused by the refusal of its employees to perform any work due to the Contractor's failure to comply with the Right-To-Know Act. The Contractor agrees to hold the Department or the Commissioner of the Department harmless and fully indemnified for any and all claims, demands, fines, actions, complaints, and causes of action resulting from or arising out of the Contractor's failure to comply with the requirements of the Right-To-Know Act.

ALTERNATIVE DISPUTE RESOLUTION
Forum, Choice of Law and Mediations:

Any actions arising out of a contract shall be governed by the laws of Massachusetts and shall be brought and maintained in a State or federal court in Massachusetts which shall have exclusive jurisdiction thereof. MassDOT and the Contractor may both agree to mediation of any claim and will share the costs of such mediation pro rata based on the number of parties involved.

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DOCUMENT 00715

SUPPLEMENTAL SPECIFICATIONS

JUNE 30, 2025

The 2025 *Standard Specifications for Highways and Bridges* are amended by the following modifications, additions and deletions. These Supplemental Specifications prevail over those published in the Standard Specifications.

The Specifications Committee has issued these Supplemental Specifications for inclusion into each proposal until such time as they are updated or incorporated into the next Standard Specifications.

Contractors are cautioned that these Supplemental Specifications are dated and will change as they are updated.

DIVISION I

GENERAL REQUIREMENTS AND COVENANTS

SECTION 2.00: PROPOSAL REQUIREMENTS AND CONDITIONS

Subsection 2.09: Rejection of Proposals
Replace the first bullet in the third paragraph with the following:

- award of the contract would result in the Bidder exceeding the Aggregate Bonding Capacity or the Single Bonding Capacity established by its Surety Company, or the Bidder's Proposal exceeds its Single Contract Limit, or the Bidder was not prequalified in the specified class of work on or before the time of bid opening; or

SECTION 7.00: LEGAL RELATIONS AND RESPONSIBILITY TO PPUBLIC

Subsection 7.05: Insurance Requirements
Change the title of paragraph A to Workers' Compensation Insurance

Subsection 7.22: Labor, Lodging, Board, Maximum Hours of Employment, Weekly Payment, Keeping of Payroll Records.
In the second paragraph replace the word "workman" to "worker" and the word "workmen" to "workers".

Replace the third paragraph with the following:

Attention of Bidders is called to MGL Chapter 149, Section 148 requiring the weekly payment of employee wages.

SECTION 9.00: MEASUREMENT AND PAYMENT

Subsection 9.03: Payment for Extra Work

Replace paragraph B., first paragraph, numbers (2) and (3) with the following.

(2) Plus 13 percent of direct labor, for the estimated costs of Federal Insurance Contribution Act (FICA) including Medicare; Federal Unemployment Tax Act (FUTA); State Unemployment Tax Act (SUTA), which includes Unemployment Insurance, the Workforce Training Fund Program,-Employer Medical Assistance Contribution, and COVID-19 Recovery Assessment; Earned Sick Time (EST) Law (940 CMR 33.00); and Paid Family and Medical Leave (PFML) Act (458 CMR 2.00); or, as an alternative to the above 13 percent, the Contractor may elect to use actual rates for FICA, FUTA, SUTA, EST and PFML provided the actual rates are supported with verifiable documentation and shall be subject to review by MassDOT Audit Operations.

(3) Plus the estimated cost of Workers' Compensation and Liability Insurance, Health, Welfare and Pension benefits, and such additional fringe benefits which the Contractor is required to pay as a result of Union Labor Agreements and/or is required by authorized governmental agencies;

In paragraph B., second paragraph, number (3), replace the word "Workmen's" with "Workers'".

DIVISION II

CONSTRUCTION DETAILS

SECTION 300: WATER SYSTEMS

SUBSECTION 301: WATER SYSTEMS

Subsection 301.60G: Laying Pipe
Revise the third paragraph to read as follows:

Pipe sections shall be laid with the bell on the upgrade end. Before laying the pipe, the outside of the spigot and the inside of the bell shall be wire brushed and wiped clean and dry.

Subsection 301.80: Method of Measurement
Delete the words cast iron in the first paragraph.

Replace the second paragraph with the following:

Fittings, consisting of bends, tees, caps, wyes, sleeves, reducers, increasers, blow-off fittings and other special fittings, apply only when new materials are necessary and which are not specifically provided for under other items in the Proposal. Fittings other than new will not be paid separately but only under the applicable pipe items. When new fittings are measured separately for payment, the length of pipe occupied by the fittings will not be measured for payment.

SECTION 800: TRAFFIC CONTROL DEVICES

SUBECTION 850: TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE OPERATIONS

Subsection 850.29: Temporary Barrier and Temporary Barrier Removed and Reset
Delete this subsection.

Subsection 850.49: Temporary Barrier
Delete this subsection.

Subsection 850.69: Temporary Barrier and Temporary Barrier Removed and Reset
Delete this subsection.

Subsection 850.80: Method of Measurement
Delete the fifth paragraph from the end of this subsection.

Subsection 850.81: Basis of Payment
Delete the sixth and seventh paragraphs from the end of this subsection.

SUBECTION 853: TEMPORARY BARRIER

Subsection 853.: Temporary Barrier
Add this new subsection:

DESCRIPTION

853.20: General

Work under this Subsection consists of furnishing, placing, adjusting, resetting, maintaining, and removing temporary barrier.

MATERIALS

853.40: General

Materials shall meet the requirements specified in the following Subsections of Division III, Materials:

Material	Section
Precast, Prestressed, and Prefabricated Concrete Products	M4.09.0
Temporary Barrier	M10.16.0
Limited Deflection Temporary Barrier	M10.16.1
Delineators for Temporary Barrier	M10.16.2

The Contractor shall supply a temporary barrier system that meets or exceeds the Test Level (TL) designated in the description of the bid item.

If the Contractor uses a proprietary temporary barrier system, it shall be listed on the QTCE.

Temporary barrier segments that appear to be damaged or in otherwise unsuitable condition may be rejected or ordered to be replaced by the Engineer at no additional cost.

853.41: Deflection

The deflection of a temporary barrier system is defined as the measured deflection, permanent and/or dynamic, during MASH Test Designation 2-11 (for TL-2) or Test Designation 3-11 (for TL-3).

The Contractor shall supply a temporary barrier system that is equal to or less than the maximum allowable deflection (permanent and/or dynamic) for each run of temporary barrier, as shown in the Plans or stated in the Special Provisions. If no distinction between permanent and temporary deflection is shown in the plans or Special Provisions, then dynamic deflection shall govern.

853.42: Precast Concrete Barriers

Precast Concrete Barriers used as temporary barriers shall be fabricated in accordance with M4.09.0: Precast, Prestressed, and Prefabricated Concrete Products. The Contractor shall submit a Certificate of Compliance (CoC) attesting to meeting this requirement.

853.43: Delineation

Delineators installed at 20-ft intervals throughout the entire barrier run shall be included. The delineators shall conform to M10.16.2: Delineators for Temporary Barrier. Delineators that may act as a washer on a bolted connection shall not be used unless specifically allowed by the barrier manufacturer. Delineators that are damaged, are no longer reflective, or go missing while temporary barrier is deployed shall be replaced in kind by the Contractor.

Delineators may be top or side-mounted to the barrier and oriented in a manner to maximize reflectivity to approaching traffic.

Temporary barrier placed on the right side of the travel way, or top-mounted and separating two or more lanes traveling in the same direction, shall use white delineators. Temporary barrier placed on the left side of the travel way shall use amber or yellow delineators; if separating two-way traffic and top-mounted, the delineator shall be double-sided.

853.44: Anchored Barrier

Temporary barrier systems that include an anchor system in order to meet performance requirements of the contract and/or meet MASH testing requirements may be accepted for use at the discretion of the Department.

Barrier that utilizes an anchor system shall use the same pattern, placement, and material of anchors that was used in MASH crash testing.

853.45: Shop Drawings

Within 30 days of the Notice to Proceed, the Contractor shall provide Shop Drawings showing the proposed temporary barrier system and confirming that it conforms to 853.40: General and will meet the allowable deflection requirements as described in 853.41: Deflection.

If anchors are proposed, the means, methods, pattern, placement, and materials for anchoring and subsequent pavement and/or deck repairs following removal of the temporary barrier system shall be included in the Shop Drawing submittal. If the use of an anchor system is rejected by the Department, the Contractor shall select an unanchored system that meets or exceeds the contract specified performance requirements, at no additional cost.

Shop Drawings for proprietary barrier systems shall include manufacturer's instructions for installation.

CONSTRUCTION METHODS

853.60: General

A Traffic Management Plan approved by the Department is required prior to the installation of the temporary barrier system.

The Contractor shall install temporary barrier systems in accordance with the Plans.

Barrier ends shall not be exposed to approaching traffic during installation. Crashworthy shielding or attenuation shall be provided at all times.

Proprietary temporary barrier systems shall be installed per the manufacturer's instructions.

The Contractor shall not place any breaks in the temporary barrier system that will result in sections that are shorter than the tested minimum length-of-need (LON) under MASH Test 2-11 (for TL-2) or 3-11 (for TL-3). Exceptions shall be allowed for gate systems or changeable length segments placed over expansion joints, if those barrier segment types have been determined to be crashworthy per MASH.

Temporary barrier shall not be placed on unpaved surfaces, unless otherwise shown in the Plans.

The Contractor shall not store materials, vehicles, or other equipment within the measured dynamic deflection envelope, as defined in 853.41: Deflection.

853.61: Temporary Barrier Removed and Reset

Temporary Barrier Removed and Reset consists of relocating a string of temporary barrier from one alignment to another to support the sequence and phasing of construction, as shown in the Plans.

Temporary Barrier Removed and Reset does not include moving all or a portion of the temporary barrier system to gain access to a work area, for the convenience of the Contractor, or to realign units that have moved due to construction activities or a traffic incident.

853.62: Quality Control Inspection

After temporary barrier installation is completed, the Contractor shall perform a Quality Control (QC) Inspection in the presence of the Engineer. QC Inspection activities shall include, but are not limited to the following reviews:

- Installation location per the approved Plans.
- Alignment and connection mechanism between adjacent barrier segments.
- Alignment and connection mechanism between barrier segment and attenuator, if present.
- Anchor system installation, if present.

For proprietary barrier systems, the QC Inspection shall also include any manufacturer-specific inspection details or criteria found in the installation instructions.

Work behind the barrier shall not commence until the QC Inspection has been accepted by the Engineer.

COMPENSATION

853.80: Method of Measurement

Temporary Barrier will be measured by the foot installed, in place.

Temporary Barrier Removed and Reset will be measured by the foot removed and reset.

853.81: Basis of Payment

Temporary Barrier will be paid for at the contract unit price per foot which shall provide full compensation for fabrication, storage, transport, furnishment, installation, delineation, alignment, maintenance, repair, and final removal of the temporary barrier.

Temporary Barrier Removed and Reset will be paid for at the contract unit price per foot which shall provide full compensation for removing, relocating, transporting, and installing new anchorage (if used). If more than one accepted temporary barrier system is approved for use in a single contract, the unit cost for Temporary Barrier Removed and Reset shall not differ among systems.

All costs associated with fabrication, installation, and maintenance of temporary barrier delineators shall be considered incidental to the cost of the item.

All costs associated with Shop Drawings and COCs shall be considered incidental to the item.

All costs associated with patching or repairing the road surface or bridge deck due to the installation and removal of temporary barrier and/or anchors for a temporary barrier system shall be considered incidental to the cost of the item.

853.82: Payment Items

Item number	Description	Unit
853.2	Temporary Barrier (TL-2)	Foot
853.21	Temporary Barrier Removed and Reset	Foot
853.23	Temporary Barrier (TL-3)	Foot
853.33	Temporary Barrier – Limited Deflection (TL-3)	Foot

SECTION 900: STRUCTURES

SUBECTION 902: ULTA HIGH PERFORMANCE CONCRETE

Subsection 902.32: Mockup
In Table 902.32-1 change the Link Slab width to 2 ft – 0 in. and change the Joint Header width to 0 ft – 6 in.

Subsection 902.32: - 902.38
Renumber section 902.32 Surface Preparation to 902.33 Surface Preparation and renumber section 902.33 through 902.38 to 902.34 through 902.39.

DIVISION III

MATERIALS SPECIFICATIONS

SECTION M2: AGGREGATES AND RELATED MATERIALS

Subsection M2.01.0 Crushed Stone
Replace the fourth paragraph and the associated asterisk notes with the following;

The crushed stone shall have a maximum 45% wear as determined by the Los Angeles Abrasion Test (AASHTO T 96)

SECTION M5: PIPE, CULVERT SECTIONS AND CONDUIT

Subsection M5.01.0 Joint Materials for Pipe
Replace this subsection with the following:

- Jute or oakum furnished for use in pipe joints shall be of an accepted grade approved for common usage.
- Mortar shall conform to the requirements of M4.04.0: Cementitious Grout, Mortar and Concrete Products
- Standard couplers as approved by the manufacturer shall be used to join corrugated metal pipe
- Rubber ring or plastic gaskets for concrete pipe joints, or manholes section joints shall be of tough, flexible, chemical-resistant material, and of such size and shape as to ensure satisfactory pipe joints when incorporated in the work and shall conform to AWWA C153.
- Rubber gasket joints for ductile iron pipe shall be Styrene-Butadiene Rubber (SBR), Ethylene Propylene Diene Monomer (EPDM) or Nitrile and conform to AWWA C111

Subsection M5.05.03.B Gate Valves
Replace this subsection with the following:

Gate valves shall conform to the requirements of AWWA Standard C500 and/or to the type used by the municipality as specified in the Special Provisions.

SECTION M7: PAINTS, PROTECTIVE COATINGS AND PAVEMENT MARKINGS

Subsection M7.01.04 Fast Drying White and Yellow Waterborne Traffic Paint
Replace the subsection with the following:

Approved waterborne traffic paint shall be tested in accordance with AASHTO M 348 and be listed on the QCML The dry paint film shall be under the Toxicity Characteristic Leaching Procedure (TCLP) limits for all contaminants listed in 40 CFR 261.24. The markings shall be installed using reflective glass beads meeting the requirements of M7.01.07. For waterborne yellow paint use Organic Yellow No. 65 or No. 75 pigment.

SECTION M9: MISCELLANEOUS MATERIALS

Subsection M9.12.0 Reflectors for Barriers
Delete this subsection.

SECTION M10: TRAFFIC CONTROL DEVICES

Subsection M10.16.0: Temporary Barrier
Subsection M10.16.1: Limited Deflection Temporary Barrier
Subsection M10.16.2: Delineators for Temporary Barrier
Add these new subsections.

M10.16.0: Temporary Barrier

All Temporary Barrier shall be tested to MASH crash testing standards and the results of the following crash test designations must fall within the acceptable impact tolerances and evaluation criteria shown in Table 2-2A of MASH:

- Test Level 2: 2-10, 2-11
- Test Level 3: 3-10, 3-11

M10.16.1: Limited Deflection Temporary Barrier

To be classified as a Limited Deflection Temporary Barrier, the results of MASH Test Designation 3-11 must result in a measured dynamic deflection of 24 in. or less.

M10.16.2: Delineators for Temporary Barrier

Delineators for Temporary Barrier shall consist of a housing, retroreflective material, and an adhesive or mechanical fastener.

Housings for Delineators for Temporary Barrier shall be fabricated from a lightweight polymer material. Metal housings shall not be permitted.

Retroreflection shall be achieved using an acrylic reflector or retroreflective sheeting directly applied to the housing. If used, retroreflective sheeting shall be factory applied and conform to ASTM D4956 Type IV, Type V, or Type IX. A minimum of 8 $in.^2$ of reflective material shall be visible on any traffic-facing portion of the delineator.

Delineators shall be attached to temporary barriers using a manufacturer-approved adhesive or mechanical fastener.

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END OF SUPPLEMENTAL SPECIFICATIONS

DOCUMENT 00719

(Revised September 14, 2023 – for all Federally Aided Projects)

SPECIAL PROVISIONS FOR PARTICIPATION BY DISADVANTAGED BUSINESS ENTERPRISES

(IMPLEMENTING TITLE 49 OF THE CODE OF FEDERAL REGULATIONS, PART 26)

Section: Page 00719-

POLICY 2
1. DEFINITIONS 3
2. DBE PARTICIPATION 5
   a. Goal 5
   b. Bidders List 5
3. CONTRACTOR ASSURANCES 6
4. REQUIRED SUBCONTRACT PROVISIONS 6
5. ELIGIBILITY OF DBES 6
   a. Massachusetts DBE Directory 6
   b. DBE Certification 6
   c. Joint Venture Approval 7
6. COUNTING DBE PARTICIPATION TOWARDS DBE PARTICIPATION GOALS 7
   a. Commercially Useful Function 7
   b. Counting Participation Toward The Contract Participation Goal 7
   c. Joint Check Policy 9
   d. Joint Check Procedure(s) 10
7. AWARD DOCUMENTATION AND PROCEDURES 11
8. COMPLIANCE 13
9. SANCTIONS 16
10. FURTHER INFORMATION; ENFORCEMENT, COOPERATION AND CONFIDENTIALITY 16
11. LIST OF ADDITIONAL DOCUMENTS 18

POLICY

The Massachusetts Department of Transportation (MassDOT) receives Federal financial assistance from the Federal Highway Administration (FHWA), United States Department of Transportation (U.S. DOT), and as a condition of receiving this assistance, has signed an assurance that it will comply with 49 CFR Part 26 (Participation By Disadvantaged Business Enterprises In Department Of Transportation Financial Assistance Programs). The U.S. DOT Disadvantaged Business Enterprise Program is authorized by the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users ("SAFETEA-LU"), as amended, at Title 23, United States Code, § 1101.

Accordingly, MassDOT has established a Disadvantaged Business Enterprise (DBE) Program in accordance with 49 CFR Part 26. It is the policy of MassDOT to ensure that DBEs have an equal opportunity to receive and participate in U.S. DOT assisted Contracts, without regard to race, color, national origin, or sex. To this end, MassDOT shall not directly, or through contractual or other arrangements, use criteria or methods of administration that have the effect of defeating or substantially impairing accomplishment of the program objectives stated below:

- To ensure nondiscrimination in the award and administration of U.S. DOT assisted Contracts;
- To create a level playing field on which DBEs can compete fairly for U.S. DOT assisted Contracts;
- To ensure that the DBE Program is narrowly tailored in accordance with applicable law;
- To ensure that only firms that fully meet 49 CFR Part 26 eligibility standards are permitted to participate as DBEs;
- To help remove barriers to the participation of DBEs in U.S. DOT assisted Contracts; and
- To assist the development of firms that can compete successfully in the market place outside the DBE Program.

The Director of Civil Rights of MassDOT has been designated as the DBE Liaison Officer. The DBE Liaison Officer is responsible for implementing all aspects of the DBE Program. Other MassDOT employees are responsible for assisting the Office of Civil Rights in carrying out this obligation. Implementation of the DBE Program is accorded the same priority as compliance with all other legal obligations incurred by MassDOT in its financial assistance agreements with each operating administration of the U.S. DOT. Information on the Federal requirements and MassDOT's policies and information can be found at:

Type of Info	***Website***	***Description***
MassDOT Highway Division Policies and Info	https://www.mass.gov/disadvantaged-business-enterprise-goals-2019-2022	*MassDOT–Highway Div'n Page*
For copies of the Code of Federal Regulations	http://www.gpo.gov/fdsys/browse/collectionCfr.action?collectionCode=CFR	FDsys – US Gov't Printing Office
For information about the U.S.DOT DBE Program	https://www.transportation.gov/civil-rights/disadvantaged-business-enterprise	U.S. DOT/ FHWA page

1. DEFINITIONS

As used in these provisions, the terms set out below are defined as follows:

"Broker", for purposes of these provisions, shall mean a DBE Entity that has entered into a legally binding relationship to provide goods or services delivered or performed by a third party. A broker may be a DBE Entity that arranges or expedites transactions but performs no work or installation services.

"Contractor", "General" or "Prime" Contractor, "Bidder," and "DB Entity" shall mean a person, firm, or other entity that has contracted directly with MassDOT to provide contracted work or services.

"Contract" shall mean the Contract for work between the Contractor and MassDOT.

"DBB" or "Design-Bid-Build" shall mean the traditional design, bid and project delivery method consisting of separate contracts between awarding authority and a designer resulting in a fully designed project; and a separate bidding process and Contract with a construction Contractor or Bidder.

"DB" or "Design-Build" shall mean an accelerated design, bid and project delivery method consisting of a single contract between the awarding authority and a DB Entity, consisting of design and construction companies that will bring a project to full design and construction.

"Disadvantaged Business Enterprise" or "DBE" shall mean a for-profit, small business concern:

(a) that is at least fifty-one (51%) percent owned by one or more individuals who are both socially and economically disadvantaged, or, in the case of any corporation, in which at least fifty-one (51%) percent of the stock is owned by one or more such individuals; and

(b) where the management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it.

"FHWA" shall mean the Federal Highway Administration," an agency within U.S. DOT that supports State and local governments in the design, and maintenance of the Nation's highway system (Federal Aid Highway Program).

"Good faith efforts" shall mean efforts to achieve a DBE participation goal or other requirement of these Special Provisions that, by their scope, intensity, and appropriateness to the objective, can reasonably be expected to fulfill the program requirement. Such efforts must be deemed acceptable by MassDOT.

"Joint Venture" shall mean an association of a DBE firm and one or more other firms to carry out a single, for-profit business enterprise, for which the parties combine their property, capital, efforts, skills and knowledge, and in which the DBE is responsible for a distinct, clearly defined portion of the work of the Contract and whose share in the capital contribution, control, management, risks, and profits of the joint venture are commensurate with its ownership interest.

"Approved Joint Venture" shall mean a joint venture, as defined above, which has been approved by MassDOT's Prequalification Office and Office of Civil Rights for DBE participation on a particular Contract.

"Manufacturer" shall mean a firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles or equipment required under the contract and of the general character described by the specifications.

"Regular Dealer" shall mean a DBE firm that owns, operates, or maintains a store, warehouse, or other establishment in which materials, supplies, articles or equipment of the general character described by the specifications and required under the Contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business.

(a) To be a regular dealer, the firm must be an established, regular business that engages, as its principal business, and under its own name, in the purchase and sale of the products in question.

(b) A person may be a regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating, or maintaining a place of business as provided above if the person both owns and operates distribution equipment for the products. Any supplementing of regular dealers' own distribution equipment shall be by long term lease agreement and not on an ad hoc or contract by contract basis.

(c) Packagers, brokers, manufacturers' representatives, or other persons who arrange or expedite transactions are not regular dealers within the meaning of this definition.

"Responsive" and "Responsible" refers to the bidder's submittal meeting all of the requirements of the advertised request for proposal. The term responsible refers to the ability of the Contractor to perform the work. This ability can be determined prior to bid invitations.

"Small Business or Small Business Concern" shall mean a small business concern or company as defined in Section 3 of the Small Business Act and SBA regulations implementing it (13 CFR Part 121); and is a business that does not exceed the cap on annual average gross receipts established by the U.S. Secretary of Transportation pursuant to 49 CFR Part 26.65; see also 49 CFR Part 26.39.

"SDO" shall mean the Massachusetts Supplier Diversity Office, formerly known as the State Office of Minority and Women Business Assistance (SOMWBA). In 2010, SOMWBA was abolished and the SDO was established. *See* St. 2010, c. 56. The SDO has assumed all the functions of SOWMBA. SDO is an agency within the Commonwealth of Massachusetts Executive office of Administration and Finance (ANF) Operational Services Division (OSD). The SDO mandate is to help promote the development of business enterprises and non-profit organizations owned and operated by minorities and women.

"Socially and economically disadvantaged individuals" shall mean individuals who are citizens of the United States (or lawfully admitted permanent residents) and who are:

(a) Individuals found by SDO to be socially and economically disadvantaged individuals on a case by case basis.

(b) Individuals in the following groups, members of which are rebuttably presumed to be socially and economically disadvantaged:

(1) "Black Americans" which includes persons having origin in any of the Black racial groups of Africa; (2) "Hispanic Americans" which include persons of Mexican, Puerto Rican, Cuban, Dominican, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race; (3) "Native Americans" which include persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians; (4) "Asian Pacific Americans" which includes persons whose origins are from Japan, China, Taiwan, Korea, Burma (Myanmar), Vietnam, Laos, Cambodia (Kampuchea), Thailand, Malaysia, Indonesia, the Philippines, Brunei, Samoa, Guam, the U.S. Trust Territories of the Pacific Islands (Republic of Palau), the Commonwealth of the Northern Marianas Islands, Macao, Fiji, Tonga, Kiribati, Tuvalu, Nauru, Federated States of Micronesia, or Hong Kong; (5) "Subcontinent Asian Americans" which includes persons whose origins are from India, Pakistan, Bangladesh, Bhutan, the Maldives Islands, Nepal or Sri Lanka; (6) Women; or (7) Any additional groups whose members are designated as socially and economically disadvantaged by the Small Business Administration (SBA), at such time as the SBA designation becomes effective.

Other terms and definitions applicable to the U.S. DOT DBE Program may be found at 49 CFR Part 26 and related appendices and guidance pages.

2. DBE PARTICIPATION

a. Goal

On this Contract, MassDOT has established the following goal(s) for participation by firms owned and controlled by socially and economically disadvantaged persons. At least half of the goal must be met in the form of DBE Subcontractor construction activity as opposed to material supplies or other services. The applicable goal remains in effect throughout the life of the contract regardless of whether pre-identified DBE Subcontractors remain on the Project or under Contract.

☒ Design-Bid-Build Projects: DBE Participation Goal **14 %**
(*One half of this goal shall be met in the form of Subcontractor construction activity*)

☐ Design-Build Projects: DBE Design Participation Goal ____**%** and DBE Construction Participation Goal **%**
(One half of the Construction Goal shall be met in the form of Subcontractor construction activity)

b. Bidders List

Pursuant to the provisions of 49 CFR Part 26.11(c), Recipients such as MassDOT, must collect from all Bidders who seek work on Federally assisted Contracts the firm full company name(s), addresses and telephone numbers of all firms that have submitted bids or quotes to the Bidders in connection with this Project. All bidders should refer to the Special Provision Document "A00801" of the Project proposal for this requirement.

In addition, MassDOT must provide to U.S. DOT, information concerning contractors firm status as a DBE or non-DBE, the age of the firm, and the annual gross receipts of the firm within a series of brackets (e.g., less than $500,000; $500,000–$1 million; $1–2 million; $2–5 million, etc.). The status, firm age, and annual gross receipt information will be sought by MassDOT regularly prior to setting its DBE participation goal for submission to U.S. DOT. MassDOT will survey each individual firm for this information directly.

Failure to comply with a written request for this information within fifteen (15) business days may result in the suspension of bidding privileges or other such sanctions, as provided for in Section 9 of this provision, until the information is received.

3. CONTRACTOR ASSURANCES

No Contractor or any Subcontractor shall discriminate on the basis of race color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in all respects and as applicable prior to, or subsequent to, award of U.S. DOT assisted Contracts. The Contractor agrees to affirmatively seek out and consider DBE firms as Contractors, Subcontractors, and/or suppliers of materials and services for this Contract. No Contract will be approved until MassDOT has reviewed Bidders'/Contractors' affirmative actions concerning DBEs. Failure to carry out these requirements is a material breach of this Contract which may result in the termination of the Contract or such other remedy as MassDOT or FHWA deem appropriate.

4. REQUIRED SUBCONTRACT PROVISIONS

The Prime Contractor shall include the provisions of Section 3 above in every subcontract, making those provisions binding on each Subcontractor; in addition, the Prime Contractor shall include a copy of this Special Provision, in its entirety, in every subcontract with a DBE firm which is, or may be, submitted for credit toward the Contract participation goal.

5. ELIGIBILITY OF DBES

Only firms that have been certified by SDO and confirmed by MassDOT as eligible in accordance with 49 CFR Part 26 to participate as DBEs on federally aided MassDOT Contracts may be used on this Contract for credit toward the DBE participation goal.

a. Massachusetts DBE Directory

MassDOT makes available to all bidders the most current Massachusetts Disadvantaged Business Enterprise Directory. This directory is made available for Contractors' convenience and is informational only. The Directory lists those firms that have been certified as eligible in accordance with the criteria of 49 CFR Part 26 to participate as DBEs on federally aided MassDOT contracts. The Directory also lists the kinds of work each firm is certified to perform but does not constitute an endorsement of the quality of performance of any business and does not represent MassDOT Subcontractor approval.

Contractors are encouraged to make use of the DBE Directory maintained by SDO on the Internet. This listing is updated daily and may be accessed at the SDO's website at:
https://www.diversitycertification.mass.gov/BusinessDirectory/BusinessDirectorySearch.aspx

b. DBE Certification

A firm must apply to SDO, currently acting as certification agent for MassDOT, for DBE certification to participate on federally aided MassDOT Contracts. A DBE application may be made in conjunction with a firm's application to SDO for certification to participate in state-funded minority and women business enterprise programs or may be for DBE certification only. An applicant for DBE certification must identify the area(s) of work it seeks to perform on U.S. DOT funded projects.

c. Joint Venture Approval

To obtain recognition as an approved DBE Joint Venture, the parties to the joint venture must provide to MassDOT's Office of Civil Rights and Prequalification Office, at least fourteen (14) business days before the bid opening date, an Affidavit of DBE/Non-DBE Joint Venture in the form attached hereto, and including, but not limited to the following:

1. a copy of the Joint Venture Agreement;
2. a description of the distinct, clearly defined portion of the contract work that the DBE will perform with its own forces; and,
3. all such additional information as may be requested by MassDOT for the purpose of determining whether the joint venture is eligible.

6. COUNTING DBE PARTICIPATION TOWARDS DBE PARTICIPATION GOALS

In order for DBE participation to count toward the Contract participation goal, the DBE(s) must have served a commercially useful function in the performance of the Contract and must have been paid in full for acceptable performance.

a. Commercially Useful Function

(1) In general, a DBE performs a commercially useful function when it is responsible for execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. With respect to materials and supplies used on the Contract, the DBE must be responsible for negotiating price, determining quality and quantity, ordering the material, installing (where applicable) and paying for the material itself.

(2) To determine whether a DBE is performing a commercially useful function, MassDOT will evaluate the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the Contract is commensurate with the work it is actually performing and the DBE credit claimed for its performance of the work, and other relevant factors.

(3) A DBE does not perform a commercially useful function if its role is limited to that of an extra participant in a transaction, contract, or project through which funds are passed in order to obtain the appearance of DBE participation. In determining whether a DBE is such an extra participant, MassDOT will examine similar transactions, particularly those in which DBEs do not participate.

b. Counting Participation Toward The Contract Participation Goal

DBE participation which serves a commercially useful function shall be counted toward the DBE participation goal in accordance with the Provisions of 49 CFR Part 26.55(a) to (h), as follows:

(1) When a DBE participates in a construction Contract, MassDOT will count the value of the work performed by the DBE's own forces. MassDOT will count the cost of supplies and materials obtained by the DBE for the work of its contract, including supplies purchased or equipment leased by the DBE. Supplies, labor, or equipment the DBE Subcontractor uses, purchases, or leases from the Prime Contractor or any affiliate of the Prime Contractor will not be counted.

(2) MassDOT will count the entire amount of fees or commissions charged by a DBE firm for providing bona fide services, such as professional, technical, consultant, or managerial services, or for providing bonds or insurance specifically required for the performance of a U.S. DOT assisted Contract, toward DBE participation goals, provided it is determined that the fee is reasonable and not excessive as compared with fees customarily allowed for similar services.

(3) When a DBE performs as a participant in a joint venture, MassDOT will count toward DBE participation goals a portion of the total dollar value of the contract that is equal to the distinct, clearly defined portion of the work of the Contract that the DBE performs with its own forces.

(4) MassDOT will use the following factors in determining whether a DBE trucking company is performing a commercially useful function:

(i) the DBE must be responsible for the management and supervision of the entire trucking operation for which it is responsible on a particular contract; there cannot be a contrived arrangement for the purpose of meeting DBE participation goals.

(ii) the DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the Contract.

(iii) the Contractor will receive DBE credit for the total value of the transportation services the DBE provides on the Contract using trucks owned, insured, and operated by the DBE itself and using drivers the DBE employs alone.

(iv) the DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The Contractor who has a contract with a DBE who leases trucks from another DBE will receive credit for the total value of the transportation services of the lease.

(v) the DBE may also lease trucks from a non-DBE firm, including an owner-operator. The Contractor who has a Contract with a DBE who leases trucks from a non-DBE is entitled to credit for the total value of the transportation services provided by non-DBE lessees not to the exceed the value of transportation services provided by DBE-owned trucks on the Contract. Additional participation by non-DBE lessees receives credit only for the fee or commission it receives as a result of the lease arrangement, fee or commission it receives as a result of the lease arrangement. The DBE does not receive credit for the total value of the transportation services provided by the lessee, since these services are not provided by a DBE.

(vi) the lease must indicate that the DBE has exclusive use of, and control over, the truck. This does not preclude the leased truck from working for others during the term of the lease with the consent of the DBE, so long as the lease gives the DBE absolute priority for use of the leased truck. Leased trucks must display the name and identification number of the DBE.

(5) MassDOT will count the Prime Contractor's expenditures with DBEs for materials or supplies toward DBE participation goals as follows:

(i) if the materials or supplies are obtained from a DBE manufacturer, as defined in Section 1 above, MassDOT will count one hundred (100%) percent of the cost of the materials or supplies toward DBE participation goals, provided the DBE meets the other requirements of the regulations.

(ii) if the materials or supplies are purchased from a DBE regular dealer, as defined in Section 1 above, MassDOT will count sixty (60%) percent of the cost of the materials or supplies toward the Contract participation goal, provided the DBE meets the other requirements of the regulations.

(iii) for materials or supplies purchased from a DBE which is neither a manufacturer nor a regular dealer, MassDOT will count the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, or fees or transportation charges for the delivery of materials or supplies required on a job site toward the Contract participation goal, provided that MassDOT determines the fees to be reasonable and not excessive as compared with fees customarily allowed for similar services; the cost of the materials and supplies themselves will not be counted; and provided the DBE meets the other requirements of the regulations.

c. Joint Check Policy

MassDOT recognizes that the use of joint checks may be a business practice required by material suppliers and vendors in the construction industry. A joint check is a two-party check issued by a/the Prime Contractor to a DBE third party such as a regular dealer of material or supplies. The Prime Contractor issues the check as payor to the DBE and the third party jointly as payees to guarantee payment to the third party for materials or supplies obtained or to be used by the DBE. FHWA has established criteria to ensure that DBEs are in fact performing a commercially useful function ("CUF") while using a joint check arrangement. Contractors and DBEs must meet and conform to these conditions and criteria governing the use of joint checks.

In the event that a Contractor or DBE Subcontractor desires to a use joint check, MassDOT will require prior notice and will closely monitor the arrangement for compliance with FHWA regulations and guidance. MassDOT may allow a joint check arrangement and give credit to a Contractor for use of the DBE where one or more of the following conditions exist:

- The use of a joint check is in fact required by this type of vendor or supplier as a standard industry practice that applies to all Contractors (DBEs and non-DBEs); or is required by a specific vendor or supplier;
- Payment for supplies or materials would be delayed for an unreasonably extended period without the joint check arrangement;
- The DBE (or any of its Subcontractors) has a pattern or history of not paying a vendor or supplier within a reasonable time or has not established enough of a credit history with the supplier or vendor; and/or
- The presence of severe adverse economic conditions, where credit resources may be limited and such practices may be necessary or required to effect timely payments.

Other factors MassDOT may consider:

- Whether there is a requirement by the Prime Contractor that a DBE should use a specific vendor or supplier to meet their Subcontractor specifications;
- Whether there is a requirement that a DBE use the Prime Contractor's negotiated price;
- The independence of the DBE;
- Whether approval has been sought prior to use of a joint check arrangement; and
- Whether any approved joint check arrangement has exceeded a reasonable period of use;
- The operation of the joint check arrangement; and
- Whether the DBE has made an effort to establish alternate arrangements for following periods (i.e., the DBE must show it can, or has, or why it has not, established or increased a credit line with the vendor or supplier).

Even with the use of a Joint Check, both the Contractor and DBE remain responsible for compliance with all other elements under 49 CFR § 26.55 (c) (1), and must still be able to prove that a commercially useful function is being performed for the Contractor.

d. Joint Check Procedure(s)

- The DBE advises its General or Prime Contractor that it will have to use a Joint Check and provide proof of such requirement.
- The General or the Prime Contractor submits a request for approval to MassDOT, using MassDOT's approved Joint Check Request form (Document B00855) and by notification on the DBE Letter of Intent (Document B00854), and any other relevant documents. Requests that are not initiated during the bid process should be made in writing and comply with the procedure.
- The MassDOT Office of Civil Rights will review the request and render a decision as part of the approval process for DBE Schedules and Letters of Intent.
- Review and Approval will be project specific and relevant documents will be made part of the project Contract file.
- Payments should be made in the name of both the DBE and vendor or supplier. Payments should be issued and signed by the Contractor as only the guarantor for prompt payment of purchases to the vendor or supplier. The payment to the vendor or supplier should be handled by the DBE (i.e. if possible, funds or the joint check should be processed by the DBE and sent by the DBE to the vendor or supplier).
- MassDOT may request copies of cancelled checks (front and back) and transmittal information to verify any payments made to the DBE and vendor or supplier.
- MassDOT may request other information and documents, and may ask questions of the Contractor, Subcontractor and vendor or supplier prior to, during, and after the project performance to ascertain whether the Subcontractor is performing a commercially useful function and all parties are complying with DBE Program policies and procedures as part of the Subcontractor approval process.

7. AWARD DOCUMENTATION AND PROCEDURES

a. The two lowest bidders/the two bidders with the lowest price per quality score point, shall submit, by the close of business on the third (3rd) business day after the bid opening, a completed Schedule of Participation by DBEs (Document B00853) which shall list:

(1) The full company name, address and telephone number of each DBE with whom the bidder intends to make a commitment.

(2) The contract item(s), by number(s) and quantity(ies), if applicable, or specific description of other business activity to be performed by each DBE as set forth in the Letters of Intent. The Bidder shall list only firms which have the capacity to perform, manage and supervise the work proposed in accordance with the requirements of 49 CFR Part 26 and Section **6.b** of these Special Provisions.

(3) The total dollar amount to be paid to each DBE. (Bidders are cautioned that at least one half of the participation goal must be met with construction activity work.)

(4) The total dollar amount to be paid to each DBE that is eligible for credit toward the DBE participation goal under the counting rules set out in Section **6.b**.

(5) The total creditable DBE participation as a percentage of the total bid price.

b. All firms listed on the Schedule must be currently certified.

c. The two lowest bidders/the two bidders with the lowest price per quality score point, shall each submit, with their Schedules of Participation, fully completed, signed Letters of Intent (Document B00854) from each of the DBEs listed on the Schedule. The Letters of Intent shall be in the form attached and shall identify specifically the contract activity the DBE proposes to perform, expressed as contract item number, if applicable, description of the activity, NAICS code, quantity, unit price and total price. In the event of discrepancy between the Schedule and the Letter of Intent, the Letter of Intent shall govern.

d. Evidence of good faith efforts will be evaluated by MassDOT in the selection of the lowest responsible bidder.

All information requested by MassDOT for the purpose of evaluating the Contractor's efforts to achieve the participation goal must be provided within three (3) calendar days and must be accurate and complete in every detail. The apparent low bidder's attainment of the DBE participation goal or a satisfactory demonstration of good faith efforts is a prerequisite for award of the Contract.

e. Failure to meet, or to demonstrate good faith efforts to meet, the requirements of these Special Provisions shall render a bid non-responsive. Therefore, in order to be eligible for award, the bidder (1) must list all DBE's it plans to employ on the Schedule of Participation; and provide the required Letters of Intent for, DBE participation which meets or exceeds the Contract goal in accordance with the terms of these Special Provisions or (2) must demonstrate, to the satisfaction of MassDOT, that good faith efforts were made to achieve the participation goal. MassDOT will adhere to the guidance provided in Appendix A to 49 CFR Part 26 on the determination of a Contractor's good faith efforts to meet the DBE participation goal(s) set forth in Section 2 herein.

f. If MassDOT finds that the percentage of DBE participation submitted by the bidder on its Schedule does not meet the Contract participation goal, or that Schedule and Letters of Intent were not timely filed, and that the bidder has not demonstrated good faith efforts to comply with these requirements, it shall propose that the bidder be declared ineligible for award. In that case, the bidder may request administrative reconsideration. Such requests must be sent in writing within three (3) calendar days of receiving notice of proposed ineligibility to: The Office of the General Counsel, Massachusetts Department of Transportation, 10 Park Plaza, Boston, MA, 02116.

g. If, after administrative reconsideration, MassDOT finds that the bidder has not shown that sufficient good faith efforts were made to comply with the requirements of these Special Provisions, it shall reject the bidder's proposal and may retain the proposal guaranty.

h. Actions which constitute evidence of good faith efforts to meet a DBE participation goal include, but are not limited to, the following examples, which are set forth in 49 CFR Part 26, Appendix A:

(1) Soliciting through all reasonable and available means (e.g., attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBEs who have the capability to perform the work of the Contract. The bidder must solicit this interest within sufficient time to allow the DBEs to respond to the solicitation. The bidder must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.

(2) Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE participation goal will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the Prime Contractor might otherwise prefer to perform these work items with its own forces.

(3) Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.

(4) Negotiating in good faith with interested DBEs. It is the bidder's responsibility to make a portion of the work available to DBE Subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE Subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone number of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.

A bidder using good business judgment would consider a number of factors in negotiating with Subcontractors, including DBE Subcontractors, and would take a firm's price and capabilities as well as Contract participation goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a bidder's failure to meet the Contract DBE participation goal, as long as such costs are reasonable. Also, the ability or desire of a Prime Contractor to perform the work of a Contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Prime Contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.

(5) Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. Contractors should be careful of adding additional requirements of performance that would in effect limit participation by DBEs or any small business. The Contractor's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. nonunion employee status) are not legitimate causes for the rejection or non-solicitation of bids in the Contractor's efforts to meet the Contract participation goal.

(6) Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or contractor.

(7) Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.

(8) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and federal minority/women business assistance offices; and other organizations as allowed on a case by case basis to provide assistance in the recruitment and placement of DBEs.

8. COMPLIANCE

a. All activity performed by a DBE for credit toward the Contract participation goal must be performed, managed and supervised by the DBE in accordance with all commercially useful function requirements of 49 CFR Part 26. The Prime Contractor shall not enter into, or condone, any other arrangement.

b. The Prime Contractor shall not perform with its own organization, or assign to any other business, an activity designated for the DBE(s) named on the Schedule(s) submitted by the Prime Contractor under Section 7 or under paragraph **8.f** of this section, without the approval of MassDOT in accordance with the requirements of paragraphs **8.f** and **8.j** of this section.

c. MassDOT may suspend payment for any activity that was not performed by the DBE to whom the activity was committed on the approved Schedule of Participation, or that was not performed in accordance with the requirements of Section 6.

d. MassDOT retains the right to approve or disapprove of any or all Subcontractors. Requests by the Prime Contractor for approval of participation by a DBE Subcontractor for credit toward the Contract participation goal must include, in addition to any other requirements for Subcontractor approval, the following:

(1) A copy of the proposed subcontract. The subcontract must be for at least the dollar amount, and for the work described, in the Bidder's Schedule of Participation.

(2) A resume stating the qualifications and experience of the DBE Superintendent and/or foreperson who will supervise the on-site work. A new resume will be required for any change in supervisory personnel during the progress of the work.

(3) A Schedule of Operations indicating when the DBE is expected to perform the work.

(4) A list of (1) equipment owned by the DBE to be used on the Project, and (2) equipment to be leased by the DBE for use on the Project.

(5) A list of: (1) all projects (public and private) which the DBE is currently performing; (2) all projects (public and private) to which the DBE is committed; and (3) all projects (public and private) to which the DBE intends to make a commitment. For each Contract, list the contracting organization, the name and telephone number of a contact person for the contracting organization, the dollar value of the work, a description of the work, and the DBE's work schedule for each project.

e. If, pursuant to the Subcontractor approval process, MassDOT finds that a DBE Subcontractor does not have sufficient experience or resources to perform, manage and supervise work of the kind proposed in accordance with the requirements of 49 CFR Part 26, approval of the DBE Subcontractor may be denied. In the event of such denial, the Prime Contractor shall proceed in accordance with the requirements paragraphs **8.f** and **8.j** of this section.

f. If, for reasons beyond its control, the Prime Contractor cannot comply with its DBE participation commitment in accordance with the Schedule of Participation submitted under Section 7, the Prime Contractor shall submit to MassDOT the reasons for its inability to comply with its obligations and shall submit, and request approval for, a revised Schedule of Participation. If approved by MassDOT, the revised Schedule shall govern the Prime Contractor's performance in meeting its obligations under these Special Provisions.

g. A Prime Contractor's compliance with the participation goal in Section 2 shall be determined by reference to the established percentage of the total contract price, provided, however, that no decrease in the dollar amount of a bidder's commitment to any DBE shall be allowed without the approval of MassDOT.

h. If the contract amount is increased, the Prime Contractor may be required to submit a revised Schedule of Participation in accordance with paragraphs **8.f** and **8.j** of this section.

i. In the event of the decertification of a DBE scheduled to participate on the Contract for credit toward the participation goal, but not under subcontract, the Contractor shall proceed in accordance with paragraphs **8.f** and **8.j** of this section.

j. The Prime Contractor shall notify MassDOT immediately of any facts that come to its attention indicating that it may or will be unable to comply with any aspect of its DBE obligation under this Contract.

k. Any notice required by these Special Provisions shall be given in writing to: (1) the Resident Engineer; (2) the District designated Compliance Officer; and (3) the DBE Liaison Officer, MassDOT Office of Civil Rights, 10 Park Plaza, – 3rd Floor - West, Boston, MA, 02116 and cc'd to the Deputy Chief of External Programs.

l. The Prime Contractor and its Subcontractors shall comply with MassDOT's Electronic Reporting System Requirements (MassDOT Document 00821) and submit all information required by MassDOT related to the DBE Special Provisions through the Equitable Business Opportunity Solution ("EBO"). MassDOT reserves the right to request reports in the format it deems necessary anytime during the performance of the Contract.

m. Termination of DBE by Prime Contractor

(1) A Prime Contractor shall not terminate a DBE Subcontractor or an approved substitute DBE firm without the prior written consent of MassDOT. This includes, but is not limited to, instances in which a Prime Contractor seeks to perform work originally designated for a DBE Subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm.

(2) MassDOT may provide such written consent only if MassDOT agrees, for reasons stated in its concurrence document, that the Prime Contractor has good cause to terminate the DBE firm.

(3) For purposes of this paragraph, good cause includes the following circumstances:

(i) The DBE Subcontractor fails or refuses to execute a written contract;

(ii) The DBE Subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Good cause, however, does not exist if the failure or refusal of the DBE Subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the Prime Contractor;

(iii) The DBE Subcontractor fails or refuses to meet the Prime Contractor's reasonable, nondiscriminatory bond requirements.

(iv) The DBE Subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;

(v) The DBE Subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant 2 CFR Parts 180, 215 and 1,200 or applicable State law;

(vi) (vii) MassDOT has determined that the listed DBE Subcontractor is not a responsible contractor;

(vii) The listed DBE Subcontractor voluntarily withdraws from the Project and provides written notice of its withdrawal;

(viii) The listed DBE is ineligible to receive DBE credit for the type of work required;

(ix) A DBE owner dies or becomes disabled with the result that the listed DBE Contractor is unable to complete its work on the Contract;

(x) Other documented good cause that MassDOT determines compels the termination of the DBE Subcontractor. Good cause, however, does not exist if the Prime Contractor seeks to terminate a DBE it relied upon to obtain the Contract so that the Prime Contractor can self-perform the DBE work or substitute another DBE or non-DBE Contractor after Contract Award.

(4) Before transmitting to MassDOT a request to terminate and/or substitute a DBE Subcontractor, the Prime Contractor must give notice in writing to the DBE Subcontractor, with a copy to MassDOT, of its intent to request to terminate and/or substitute, and the reason for the request.

(5) The Prime Contractor must give the DBE five (5) business days to respond to the Prime Contractor's notice. The DBE must advise MassDOT and the Contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why MassDOT should not approve the Prime Contractor's action. If required in a particular case as a matter of public necessity (e.g., safety), MassDOT may provide a response period shorter than five (5) business days.

(6) In addition to post-award terminations, the provisions of this section apply to pre-award deletions of or substitutions for DBE firms.

n. Prompt Payment.

Contractors are required to promptly pay Subcontractors under this Prime Contract within ten (10) business days from the receipt of each payment the Prime Contractor receives from MassDOT. Failure to comply with this requirement may result in the withholding of payment to the Prime Contractor until such time as all payments due under this provision have been received by the Subcontractor(s) and/or referral to the Prequalification Committee for action which may affect the Contractor's prequalification status.

9. SANCTIONS

If the Prime Contractor does not comply with the terms of these Special Provisions and cannot demonstrate to the satisfaction of MassDOT that good faith efforts were made to achieve such compliance, MassDOT may, in addition to any other remedy provided for in the Contract, and notwithstanding any other provision in the Contract:

a. Retain, in connection with final acceptance and final payment processing, an amount determined by multiplying the total contract amount by the percentage in Section 2, less the amount paid to approved DBE(s) for work performed under the Contract in accordance with the provisions of Section 8.

b. Suspend, terminate or cancel this Contract, in whole or in part, and call upon the Prime Contractor's surety to perform all terms and conditions in the Contract.

c. In accordance with 720 CMR 5.05(1)(f), modify or revoke the Prime Contractor's Prequalification status or recommend that the Prime Contractor not receive award of a pending Contract. The Prime Contractor may appeal the determination of the Prequalification Committee in accordance with the provisions of 720 CMR 5.06.

d. Initiate debarment proceedings pursuant to M.G.L. c. 29 §29F and, as applicable, 2 CFR Parts 180, 215 and 1,200.

e. Refer the matter to the Massachusetts Attorney General for review and prosecution, if appropriate, of any false claim or pursuant to M.G.L. c. 12, §§ 5A to 5O (the Massachusetts False Claim Act).

f. Refer the matter to the U.S. DOT's Office of the Inspector General or other agencies for prosecution under Title 18, U.S.C. § 1001, 49 CFR Parts 29 and 31, and other applicable laws and regulations.

10. FURTHER INFORMATION; ENFORCEMENT, COOPERATION AND CONFIDENTIALITY.

a. Any proposed DBE, bidder, or Contractor shall provide such information as is necessary in the judgment of MassDOT to ascertain its compliance with the terms of this Special Provision. Further, pursuant to 49 CFR, Part 26.107:

(1) If you are a firm that does not meet the eligibility criteria of 49 CFR, Parts 26.61 to 26.73 ("subpart D"), that attempts to participate in a DOT- assisted program as a DBE on the basis of false, fraudulent, or deceitful statements or representations or under circumstances indicating a serious lack of business integrity or honesty, MassDOT or FHWA may initiate suspension or debarment proceedings against you under 49 CFR Part 29.

(2) If you are a firm that, in order to meet DBE Contract participation goals or other DBE Program requirements, uses or attempts to use, on the basis of false, fraudulent or deceitful statements or representations or under circumstances indicating a serious lack of business integrity or honesty, another firm that does not meet the eligibility criteria of subpart D, FHWA may initiate suspension or debarment proceedings against you under 49 CFR Part 29.

(3) In a suspension or debarment proceeding brought either under subparagraph a.(1) or b.(2) of this section, the concerned operating administration may consider the fact that a purported DBE has been certified by a recipient. Such certification does not preclude FHWA from determining that the purported DBE, or another firm that has used or attempted to use it to meet DBE participation goals, should be suspended or debarred.

(4) FHWA may take enforcement action under 49 CFR Part 31, Program Fraud and Civil Remedies, against any participant in the DBE Program whose conduct is subject to such action under 49 CFR Part 31.

(5) FHWA may refer to the Department of Justice, for prosecution under 18 U.S.C. 1001 or other applicable provisions of law, any person who makes a false or fraudulent statement in connection with participation of a DBE in any DOT-assisted program or otherwise violates applicable Federal statutes.

b. Pursuant to 49 CFR Part 26.109, the rules governing information, confidentiality, cooperation, and intimidation or retaliation are as follows:

(1) Availability of records.

(i) In responding to requests for information concerning any aspect of the DBE Program, FHWA complies with provisions of the Federal Freedom of Information and Privacy Acts (5 U.S.C. 552 and 552a). FHWA may make available to the public any information concerning the DBE Program release of which is not prohibited by Federal law.

(ii) MassDOT shall safeguard from disclosure to unauthorized persons information that may reasonably be considered as confidential business information, consistent with Federal and Massachusetts General Law (M.G.L. c. 66, § 10, M.G.L. c. 4, §7 (26), 950 CMR 32.00).

(2) Confidentiality of information on complainants. Notwithstanding the provisions of subparagraph b.(1) of this section, the identity of complainants shall be kept confidential, at their election. If such confidentiality will hinder the investigation, proceeding or hearing, or result in a denial of appropriate administrative due process to other parties, the complainant must be advised for the purpose of waiving the privilege. Complainants are advised that, in some circumstances, failure to waive the privilege may result in the closure of the investigation or dismissal of the proceeding or hearing.

(3) Cooperation. All participants in FHWA's DBE Program (including, but not limited to, recipients, DBE firms and applicants for DBE certification, complainants and appellants, and Contractors using DBE firms to meet Contract participation goals) are required to cooperate fully and promptly with U.S. DOT and recipient compliance reviews, certification reviews, investigations, and other requests for information. Failure to do so shall be a ground for appropriate action against the party involved (e.g., with respect to recipients, a finding of noncompliance; with respect to DBE firms, denial of certification or removal of eligibility and/or suspension and debarment; with respect to a complainant or appellant, dismissal of the complaint or appeal; with respect to a Contractor which uses DBE firms to meet participation goals, findings of non-responsibility for future Contracts and/or suspension and debarment).

(4) Intimidation and retaliation. No recipient, Contractor, or any other participant in the program, may intimidate, threaten, coerce, or discriminate against any individual or firm for the purpose of interfering with any right or privilege secured by this part or because the individual or firm has made a complaint, testified, assisted, or participated in any manner in an investigation, proceeding, or hearing under this part. If any recipient or contractor violates this prohibition, that entity is in noncompliance with this 49 CFR Part 26.

11. LIST OF ADDITIONAL DOCUMENTS.

a. The following documents shall be completed and signed by the bidder and designated DBEs in accordance with Section 7 - Award Documentation and Procedures. These documents must be returned by the bidder to MassDOT's Bid Document Distribution Center:

- □ Schedule of DBE Participation (Document B00853)
- □ Letter of Intent (Document B00854)
- □ DBE Joint Check Arrangement Approval Form (Document B00855), if Contractor and DBE plan, or if DBE is required to use a Joint Check

b. The following document shall be signed and returned by Contractor and Subcontractors/DBEs to the MassDOT District Office overseeing the Project, as applicable:

- □ Contractor/Subcontractor Certification Form (Document No. 00859) (a checklist of other documents to be included with every subcontract (DBEs and non-DBEs alike)).

c. The following document shall be provided to MassDOT's Office of Civil Rights and Prequalification Office at least fourteen (14) business days before the bid opening date, if applicable:

- □ Affidavit of DBE/Non-DBE Joint Venture (Document B00856)

d. The following document shall be provided to MassDOT's District Office of Civil Rights within 30 calendar days after the work of the DBE is completed, or no later than 30 calendar days after the work of the DBE is on a completed and processed CQE. This document shall be completed and submitted by the Prime Contractor:

- □ Certificate of Completion by a Minority/Women or Disadvantaged Business Enterprise (M/W/DBE) (Form No. CSD-100)

*** END OF DOCUMENT ***

DOCUMENT 00760

FHWA-1273 – Revised October 23, 2023

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. General
II. Nondiscrimination
III. Non-segregated Facilities
IV. Davis-Bacon and Related Act Provisions
V. Contract Work Hours and Safety Standards Act Provisions
VI. Subletting or Assigning the Contract
VII. Safety: Accident Prevention
VIII. False Statements Concerning Highway Projects
IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
X. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion
XI. Certification Regarding Use of Contract Funds for Lobbying
XII. Use of United States-Flag Vessels:

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under title 23, United States Code, as required in 23 CFR 633.102(b) (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services). 23 CFR 633.102(e).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider. 23 CFR 633.102(e).

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services) in accordance with 23 CFR 633.102. The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in solicitation-for-bids or request-for-proposals documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract). 23 CFR 633.102(b).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract. 23 CFR 633.102(d).

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. 23 U.S.C. 114(b). The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors. 23 U.S.C. 101(a).

II. NONDISCRIMINATION (23 CFR 230.107(a); 23 CFR Part 230, Subpart A, Appendix A; EO 11246)

The provisions of this section related to 23 CFR Part 230, Subpart A, Appendix A are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR Part 60, 29 CFR Parts 1625-1627, 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR Part 60, and 29 CFR Parts 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with 23 U.S.C. 140, Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d et seq.), and related regulations including 49 CFR Parts 21, 26, and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR Part 230, Subpart A, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

1. Equal Employment Opportunity: Equal Employment Opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (*see* 28 CFR Part 35, 29 CFR Part 1630, 29 CFR Parts 1625-1627, 41 CFR Part 60 and 49 CFR Part 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140, shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR Part 35 and 29 CFR Part 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract. 23 CFR 230.409 (g)(4) & (5).

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, sexual orientation, gender identity, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action or are substantially involved in such action, will be made fully cognizant of and will implement the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer or other knowledgeable company official.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to ensure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action

within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs (i.e., apprenticeship and on-the-job training programs for the geographical area of contract performance). In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. 23 CFR 230.409. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established thereunder. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, sexual orientation, gender identity, national origin, age, or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors, suppliers, and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurances Required:

a. The requirements of 49 CFR Part 26 and the State DOT's FHWA-approved Disadvantaged Business Enterprise (DBE) program are incorporated by reference.

b. The contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:
(1) Withholding monthly progress payments;
(2) Assessing sanctions;
(3) Liquidated damages; and/or
(4) Disqualifying the contractor from future bidding as non-responsible.

c. The Title VI and nondiscrimination provisions of U.S. DOT Order 1050.2A at Appendixes A and E are incorporated by reference. 49 CFR Part 21.

11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women.

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of more than $10,000. 41 CFR 60-1.5.

As prescribed by 41 CFR 60-1.8, the contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location under the contractor's control where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size), in accordance with 29 CFR 5.5. The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. 23 U.S.C. 113. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. 23 U.S.C. 101. Where applicable law requires that projects be treated as a project on a Federal-aid highway, the provisions of this subpart will apply regardless of the location of the project. Examples include: Surface Transportation Block Grant Program projects funded under 23 U.S.C. 133 [excluding recreational trails projects], the Nationally Significant Freight and Highway Projects funded under 23 U.S.C. 117, and National Highway Freight Program projects funded under 23 U.S.C. 167.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 “Contract provisions and related matters” with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages (29 CFR 5.5)

a. *Wage rates and fringe benefits.* All laborers and mechanics employed or working upon the site of the work (or otherwise working in construction or development of the project under a development statute), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of basic hourly wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. As provided in paragraphs (d) and (e) of 29 CFR 5.5, the appropriate wage determinations are effective by operation of law even if they have not been attached to the contract. Contributions made or costs reasonably anticipated for bona fide fringe benefits under the Davis-Bacon Act (40 U.S.C. 3141(2)(B)) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.e. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics must be paid the appropriate wage rate and fringe benefits on the wage determination for the classification(s) of work actually performed, without regard to skill, except as provided in paragraph 4. of this section. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided,* That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph 1.c. of this section) and the Davis-Bacon poster (WH–1321) must be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. *Frequently recurring classifications.* (1) In addition to wage and fringe benefit rates that have been determined to be prevailing under the procedures set forth in 29 CFR part 1, a wage determination may contain, pursuant to § 1.3(f), wage and fringe benefit rates for classifications of laborers and mechanics for which conformance requests are regularly submitted pursuant to paragraph 1.c. of this section, provided that:

(i) The work performed by the classification is not performed by a classification in the wage determination for which a prevailing wage rate has been determined;

(ii) The classification is used in the area by the construction industry; and

(iii) The wage rate for the classification bears a reasonable relationship to the prevailing wage rates contained in the wage determination.

(2) The Administrator will establish wage rates for such classifications in accordance with paragraph 1.c.(1)(iii) of this section. Work performed in such a classification must be paid at no less than the wage and fringe benefit rate listed on the wage determination for such classification.

c. *Conformance.* (1) The contracting officer must require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract be classified in conformance with the wage determination. Conformance of an additional classification and wage rate and fringe benefits is appropriate only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is used in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) The conformance process may not be used to split, subdivide, or otherwise avoid application of classifications listed in the wage determination.

(3) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken will be sent by the contracting officer by email to DBAconformance@dol.gov. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.

(4) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer will, by email to DBAconformance@dol.gov, refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30–day period that additional time is necessary.

(5) The contracting officer must promptly notify the contractor of the action taken by the Wage and Hour Division under paragraphs 1.c.(3) and (4) of this section. The contractor must furnish a written copy of such determination to each affected worker or it must be posted as a part of the wage determination. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 1.c.(3) or (4) of this section must be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

d. *Fringe benefits not expressed as an hourly rate.* Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor may either pay the benefit as stated in the wage determination or may pay another bona fide fringe benefit or an hourly cash equivalent thereof.

e. *Unfunded plans.* If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided,* That the Secretary of Labor has found, upon the written request of the contractor, in accordance with the criteria set forth in § 5.28, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

f. *Interest.* In the event of a failure to pay all or part of the wages required by the contract, the contractor will be required to pay interest on any underpayment of wages.

2. Withholding (29 CFR 5.5)

a. *Withholding requirements.* The contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for the full amount of wages and monetary relief, including interest, required by the clauses set forth in this section for violations of this contract, or to satisfy any such liabilities required by any other Federal contract, or federally assisted contract subject to Davis-Bacon labor standards, that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to Davis-Bacon labor standards requirements and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld. In the event of a contractor's failure to pay any laborer or mechanic, including any apprentice or helper working on the site of the work all or part of the wages required by the contract, or upon the contractor's failure to submit the required records as discussed in paragraph 3.d. of this section, the contracting agency may on its own initiative and after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with paragraph

2.a. of this section or Section V, paragraph 3.a., or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(2) A contracting agency for its reprocurement costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

3. Records and certified payrolls (29 CFR 5.5)

a. *Basic record requirements* (1) *Length of record retention.* All regular payrolls and other basic records must be maintained by the contractor and any subcontractor during the course of the work and preserved for all laborers and mechanics working at the site of the work (or otherwise working in construction or development of the project under a development statute) for a period of at least 3 years after all the work on the prime contract is completed.

(2) *Information required.* Such records must contain the name; Social Security number; last known address, telephone number, and email address of each such worker; each worker's correct classification(s) of work actually performed; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act); daily and weekly number of hours actually worked in total and on each covered contract; deductions made; and actual wages paid.

(3) *Additional records relating to fringe benefits.* Whenever the Secretary of Labor has found under paragraph 1.e. of this section that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in 40 U.S.C. 3141(2)(B) of the Davis-Bacon Act, the contractor must maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits.

(4) *Additional records relating to apprenticeship.* Contractors with apprentices working under approved programs must maintain written evidence of the registration of apprenticeship programs, the registration of the apprentices, and the ratios and wage rates prescribed in the applicable programs.

b. *Certified payroll requirements* (1) *Frequency and method of submission.* The contractor or subcontractor must submit weekly, for each week in which any DBA- or Related Acts-covered work is performed, certified payrolls to the contracting agency. The prime contractor is responsible for the submission of all certified payrolls by all subcontractors. A contracting agency or prime contractor may permit or require contractors to submit certified payrolls through an electronic system, as long as the electronic system requires a legally valid electronic signature; the system allows the contractor, the contracting agency, and the Department of Labor to access the certified payrolls upon request for at least 3 years after the work on the prime contract has been completed; and the contracting agency or prime contractor permits other methods of submission in situations where the contractor is unable or limited in its ability to use or access the electronic system.

(2) *Information required.* The certified payrolls submitted must set out accurately and completely all of the information required to be maintained under paragraph 3.a.(2) of this section, except that full Social Security numbers and last known addresses, telephone numbers, and email addresses must not be included on weekly transmittals. Instead, the certified payrolls need only include an individually identifying number for each worker (*e.g.,* the last four digits of the worker's Social Security number). The required weekly certified payroll information may be submitted using Optional Form WH–347 or in any other format desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division website at *https://www.dol.gov/sites/dolgov/files/WHD/legacy/files/wh347/.pdf* or its successor website. It is not a violation of this section for a prime contractor to require a subcontractor to provide full Social Security numbers and last known addresses, telephone numbers, and email addresses to the prime contractor for its own records, without weekly submission by the subcontractor to the contracting agency.

(3) *Statement of Compliance.* Each certified payroll submitted must be accompanied by a “Statement of Compliance,” signed by the contractor or subcontractor, or the contractor's or subcontractor's agent who pays or supervises the payment of the persons working on the contract, and must certify the following:

(i) That the certified payroll for the payroll period contains the information required to be provided under paragraph 3.b. of this section, the appropriate information and basic records are being maintained under paragraph 3.a. of this section, and such information and records are correct and complete;

(ii) That each laborer or mechanic (including each helper and apprentice) working on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR part 3; and

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification(s) of work actually performed, as specified in the applicable wage determination incorporated into the contract.

(4) *Use of Optional Form WH–347.* The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 will satisfy the requirement for submission of the “Statement of Compliance” required by paragraph 3.b.(3) of this section.

(5) *Signature.* The signature by the contractor, subcontractor, or the contractor's or subcontractor's agent must be an original handwritten signature or a legally valid electronic signature.

(6) *Falsification.* The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 3729.

(7) *Length of certified payroll retention.* The contractor or subcontractor must preserve all certified payrolls during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

c. *Contracts, subcontracts, and related documents.* The contractor or subcontractor must maintain this contract or subcontract and related documents including, without limitation, bids, proposals, amendments, modifications, and extensions. The contractor or subcontractor must preserve these contracts, subcontracts, and related documents during the course of the work and for a period of 3 years after all the work on the prime contract is completed.

d. *Required disclosures and access* (1) *Required record disclosures and access to workers.* The contractor or subcontractor must make the records required under paragraphs 3.a. through 3.c. of this section, and any other documents that the contracting agency, the State DOT, the FHWA, or the Department of Labor deems necessary to determine compliance with the labor standards provisions of any of the applicable statutes referenced by § 5.1, available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and must permit such representatives to interview workers during working hours on the job.

(2) *Sanctions for non-compliance with records and worker access requirements.* If the contractor or subcontractor fails to submit the required records or to make them available, or refuses to permit worker interviews during working hours on the job, the Federal agency may, after written notice to the contractor, sponsor, applicant, owner, or other entity, as the case may be, that maintains such records or that employs such workers, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available, or to permit worker interviews during working hours on the job, may be grounds for debarment action pursuant to § 5.12. In addition, any contractor or other person that fails to submit the required records or make those records available to WHD within the time WHD requests that the records be produced will be precluded from introducing as evidence in an administrative proceeding under 29 CFR part 6 any of the required records that were not provided or made available to WHD. WHD will take into consideration a reasonable request from the contractor or person for an extension of the time for submission of records. WHD will determine the reasonableness of the request and may consider, among other things, the location of the records and the volume of production.

(3) *Required information disclosures.* Contractors and subcontractors must maintain the full Social Security number and last known address, telephone number, and email address of each covered worker, and must provide them upon request to the contracting agency, the State DOT, the FHWA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or other compliance action.

4. Apprentices and equal employment opportunity (29 CFR 5.5)

a. *Apprentices* (1) *Rate of pay.* Apprentices will be permitted to work at less than the predetermined rate for the work they perform when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship (OA), or with a State Apprenticeship Agency recognized by the OA. A person who is not individually registered in the program, but who has been certified by the OA or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice, will be permitted to work at less than the predetermined rate for the work they perform in the first 90 days of probationary employment as an apprentice in such a program. In the event the OA or a State Apprenticeship Agency recognized by the OA withdraws approval of an apprenticeship program, the contractor will no longer be permitted to use apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) *Fringe benefits.* Apprentices must be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits must be paid in accordance with that determination.

(3) *Apprenticeship ratio.* The allowable ratio of apprentices to journeyworkers on the job site in any craft classification must not be greater than the ratio permitted to the contractor as to the entire work force under the registered program or the ratio applicable to the locality of the project pursuant to paragraph 4.a.(4) of this section. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in paragraph 4.a.(1) of this section, must be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under this section must be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(4) *Reciprocity of ratios and wage rates.* Where a contractor is performing construction on a project in a locality other than the locality in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyworker's hourly rate) applicable within the locality in which the construction is being performed must be observed. If there is no applicable ratio or wage rate for the locality of the project, the ratio and wage rate specified in the contractor's registered program must be observed.

b. *Equal employment opportunity.* The use of apprentices and journeyworkers under this part must be in conformity with

the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

c. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. 23 CFR 230.111(e)(2). The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeyworkers shall not be greater than permitted by the terms of the particular program.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract as provided in 29 CFR 5.5.

6. Subcontracts. The contractor or subcontractor must insert FHWA-1273 in any subcontracts, along with the applicable wage determination(s) and such other clauses or contract modifications as the contracting agency may by appropriate instructions require, and a clause requiring the subcontractors to include these clauses and wage determination(s) in any lower tier subcontracts. The prime contractor is responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in this section. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and may be subject to debarment, as appropriate. 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract as provided in 29 CFR 5.5.

9. Disputes concerning labor standards. As provided in 29 CFR 5.5, disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility. a. By entering into this contract, the contractor certifies that neither it nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of 40 U.S.C. 3144(b) or § 5.12(a).

c. The penalty for making false statements is prescribed in the U.S. Code, Title 18 Crimes and Criminal Procedure, 18 U.S.C. 1001.

11. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under the DBA, Related Acts, this part, or 29 CFR part 1 or 3;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under the DBA, Related Acts, this part, or 29 CFR part 1 or 3; or

d. Informing any other person about their rights under the DBA, Related Acts, this part, or 29 CFR part 1 or 3.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

Pursuant to 29 CFR 5.5(b), the following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchpersons and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek. 29 CFR 5.5.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph 1. of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages and interest from the date of the underpayment. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or

mechanic, including watchpersons and guards, employed in violation of the clause set forth in paragraph 1. of this section, in the sum currently provided in 29 CFR 5.5(b)(2)* for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1. of this section.

* $31 as of January 15, 2023 (See 88 FR 88 FR 2210) as may be adjusted annually by the Department of Labor, pursuant to the Federal Civil Penalties Inflation Adjustment Act of 1990.

3. Withholding for unpaid wages and liquidated damages

a. *Withholding process.* The FHWA or the contracting agency may, upon its own action, or must, upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor so much of the accrued payments or advances as may be considered necessary to satisfy the liabilities of the prime contractor or any subcontractor for any unpaid wages; monetary relief, including interest; and liquidated damages required by the clauses set forth in this section on this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act that is held by the same prime contractor (as defined in § 5.2). The necessary funds may be withheld from the contractor under this contract, any other Federal contract with the same prime contractor, or any other federally assisted contract that is subject to the Contract Work Hours and Safety Standards Act and is held by the same prime contractor, regardless of whether the other contract was awarded or assisted by the same agency, and such funds may be used to satisfy the contractor liability for which the funds were withheld.

b. *Priority to withheld funds.* The Department has priority to funds withheld or to be withheld in accordance with Section IV paragraph 2.a. or paragraph 3.a. of this section, or both, over claims to those funds by:

(1) A contractor's surety(ies), including without limitation performance bond sureties and payment bond sureties;

(2) A contracting agency for its reprocurement costs;

(3) A trustee(s) (either a court-appointed trustee or a U.S. trustee, or both) in bankruptcy of a contractor, or a contractor's bankruptcy estate;

(4) A contractor's assignee(s);

(5) A contractor's successor(s); or

(6) A claim asserted under the Prompt Payment Act, 31 U.S.C. 3901–3907.

4. Subcontracts. The contractor or subcontractor must insert in any subcontracts the clauses set forth in paragraphs 1. through 5. of this section and a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor is responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1. through 5. In the event of any violations of these clauses, the prime contractor and any subcontractor(s) responsible will be liable for any unpaid wages and monetary relief, including interest from the date of the underpayment or loss, due to any workers of lower-tier subcontractors, and associated liquidated damages and may be subject to debarment, as appropriate.

5. Anti-retaliation. It is unlawful for any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, or to cause any person to discharge, demote, intimidate, threaten, restrain, coerce, blacklist, harass, or in any other manner discriminate against, any worker or job applicant for:

a. Notifying any contractor of any conduct which the worker reasonably believes constitutes a violation of the Contract Work Hours and Safety Standards Act (CWHSSA) or its implementing regulations in this part;

b. Filing any complaint, initiating or causing to be initiated any proceeding, or otherwise asserting or seeking to assert on behalf of themselves or others any right or protection under CWHSSA or this part;

c. Cooperating in any investigation or other compliance action, or testifying in any proceeding under CWHSSA or this part; or

d. Informing any other person about their rights under CWHSSA or this part.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System pursuant to 23 CFR 635.116.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term “perform work with its own organization” in paragraph 1 of Section VI refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions: (based on longstanding interpretation)

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract. 23 CFR 635.102.

2. Pursuant to 23 CFR 635.116(a), the contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. Pursuant to 23 CFR 635.116(c), the contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract. (based on long-standing interpretation of 23 CFR 635.116).

5. The 30-percent self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements. 23 CFR 635.116(d).

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR Part 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract. 23 CFR 635.108.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR Part 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704). 29 CFR 1926.10.

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR Part 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 11, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT (42 U.S.C. 7606; 2 CFR 200.88; EO 11738)

This provision is applicable to all Federal-aid construction contracts in excess of $150,000 and to all related subcontracts. 48 CFR 2.101; 2 CFR 200.327.

By submission of this bid/proposal or the execution of this contract or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, subcontractor, supplier, or vendor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal Highway Administration and the Regional Office of the Environmental Protection Agency. 2 CFR Part 200, Appendix II.

The contractor agrees to include or cause to be included the requirements of this Section in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements. 2 CFR 200.327.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200. 2 CFR 180.220 and 1200.220.

1**. Instructions for Certification – First Tier Participants:**

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction. 2 CFR 180.320.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default. 2 CFR 180.325.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances. 2 CFR 180.345 and 180.350.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900-180.1020, and 1200. “First Tier Covered Transactions” refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction. 2 CFR 180.330.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold. 2 CFR 180.220 and 180.300.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. 2 CFR 180.300; 180.320, and 180.325. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. 2 CFR 180.335. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (https://www.sam.gov/). 2 CFR 180.300, 180.320, and 180.325.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default. 2 CFR 180.325.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.335;.

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property, 2 CFR 180.800;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (a)(2) of this certification, 2 CFR 180.700 and 180.800; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default. 2 CFR 180.335(d).

(5) Are not a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(6) Are not a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability (USDOT Order 4200.6 implementing appropriations act requirements).

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal. 2 CFR 180.335 and 180.340.

* * * * *

3. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders, and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200). 2 CFR 180.220 and 1200.220.

a. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances. 2 CFR 180.365.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180, Subpart I, 180.900 – 180.1020, and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. “First Tier Covered Transactions” refers to any covered transaction between a recipient or subrecipient of Federal funds and a participant (such as the prime or general contract). “Lower Tier Covered Transactions” refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). “First Tier Participant” refers to the participant who has entered into a covered transaction with a recipient or subrecipient of Federal funds (such as the prime or general contractor). “Lower Tier Participant” refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated. 2 CFR 1200.220 and 1200.332.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold. 2 CFR 180.220 and 1200.220.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the System for Award Management website (https://www.sam.gov/), which is compiled by the General Services Administration. 2 CFR 180.300, 180.320, 180.330, and 180.335.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily

excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment. 2 CFR 180.325.

* * * * *

4. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

a. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals:

(1) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency, 2 CFR 180.355;

(2) is a corporation that has been convicted of a felony violation under any Federal law within the two-year period preceding this proposal (USDOT Order 4200.6 implementing appropriations act requirements); and

(3) is a corporation with any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability. (USDOT Order 4200.6 implementing appropriations act requirements)

b. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant should attach an explanation to this proposal.

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XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed $100,000. 49 CFR Part 20, App. A.

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed $100,000 and that all such recipients shall certify and disclose accordingly.

XII. USE OF UNITED STATES-FLAG VESSELS:

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, or any other covered transaction. 46 CFR Part 381.

This requirement applies to material or equipment that is acquired for a specific Federal-aid highway project. 46 CFR 381.7. It is not applicable to goods or materials that come into inventories independent of an FHWA funded-contract.

When oceanic shipments (or shipments across the Great Lakes) are necessary for materials or equipment acquired for a specific Federal-aid construction project, the bidder, proposer, contractor, subcontractor, or vendor agrees:

1. To utilize privately owned United States-flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to this contract, to the extent such vessels are available at fair and reasonable rates for United States-flag commercial vessels. 46 CFR 381.7.

2. To furnish within 20 days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, ‘on-board’ commercial ocean bill-of-lading in English for each shipment of cargo described in paragraph (b)(1) of this section to both the Contracting Officer (through the prime contractor in the case of subcontractor bills-of-lading) and to the Office of Cargo and Commercial Sealift (MAR-620), Maritime Administration, Washington, DC 20590. (MARAD requires copies of the ocean carrier's (master) bills of lading, certified onboard, dated, with rates and charges. These bills of lading may contain business sensitive information and therefore may be submitted directly to MARAD by the Ocean Transportation Intermediary on behalf of the contractor). 46 CFR 381.7.

ATTACHMENT A - EMPLOYMENT AND MATERIALS PREFERENCE FOR APPALACHIAN DEVELOPMENT HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS ROAD CONTRACTS (23 CFR 633, Subpart B, Appendix B) This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

DOCUMENT 00811

SPECIAL PROVISIONS
MONTHLY PRICE ADJUSTMENT FOR HOT MIX ASPHALT (HMA) MIXTURES
Revised: 02/03/2023

This provision applies to all projects using greater than 100 tons of hot mix asphalt (HMA) mixtures containing liquid asphalt cement as stipulated in the Notice to Contractors section of the bid documents.

Price Adjustments will be based on the variance in price, for the liquid asphalt component only, between the Base Price and the Period Price. They shall not include transportation or other charges. Price Adjustments will occur on a monthly basis.

Base Price
The Base Price of liquid asphalt on a project as listed in the Notice to Contractors section of the bid documents is a fixed price determined by the Department at the time of the bid using the same method as the determination of the Period Price detailed below. The Base Price shall be used in all bids.

Period Price
The Period Price is the price of liquid asphalt for each monthly period as determined by the Department using the average selling price per standard ton of PG64-28 paving grade (primary binder classification) asphalt, FOB manufacturer's terminal, as listed under the "East Coast Market - New England, Boston, Massachusetts area" section of the Poten & Partners, Inc. "Asphalt Weekly Monitor". This average selling price is listed in the issue having a publication date of the second Friday of the month and will be posted as the Period Price for that month. The Department will post this Period Price on its website at https://www.mass.gov/service-details/massdot-current-contract-price-adjustments following its receipt of the relevant issue of the "Asphalt Weekly Monitor". Poten and Partners has granted the Department the right to publish this specific asphalt price information sourced from the Asphalt Weekly Monitor.

Price Adjustment Determination, Calculation and Payment
The Contract Price of the HMA mixture will be paid under the respective item in the Contract. Price Adjustments, as herein provided, either upwards or downwards, will be made after the work has been performed using the monthly period price for the month during which the work was performed.

Price Adjustments will be paid only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.

The Price Adjustment applies only to the actual virgin liquid asphalt content in the mixture placed on the job in accordance with the approved Job Mix Formula.

Price Adjustments will be separate payment items. The pay item numbers are 999.401 for a positive price adjustment (a payment) and 999.402 for a negative price adjustment (a deduction). Price Adjustments will be calculated using the following equation:

Price Adjustment = Tons of HMA Placed X Liquid Asphalt Content % X RAP Factor X (Period Price - Base Price)

No Price Adjustment will be allowed beyond the Completion Date of this Contract, unless there is a Department-approved extension of time.

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DOCUMENT 00812

SPECIAL PROVISIONS
MONTHLY PRICE ADJUSTMENT FOR DIESEL FUEL AND GASOLINE –
ENGLISH UNITS
Revised: 02/01/2021

This monthly fuel price adjustment is inserted in this contract because the national and worldwide energy situation has made the future cost of fuel unpredictable. This adjustment will provide for either additional compensation to the Contractor or repayment to the Commonwealth, depending on an increase or decrease in the average price of diesel fuel or gasoline.

This adjustment will be based on fuel usage factors for various items of work developed by the Highway Research Board in Circular 158, dated July 1974. These factors will be multiplied by the quantities of work done in each item during each monthly period and further multiplied by the variance in price from the Base Price to the Period Price.

The Base Price of Diesel Fuel and Gasoline will be the price as indicated in the Department's web site https://www.mass.gov/service-details/massdot-current-contract-price-adjustments for the month in which the contract was bid, which includes State Tax.

The Period Price will be the average of prices charged to the State, including State Tax for the bulk purchases made during each month.

This adjustment will be effected only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.

No adjustment will be paid for work done beyond the extended completion date of any contract.

Any adjustment (increase or decrease) to estimated quantities made to each item at the time of final payment will have the fuel price adjustment figured at the average period price for the entire term of the project for the difference of quantity.

The fuel price adjustment will apply only to the following items of work at the fuel factors shown:

ITEMS COVERED	FUEL FACTORS	
	Diesel	Gasoline
Excavation: and Borrow Work: Items 120, 120.1, 121, 123, 124, 125, 127, 129.3, 140, 140.1, 141, 142, 143, 144, 150, 150.1, 151 and 151.1 (Both Factors used)	0.29 Gallons / CY.	0.15 Gallons / CY
Surfacing Work: All Items containing Hot Mix Asphalt	2.90 Gallons / Ton	Does Not Apply

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DOCUMENT 00813

SPECIAL PROVISIONS

PRICE ADJUSTMENTS FOR STRUCTURAL STEEL AND REINFORCING STEEL

July 16, 2025

This special provision applies to all projects containing the use of structural steel and/or reinforcing steel as specified elsewhere in the Contract work. It applies to all structural steel and all reinforcing steel, as defined below, on the project. Compliance with this provision is mandatory, i.e., there are no "opt-in" or "opt-out" clauses. Price adjustments will be handled as described below and shall only apply to unfabricated reinforcing steel bars and unfabricated structural steel material, consisting of rolled shapes, plate steel, sheet piling, pipe piles, steel castings and steel forgings.

Price adjustments will be variances between Base Prices and Period Prices. Base Prices and Period Prices are defined below.

Price adjustments will only be made if the variances between Base Prices and Period Prices are 5% or more. A variance can result in the Period Price being either higher or lower than the Base Price. Once the 5% threshold has been achieved, the adjustment will apply to the full variance between the Base Price and the Period Price.

Price adjustments will be calculated by multiplying the number of pounds of unfabricated structural steel material or unfabricated reinforcing steel bars on a project by the index factor calculated as shown below under Example of a Period Price Calculation.

Price adjustments will ***not*** include guardrail panels or the costs of shop drawing preparation, handling, fabrication, coatings, transportation, storage, installation, profit, overhead, fuel costs, fuel surcharges, or other such charges not related to the cost of the unfabricated structural steel and unfabricated reinforcing steel.

The weight of steel subject to a price adjustment shall not exceed the final shipping weight of the fabricated part by more than 10%.

Base Prices and Period Prices are defined as follows:

Base Prices of unfabricated structural steel and unfabricated reinforcing steel on a project are fixed prices determined by the Department and found in the table below. While it is the intention of the Department to make this table comprehensive, some of a project's unfabricated structural steel and/or unfabricated reinforcing steel may be inadvertently omitted. Should this occur, the Contractor shall bring the omission to the Department's attention so that a contract alteration may be processed that adds the missing steel to the table and its price adjustments to the Contract.

The Base Price Date is the month and year of the most recent finalized period price index at the time that MassDOT opened bids for the project. The Base Price Index for this contract is the Steel PPI listed in the Notice to Contractors.

Period Prices of unfabricated structural steel and unfabricated reinforcing steel on a project are variable prices that have been calculated using the Period Price Date and an index of steel prices to adjust the Base Price.

The Period Price Date is the date the steel was delivered to the fabricator as evidenced by an official bill of lading submitted to the Department containing a description of the shipped materials, weights of the shipped materials and the date of shipment. This date is used to select the Period Price Index.

The index used for the calculation of Period Prices is the U.S. Department of Labor Bureau of Labor Statistics Producer Price Index (PPI) Series ID WPU101702 (Not Seasonally Adjusted, Group: Metals and Metal Products, Item: Semi-finished Steel Mill Products.) As this index is subject to revision for a period of up to four (4) months after its original publication, no price adjustments will be made until the index for the period is finalized, i.e., the index is no longer suffixed with a "(P)".

Period Prices are determined as follows:

Period Price = Base Price X Index Factor
Index Factor = Period Price Index / Base Price Index

Example of a Period Price Calculation:

Calculate the Period Price for December 2009 using a Base Price from March 2009 of $0.82/Pound for 1,000 Pounds of ASTM A709 (AASHTO M270) Grade A36 Structural Steel Plate.

The Period Price Date is December 2009. From the PPI website*, the Period Price Index = 218.0.

The Base Price Date is March 2009. From the PPI website*, the Base Price Index = 229.4.

Index Factor = Period Price Index / Base Price Index = 218.0 / 229.4 = 0.950
Period Price = Base Price X Index Factor = $0.82/Pound X 0.950 = $0.78/Pound

Since $0.82 - $0.78 = $0.04 is less than 5% of $0.82, no price adjustment is required.

If the $0.04 difference shown above was greater than 5% of the Base Price, then the price adjustment would be 1,000 Pounds X $0.04/Pound = $40.00. Since the Period Price of $0.78/Pound is less than the Base Price of $0.82/Pound, indicating a drop in the price of steel between the bid and the delivery of material, a credit of $40.00 would be owed to MassDOT. When the Period Price is higher than the Base Price, the price adjustment is owed to the Contractor.

* To access the PPI website and obtain a Base Price Index or a Period Price Index, go to http://data.bls.gov/cgi-bin/srgate

End of example.

The Contractor will be paid for unfabricated structural steel and unfabricated reinforcing steel under the respective contract pay items for all components constructed of either structural steel or reinforced Portland cement concrete under their respective Contract Pay Items.

Price adjustments, as herein provided for, will be paid separately as follows:

Structural Steel
Pay Item Number 999.449 for positive (+) pay adjustments (payments to the Contractor)

Pay Item Number 999.457 for negative (-) pay adjustments (credits to MassDOT Highway Division)

Reinforcing Steel
Pay Item Number 999.466 for positive (+) pay adjustments (payments to the Contractor)

Pay Item Number 999.467 for negative (-) pay adjustments (credits to MassDOT Highway Division)

No price adjustment will be made for price changes after the Contract Completion Date, unless the MassDOT Highway Division has approved an extension of Contract Time for the Contract.

TABLE

Steel Type		Price per Pound
1	ASTM A615/A615M Grade 60 (AASHTO M31 Grade 60 or 420) Reinforcing Steel	$0.53
2	ASTM A27 (AASHTO M103) Steel Castings, H-Pile Points & Pipe Pile Shoes (See Note below.)	$0.74
3	ASTM A668 / A668M (AASHTO M102) Steel Forgings	$0.74
4	ASTM A108 (AASHTO M169) Steel Forgings for Shear Studs	$0.76
5	ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 36 or 250 Structural Steel Plate	$0.79
6	ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 36 or 250 Structural Steel Shapes	$0.75
7	ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 50 or 345 Structural Steel Plate	$0.79
8	ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 50 or 345 Structural Steel Shapes	$0.75
9	ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 50WT or 345WT Structural Steel Plate	$0.82
10	ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 50WT or 345WT Structural Steel Shapes	$0.76
11	ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 50W 345W Structural Steel Plate	$0.82
12	ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 50W or 345W Structural Steel Shapes	$0.76
13	ASTM A709/A709M Grade HPS 50W / AASHTO M270M/M270 Grade HPS 50W or 345W Structural Steel Plate	$0.86
14	ASTM A709/A709M Grade HPS 70W / AASHTO M270M/M270 Grade HPS 70W or 485W Structural Steel Plate	$0.93
15	ASTM A514/A514M-05 Grade HPS 100W / AASHTO M270M/M270 Grade HPS 100W or 690W Structural Steel Plate	$1.42
16	ASTM A992/A992M Grade 50S / AASHTO M270M/M270 Grade 50S or 345S Structural Steel Plate	$0.82
17	ASTM A992/A992M Grade 50S / AASHTO M270M/M270 Grade 50S or 345S Structural Steel Shapes	$0.76
18	ASTM A276 Type 316 Stainless Steel	$4.26
19	ASTM A240 Type 316 Stainless Steel	$4.26
20	ASTM A148 Grade 80/50 Steel Castings (See Note below.)	$1.46
21	ASTM A53 Grade B Structural Steel Pipe	$0.93
22	ASTM A500 Grades A, B, 36 & 50 Structural Steel Pipe	$0.93
23	ASTM A252, Grades 240 (36 KSI) & 414 (60 KSI) Pipe Pile	$0.74
24	ASTM 252, Grade 2 Permanent Steel Casing	$0.74
25	ASTM A36 (AASHTO M183) for H-piles, steel supports and sign supports	$0.78
26	ASTM A328 / A328M, Grade 50 (AASHTO M202) Steel Sheetpiling	$1.40
27	ASTM A572 / A572M, Grade 50 Sheetpiling	$1.40
28	ASTM A36/36M, Grade 50	$0.79
29	ASTM A570, Grade 50	$0.78
30	ASTM A572 (AASHTO M223), Grade 50 H-Piles	$0.79
31	ASTM A1085 Grade A (50 KSI) Steel Hollow Structural Sections (HSS), heat-treated per ASTM A1085 Supplement S1	$0.93
32	AREA 140 LB Rail and Track Accessories	$0.48

NOTE: Steel Castings are generally used only on moveable bridges. Cast iron frames, grates and pipe are not “steel” castings and will not be considered for price adjustments.

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DOCUMENT 00814

SPECIAL PROVISIONS
PRICE ADJUSTMENT FOR PORTLAND CEMENT CONCRETE MIXES

January 12, 2009

This provision applies to all projects using greater than 100 Cubic Yards (76 Cubic Meters) of Portland cement concrete containing Portland cement as stipulated in the Notice to Contractors section of the Bid Documents. This Price Adjustment will occur on a monthly basis.

The Price Adjustment will be based on the variance in price for the Portland cement component only from the Base Price to the Period Price. It shall not include transportation or other charges.

The Base Price of Portland cement on a project is a fixed price determined at the time of bid by the Department by using the same method as for the determination of the Period Price (see below) and found in the Notice to Contractors.

The Period Price of Portland cement will be determined by using the latest published price, in dollars per ton (U.S.), for Portland cement (Type I) quoted for Boston, U.S.A. in the **Construction Economics** section of *ENR Engineering News-Record* magazine or at the ENR website http://www.enr.com under **Construction Economics**. The Period Price will be posted on the MassDOT website the Wednesday immediately following the publishing of the monthly price in ENR, which is normally the first week of the month.

The Contract Price of the Portland cement concrete mix will be paid under the respective item in the Contract. The price adjustment, as herein provided, upwards or downwards, will be made after the work has been performed, using the monthly period price for the month during which the work was performed.

The price adjustment applies only to the actual Portland cement content in the mix placed on the job in accordance with the Standard Specifications for Highways and Bridges, Division III, Section M4.02.01. No adjustments will be made for any cement replacement materials such as fly ash or ground granulated blast furnace slag.

The Price Adjustment will be a separate payment item. It will be determined by multiplying the number of cubic yards of Portland cement concrete placed during each monthly period times the Portland cement content percentage times the variance in price between the Base Price and Period Price of Portland cement.

This Price Adjustment will be paid only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.

No Price Adjustment will be allowed beyond the Completion Date of this Contract, unless there is a Department-approved extension of time.

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DOCUMENT 00820

THE COMMONWEALTH OF MASSACHUSETTS SUPPLEMENTAL EQUAL EMPLOYMENT OPPORTUNITY, NON-DISCRIMINATION AND AFFIRMATIVE ACTION PROGRAM

I. Definitions

For purposes of this contract,

"Minority" means a person who meets one or more of the following definitions:

(a) American Indian or Native American means: all persons having origins in any of the original peoples of North America and who are recognized as an Indian by a tribe or tribal organization.
(b) Asian means: All persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian sub-continent, or the Pacific Islands, including, but Not limited to China, Japan, Korea, Samoa, India, and the Philippine Islands.
(c) Black means: All persons having origins in any of the Black racial groups of Africa, including, but not limited to, African-Americans, and all persons having origins in any of the original peoples of the Cape Verdean Islands.
(d) Eskimo or Aleut means: All persons having origins in any of the peoples of Northern Canada, Greenland, Alaska, and Eastern Siberia.
(e) Hispanic means: All persons having their origins in any of the Spanish-speaking peoples of Mexico, Puerto Rico, Cuba, Central or South America, or the Caribbean Islands.

"State construction contract" means a contract for the construction, reconstruction, installation, demolition, maintenance or repair of a building or capital facility, or a contract for the construction, reconstruction, alteration, remodeling or repair of a public work undertaken by a department, agency, board, or commission of the commonwealth.

"State assisted construction contract" means a contract for the construction, reconstruction, installation, demolition, maintenance or repair of a building or capital facility undertaken by a political subdivision of the commonwealth, or two or more political subdivisions thereof, an authority, or other instrumentality and whose costs of the contract are paid for, reimbursed, grant funded, or otherwise supported, in whole or in part, by the commonwealth.

II. Equal Opportunity, Non-Discrimination and Affirmative Action

During the performance of this Contract, the Contractor and all subcontractors (hereinafter collectively referred to as "the Contractor") for a state construction contract or a state assisted construction contract, for him/herself, his/her assignees and successors in interest, agree to comply with all applicable equal employment opportunity, non-discrimination and affirmative action requirements, including but not limited to the following:

In connection with the performance of work under this contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, sex, sexual orientation, genetic information, military service, age, ancestry or disability, shall not discriminate in the selection or retention of subcontractors, and shall not discriminate in the procurement of materials and rentals of equipment.

The aforesaid provision shall include, but not be limited to, the following: employment upgrading, demotion, or transfer; recruitment advertising, layoff or termination; rates of pay or other forms of compensation; conditions or privileges of employment; and selection for apprenticeship or on-the-job training opportunity. The Contractor shall comply with the provisions of chapter 151B of the Massachusetts General Laws, as amended, and all other applicable anti-discrimination and equal opportunity laws, all of which are herein incorporated by reference and made a part of this Contract.

The Contractor shall post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the Massachusetts Commission Against Discrimination setting forth the provisions of the Fair Employment Practices Law of the Commonwealth (Massachusetts General Laws Chapter l51 B).

In connection with the performance of work under this contract, the Contractor shall undertake, in good faith, affirmative action measures to eliminate any discriminatory barriers in the terms and conditions of employment on the grounds of race, color, religious creed, national origin, sex, sexual orientation, genetic information, military service, age, ancestry or disability. Such affirmative action measures shall entail positive and aggressive measures to ensure nondiscrimination and to promote equal opportunity in the areas of hiring, upgrading, demotion or transfer, recruitment, layoff or termination, rate of compensation, apprenticeship and on-the-job training programs. A list of positive and aggressive measures shall include, but not be limited to, advertising employment opportunities in minority and other community news media; notifying minority, women and other community-based organizations of employment opportunities; validating all job specifications, selection requirements, and tests; maintaining a file of names and addresses of each worker referred to the Contractor and what action was taken concerning such worker; and notifying the administering agency in writing when a union with whom the Contractor has a collective bargaining agreement has failed to refer a minority or woman worker. These and other affirmative action measures shall include all actions required to guarantee equal employment opportunity for all persons, regardless of race, color, religious creed, national origin, sex, sexual orientation, genetic information, military service, age, ancestry or disability. One purpose of this provision is to ensure to the fullest extent possible an adequate supply of skilled tradesmen for this and future Commonwealth public construction projects.

III. Minority and Women Workforce Participation

Pursuant to his/her obligations under the preceding section, the Contractor shall strive to achieve on this project the labor participation goals contained herein. Said participation goals shall apply in each job category on this project including but not limited to bricklayers, carpenters, cement masons, electricians, ironworkers, operating engineers and those classes of work enumerated in Section 44F of Chapter 149 of the Massachusetts General Laws. The participation goals for this project shall be 15.3% for minorities and 6.9% for women. The participation goals, as set forth herein, shall not be construed as quotas or set-asides; rather, such participation goals will be used to measure the progress of the Commonwealth's equal opportunity, non-discrimination and affirmative action program. Additionally, the participation goals contained herein should not be seen or treated as a floor or as a ceiling for the employment of particular individuals or group of individuals.

IV. Liaison Committee

At the discretion of the agency that administers the contract for the construction project there may be established for the life of the contract a body to be known as the Liaison Committee. The Liaison Committee shall be composed of one representative each from the agency or agencies administering the contract for the construction project, hereinafter called the administering agency, a representative from the Office of Affirmative action, and such other representatives as may be designated by the administering agency. The Contractor (or his/her agent, if any, designated by him/her as the on-site equal employment opportunity officer) shall recognize the Liaison Committee as an affirmative action body, and shall establish a continuing working relationship with the Liaison Committee, consulting with the Liaison Committee on all matters related to minority recruitment, referral, employment and training.

V. Reports and Records

The Contractor shall prepare projected workforce tables on a quarterly basis when required by the administering agency. These shall be broken down into projections, by week, of workers required in each trade. Copies shall be furnished one week in advance of the commencement of the period covered, and also, when updated, to the administering agency and the Liaison Committee when required.

The Contractor shall prepare weekly reports in a form approved by the administering agency, unless information required is required to be reported electronically by the administering agency, the number of hours worked in each trade by each employee, identified as woman, minority, or non-minority. Copies of these shall be provided at the end of each such week to the administering agency and the Liaison Committee.

Records of employment referral orders, prepared by the Contractor, shall be made available to the administering agency on request.

The Contractor will provide all information and reports required by the administering agency on instructions issued by the administering agency and will permit access to its facilities and any books, records, accounts and other sources of information which may be determined by the administering agency to effect the employment of personnel. This provision shall apply only to information pertinent to the Commonwealth's supplementary non-discrimination, equal opportunity and access and opportunity contract requirements. Where information required is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the administering agency and shall set forth what efforts he has made to obtain the information.

VI. Access to Work Site

A designee of the administering agency and a designee of the Liaison Committee shall each have a right to access the work site.

VII. Solicitations for Subcontracts, and for the Procurement of Materials and Equipment

In all solicitations either by competitive bidding or negotiation made by the Contractor either for work to be performed under a subcontract or for the procurement of materials or equipment, each potential subcontractor or supplier shall be notified in writing by the Contractor of the Contractor's obligations under this contract relative to non-discrimination and equal opportunity.

VIII. Sanctions

Whenever the administering agency believes the General or Prime Contractor or any subcontractor may not be operating in compliance with the provisions of the Fair Employment Practices Law of the Commonwealth (Massachusetts General Laws Chapter 151B), the administering agency may refer the matter to the Massachusetts Commission Against Discrimination ("Commission") for investigation.

Following the referral of a matter by the administering agency to the Massachusetts Commission Against Discrimination, and while the matter is pending before the MCAD, the administering agency may withhold payments from contractors and subcontractors when it has documentation that the contractor or subcontractor has violated the Fair Employment Practices Law with respect to its activities on the Project, or if the administering agency determines that the contractor has materially failed to comply with its obligations and the requirements of this Section. The amount withheld shall not exceed a withhold of payment to the General or Prime Contractor of 1/100 or 1% of the contract award price or $5,000, whichever sum is greater, or, if a subcontractor is in non-compliance, a withhold by the administering agency from the General Contractor, to be assessed by the General Contractor as a charge against the subcontractor, of 1/100 or 1% of the subcontractor price, or $1,000 whichever sum is greater, for each violation of the applicable law or contract requirements. The total withheld from anyone General or Prime Contractor or subcontractor on a Project shall not exceed $20,000 overall. No withhold of payments or investigation by the Commission or its agent shall be initiated without the administering agency providing prior notice to the Contractor.

If, after investigation, the Massachusetts Commission Against Discrimination finds that a General or Prime Contractor or subcontractor, in commission of a state construction contract or state-assisted construction contract, violated the provisions of the Fair Employment Practices Law, the administering agency may convert the amount withheld as set forth above into a permanent sanction, as a permanent deduct from payments to the General or Prime Contractor or subcontractor, which sanction will be in addition to any such sanctions, fines or penalties imposed by the Massachusetts Commission Against Discrimination.

No sanction enumerated under this Section shall be imposed by the administering agency except after notice to the General or Prime Contractor or subcontractor and an adjudicatory proceeding, as that term is used, under Massachusetts General Laws Chapter 30A, has been conducted.

IX. Severability

The provisions of this section are severable, and if any of these provisions shall be held unconstitutional by any court of competent jurisdiction, the decision of such court shall not affect or impair any of the remaining provisions.

X. Contractor's Certification

After award and prior to the execution of any contract for a state construction contract or a state assisted construction contract, the Prime or General Contractor shall certify that it will comply with all provisions of this Document 00820 Supplemental Equal Employment Opportunity, Non-Discrimination and Affirmative Action Program, by executing Document 00859 Contractor/Subcontractor Certification Form.

XI. Subcontractor Requirements

Prior to the award of any subcontract for a state construction contract or a state assisted construction contract, the Prime or General Contractor shall provide all prospective subcontractors with a complete copy of this Document 00820 entitled "Supplemental Equal Employment Opportunity, Non-Discrimination and Affirmative Action Program" and will incorporate the provisions of this Document 00820 into any and all contracts or work orders for all subcontractors providing work on the Project. In order to ensure that the said subcontractor's certification becomes a part of all subcontracts under the prime contract, the Prime or General Contractor shall certify in writing to the administering agency that it has complied with the requirements as set forth in the preceeding paragraph by executing Document 00859 Contractor/Subcontractor Certification Form.

Rev'd 03/07/14

*** END OF DOCUMENT ***

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DOCUMENT 00821

ELECTRONIC REPORTING REQUIREMENTS
CIVIL RIGHTS PROGRAMS AND CERTIFIED PAYROLL

Implemented on March 2, 2009 Revised June 04, 2019

The Massachusetts Department Of Transportation (MassDOT) has replaced the CHAMP reporting system with Equitable Business Opportunity Solution (EBO), a new web-based civil rights reporting software system. This system is capable of handling both civil rights reporting requirements and certified payrolls. The program's functions include the administration of Equal Employment Opportunity (EEO) requirements, On-The-Job Training requirements (OJT), Disadvantage Business Enterprise (DBE) and/or Minority / Women's Business Enterprise (M/WBE) subcontracting requirements, and the electronic collection of certified payrolls associated with MassDOT projects. In addition, this system is used to generate various data required as part of the American Recovery and Reinvestment Act (ARRA). Contractors are responsible for all coordination with all sub-contractors to ensure timely and accurate electronic submission of all required data.

Contractor and Sub-Contractor EBO User Certification

All contractors and sub-contractors must use the EBO software system. The software vendor, Internet Government Solutions (IGS), has developed an online EBO Training Module that is available to contractors and sub-contractors. This module is a self-tutorial which allows all users in the company to access the training, complete the tutorial, and become certified as EBO users for a one time fee of $75.00. This is the only cost to contractors and sub-contractors associated with the EBO software system. The online EBO Training Module can be accessed at www.ebotraining.com. Click the "Register My Company" button on the login page to begin your training registration. Questions regarding EBO online training should be directed to Gerry Anguilano, IGS at (440) 238-1684.

MassDOT will track contractors and sub-contractors who have successfully completed the on-line training module. All persons performing civil rights program and/or certified payroll functions should be EBO certified.

Vetting of Firms and Designated Firm Individuals

Contractors must authorize a Primary Log-In ID Holder who has completed EBO on-line training to have access to the EBO system by completing and submitting the "Request For EBO System Log-In/Password Form" located on the MassDOT website at: https://www.mass.gov/how-to/how-to-get-an-ebo-login
Contractors must also agree to comply with the EBO system user agreement located on the MassDOT website.

All subcontracts entered into on a project must include language that identifies the submission and training requirements that the sub-contractor must perform. Sub-contractors will be approved by the respective District Office of MassDOT through the existing approval process. When new sub-contractors, who have not previously worked for MassDOT, are initially selected by a general contractor, the new sub-contractor must be approved by the District before taking the EBO on-line training module.

Interim Reporting Requirements

Until MassDOT is satisfied that the EBO system is fully operational and functioning as designed, contractors and sub-contractors will be required to submit certified payrolls manually. There will be a transition period where dual reporting, through manual and electronic submission, will be required. MassDOT, however, will notify contractors and sub-contractors when they may cease manual submission of certified payrolls.

*** END OF DOCUMENT ***

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DOCUMENT 00859

CONTRACTOR/SUBCONTRACTOR CERTIFICATION FORM ‡

The contractor shall submit this completed document 00859 to MassDOT for each subcontract.

_____ **(Contractor)** **Date:**_____

_____**(Subcontractor)** ☐ District Approved Subcontractor

Contract No: 131228 **Project No.** 613052 **Federal Aid No.:** NHP (NHS)/ HSI-003S (871) X

Location: MANSFIELD

Project Description: Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive

PART 1 CONTRACTOR CERTIFICATION: I hereby certify, as an authorized official of this company, that to the best of my knowledge, information and belief, the company is in compliance with all applicable federal and state laws, rules, and regulations governing fair labor and employment practices, that the company will not discriminate in their employment practices, that the company will make good faith efforts to comply with the minority employee and women employee workforce participation ratio goals and specific affirmative action steps contained in Contract Document 00820 The Commonwealth of Massachusetts Supplemental Equal Employment Opportunity, Non-Discrimination and Affirmative Action Program, and that the company will comply with the special provisions and documentation indicated below (as checked).

I further hereby certify, as an authorized official of this company, that the special provisions and documentation indicated below (as checked) have been or are included in, and made part of, the Subcontractor Agreement entered into with the firm named above.

☐ **This is not a Federally-aided construction project**

Document #

☐ 00718 –Participation By Minority Or Women's Business Enterprises and SDVOBE†
☐ 00761 –Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion
☐ 00820 – MA Supplemental Equal Employment Opportunity, Non-Discrimination, and Affirmative Action Program
☐ 00821 – Electronic Reporting Requirements, Civil Rights Programs, and Certified Payroll
☐ 00859 – Contractor/Subcontractor Certification Form (this document)
☐ 00860 – MA Employment Laws
☐ 00861 – Applicable State Wage Rates in the Contract Proposal**
☐ B00842 – MA Schedule of Participation By Minority or Women Business Enterprises (M/WBEs)†
☐ B00843 – MA Letter of Intent – M/WBEs†

** Does not apply to Material Suppliers, unless performing work on-site
† Applies only if Subcontractor is a M/WBE; only include these forms for the particular M/WBE Entity

☐ B00844 - Schedule of Participation By SDVOBE
☐ B00845 - Letter of Intent – SDVOBE
☐ B00846 – M/WBE or SDVOBE Joint Check Arrangement Approval Form
☐ B00847 – Joint Venture Affidavit

☐ **This is a Federally-aided construction project (Federal Aid Number is present)**

Document #

☐ 00719 – Special Provisions for Participation by Disadvantaged Business Enterprises†
☐ 00760 - Form FHWA 1273 - Required Contract Provisions for Federal-Aid Construction Contracts
☐ 00820 – MA Supplemental Equal Employment Opportunity, Non-Discrimination and Affirmative Action Program
☐ 00821 – Electronic Reporting Requirements, Civil Rights Programs and Certified Payroll
☐ 00859 – Contractor/Subcontractor Certification Form (this document)
☐ 00860 – MA Employment Laws
☐ 00870 – Standard Federal Equal Employment Opportunity Construction Contract Specifications Executive Order 11246, (41 CFR Parts 60-4.2 and 60-4.3 (Solicitations and Equal Opportunity Clauses)*
☐ 00875 – Federal Trainee Special Provisions

☐ B00853 – Schedule of Participation by Disadvantaged Business Enterprise†
☐ B00854 – Letter of Intent – DBEs†
☐ B00855 – DBE Joint Check Arrangement Approval Form
☐ B00856 – Joint Venture Affidavit
☐ 00861/00880 - Applicable state and federal wage rates from Contract Proposal**

*Applicable only to Contracts or Subcontracts in excess of $10,000
**Does not apply to Material Suppliers, unless performing work on-site
† Applies only if Subcontractor is a DBE; only include these forms for the particular DBE Entity

Signed this _____ Day of _____, 20_____ Under The Pains And Penalties Of Perjury.

_____ _____
(Print Name and Title) (Authorized Signature)

PART 2

PART 2 SUBCONTRACTOR CERTIFICATION: I hereby certify, as an authorized official of this company, that the required documents in Part 1 above were physically incorporated in our Agreement/Subcontract with the Contractor and give assurance that this company will fully comply or make every good faith effort to comply with the same. I further certify that:

1. This company recognizes that if this is a Federal-Aid Project, then this Contract is covered by the equal employment opportunity laws administered and enforced by the United States Department of Labor ("USDOL"), Office of Federal Contract Compliance Programs ('OFCCP"). By signing below, we acknowledge that this company has certain reporting obligations to the OFCCP, as specified by 41 CFR Part 60-4.2.
2. This company further acknowledges that any contractor with fifty (50) or more employees on a Federal-aid Contract with a value of fifty-thousand ($50,000) dollars or more must annually file an EEO-1 Report (SF 100) to the EEOC, Joint Reporting Committee, on or before September 30th, each year, as specified by 41 CFR Part 60-1.7a.
3. For more information regarding the federal reporting requirements, please contact the USDOL, OFCCP Regional Office, at 1-646-264-3170 or EEO-1, Joint Reporting Committee at 1-866-286-6440. You may also find guidance at: http://www.dol.gov/ofccp/TAguides/consttag.pdf or http://www.wdol.gov/dba.aspx#0.
4. This company ☐ has, ☐ has not, participated in a previous contract or subcontract subject to the Equal Opportunity clauses set forth in 41 CFR Part 60-4 and Executive Order 11246, and where required, has filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance Programs or the EEO Commission all reports due under the applicable filing requirements.
5. This company is in full compliance with applicable Federal and Commonwealth of Massachusetts laws, rules, and regulations and is not currently debarred or disqualified from bidding on or participating in construction contracts in any jurisdiction of the United States. See : https://www.mass.gov/service-details/contractors-and-vendors-suspended-or-debarred-by-massdot
6. This company is properly registered and in good standing with the Office of the Secretary of the Commonwealth.

Signed this _____ Day of _____, 20_____, Under The Pains And Penalties Of Perjury.

Firm: _____
Address: _____
_____
_____
Telephone Number:_____
Federal I.D. Number:_____
Estimated Start Date:_____
Estimated Completion Date:_____
Estimated Dollar Amount:_____

_____
(Print Name and Title)

_____
(Authorized Signature)

_____
(Date)

Rev'd 09/02/22

*** END OF DOCUMENT ***

DOCUMENT 00860

COMMONWEALTH OF MASSACHUSETTS PUBLIC EMPLOYMENT LAWS

Revised February 20, 2019

The Contractor's attention is directed to Massachusetts General Laws, Chapter 149, Sections 26 through 27H, and 150A. This contract is considered to fall within the ambit of that law, which provides that in general, the Prevailing Rate or Total Rate must be paid to employees working on projects funded by the Commonwealth of Massachusetts or any political subdivision including Massachusetts Department of Transportation (MassDOT).

A Federal Aid project is also subject to the Federal Minimum Wage Rate law for construction. When comparing a state minimum wage rate, monitored by the Massachusetts Attorney General, versus federal minimum wage rate, monitored by the U.S. Department of Labor Wage and Hour Division, for a particular job classification the higher wage is at all times to be paid to the affected employee.

Every contractor or subcontractor engaged in this contract to which sections twenty-seven and twenty-seven A apply will keep a true and accurate record of all mechanics and apprentices, teamsters, chauffeurs and laborers employed thereon, showing the name, address and occupational classification of each such employee on this contract, and the hours worked by, and the wages paid to, each such employee, and shall furnish to the MassDOT's Resident Engineer, on a weekly basis, a copy of said record, in a form approved by MassDOT and in accordance with M.G.L. c. 149, § 27B, signed by the employer or his/her authorized agent under the penalties of perjury.

Each such contractor or subcontractor shall preserve its payroll records for a period of three years from the date of completion of the contract.

The Prevailing Wage Rate generally includes the following:

> Minimum Hourly Wage + Employer Contributions to Benefit Plans = Prevailing Wage Rate or Total Rate
>
> Any employer who does not make contributions to Benefit Plans must pay the total Prevailing Wage Rate directly to the employee.

Any deduction from the Prevailing Wage Rate or Total Rate for contributions to benefit plans can only be for a Health & Welfare, Pension, or Supplementary Unemployment plan meeting the requirements of the Employee Retirement Income Security Act (ERISA) of 1974. The maximum allowable deduction for these benefits from the prevailing wage rate cannot be greater than the amount allowed by Executive Office of Labor (EOL) for the specified benefits. Any additional expense of providing benefits to the employees is to be borne by the employer and cannot be deducted from the Minimum Hourly Wage. If the employer's benefit expense is less than that so provided by EOL the difference will be paid directly to the employee. The rate established must be paid to all employees who perform work on the project.

When an employer makes deductions from the Minimum Hourly Wage for an employee's contribution to social security, state taxes, federal taxes, and/or other contribution programs, allowed by law, the employer shall furnish each employee a suitable pay slip, check stub or envelope notifying the employee of the amount of the deductions.

No contractor or subcontractor contracting for any part of the contract week shall require or permit any laborer or mechanic to be employed on such work in excess of forty hours in any workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times his basic rate of pay for all hours worked in excess of forty hours in such workweek, whichever is the greater number of overtime hours.

Apprentice Rates are permitted only when there is an Apprentice Agreement registered with the Massachusetts Division of Apprentice Training in accordance with M.G.L. c. 23, § 11E-11L.

The Prevailing Wage Rates issued for each project shall be the rates paid for the entire project. The Prevailing Wage Rates must be posted on the job site at all times and be visible from a public way.

In addition, each such contractor and subcontractor shall furnish to the MassDOT's Resident Engineer, within fifteen days after completion of its portion of the work, a statement, executed by the contractor or subcontractor or by any authorized officer or employee of the contractor or subcontractor who supervises the payment of wages, in the following form:

STATEMENT OF COMPLIANCE

Date: _____

I , _____do hereby state:
(Name of signatory party) (Title)

That I pay or supervise the payment of the persons employed by:

_____
(Contractor or Subcontractor)

on the _____
(MassDOT Project Location and Contract Number)

and that all mechanics and apprentices, teamsters, chauffeurs and laborers employed on said project have been paid in accordance with wages determined under the provisions of sections twenty-six and twenty-seven of chapter one hundred and forty-nine of the General Laws.

Signature _____

Title _____

The above-mentioned copies of payroll records and statements of compliance shall be available for inspection by any interested party filing a written request to the MassDOT's Resident Engineer for such inspection and copying.

Massachusetts General Laws c. 149, §27, requires annual updates to prevailing wage schedules for all public construction contracts lasting longer than one year. MassDOT will request the required updates and furnish them to the Contractor. The Contractor is required to pay no less than the wage rates indicated on the annual updated wage schedules.

MassDOT will request the updates no later that two week before the anniversary of the Notice to Proceed date of the contract to allow for adequate processing by the Department of Labor Standards (DLS). The effective date for the new rates will be the anniversary date of the contract (i.e. the notice to proceed date), regardless of the date of issuance on the schedule from DLS.

All bidders are cautioned that the aforementioned laws require that employers pay to covered employees no less than the applicable minimum wages. In addition, the same laws require that the applicable prevailing wages become incorporated as part of this contract. The prevailing minimum wage law establishes serious civil and criminal penalties for violations, including imprisonment and exclusion from future public contracts. Bidders are cautioned to carefully read the relevant sections of the Massachusetts General Laws.

*** END OF DOCUMENT ***

DOCUMENT 00861

STATE PREVAILING WAGE RATES

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THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS
Prevailing Wage Rates

MAURA HEALY
Governor
KIM DRISCOLL
Lt. Governor

As determined by the Director under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

LAUREN JONES
Secretary
MICHAEL FLANAGAN
Director

Awarding Authority:	MassDOT Highway	**City/Town:**	MANSFIELD
Contract Number:	131228		
Description of Work:	MANSFIELD - Federal Aid Project No. NHP (NHS)/ HSI-003S (871) X Corridor Improvements on Chauncey Street (Route 106) from State Route 140 to Copeland Drive		
Job Location:	State Route140 to Copeland Drive		

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. For multi-year CM AT RISK projects, the awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. The updated wage schedule must be provided to all contractors, including general and sub-contractors, working on the construction project.
- This annual update requirement is generally not applicable to 27F “rental of equipment” contracts. For such contracts, the prevailing wage rates issued by DLS shall remain in effect for the duration of the contract term. However, if the prevailing wage rate sheet issued does not contain wage rates for each year covered by the contract term, the Awarding Authority must request updated rate sheets from DLS and provide them to the contractor to ensure the correct rates are being paid throughout the duration of the contract. Additionally, if an Awarding Authority exercises an option to renew or extend the contract term, they must request updated rate sheets form DLS and provide them to the contractor.
- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the “Wage Request Number” on all pages of this schedule.
- An Awarding Authority must request an updated wage schedule if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c.149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or a sub-contractor.
- Apprentices working on the project are required to be registered with the Massachusetts Division of Apprentice Standards (DAS). Apprentices must keep their apprentice identification card on their persons during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DAS regardless of whether they are registered with another federal, state, local, or private agency must be paid the journeyworker's rate.**
- Every contractor or subcontractor working on the construction project must submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee’s name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. For a sample payroll reporting form go to http://www.mass.gov/dols/pw.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Contractors must obtain the wage schedules from awarding authorities. Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may file a complaint with the Fair Labor Division of the office of the Attorney General at (617) 727-3465.

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
(2 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2025	$40.95	$15.57	$20.17	$0.00	$0.00	$76.69
	12/1/2025	$40.95	$15.57	$21.78	$0.00	$0.00	$78.30
	1/1/2026	$40.95	$16.17	$21.78	$0.00	$0.00	$78.90
	6/1/2026	$41.95	$16.17	$21.78	$0.00	$0.00	$79.90
	12/1/2026	$41.95	$16.17	$23.52	$0.00	$0.00	$81.64
	1/1/2027	$41.95	$16.77	$23.52	$0.00	$0.00	$82.24
(3 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2025	$41.02	$15.57	$20.17	$0.00	$0.00	$76.76
	12/1/2025	$41.02	$15.57	$21.78	$0.00	$0.00	$78.37
	1/1/2026	$41.02	$16.17	$21.78	$0.00	$0.00	$78.97
	6/1/2026	$42.02	$16.17	$21.78	$0.00	$0.00	$79.97
	12/1/2026	$42.02	$16.17	$23.52	$0.00	$0.00	$81.71
	1/1/2027	$42.02	$16.77	$23.52	$0.00	$0.00	$82.31
(4 & 5 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2025	$41.14	$15.57	$20.17	$0.00	$0.00	$76.88
	12/1/2025	$41.14	$15.57	$21.78	$0.00	$0.00	$78.49
	1/1/2026	$41.14	$16.17	$21.78	$0.00	$0.00	$79.09
	6/1/2026	$42.14	$16.17	$21.78	$0.00	$0.00	$80.09
	12/1/2026	$42.14	$16.17	$23.52	$0.00	$0.00	$81.83
	1/1/2027	$42.14	$16.77	$23.52	$0.00	$0.00	$82.43
ADS/SUBMERSIBLE PILOT PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	1/1/2024	$117.16	$10.08	$11.62	$12.67	$0.00	$151.53
For apprentice rates see "Apprentice- PILE DRIVER"							
AIR TRACK OPERATOR LABORERS LABORERS - ZONE 2	6/1/2025	$41.09	$9.90	$9.25	$9.11	$0.00	$69.35
	12/1/2025	$42.47	$9.90	$9.25	$9.11	$0.00	$70.73
	6/1/2026	$43.91	$9.90	$9.25	$9.11	$0.00	$72.17
	12/1/2026	$45.35	$9.90	$9.25	$9.11	$0.00	$73.61
	6/1/2027	$46.80	$9.90	$9.25	$9.11	$0.00	$75.06
	12/1/2027	$48.25	$9.90	$9.25	$9.11	$0.00	$76.51
	6/1/2028	$49.75	$9.90	$9.25	$9.11	$0.00	$78.01
	12/1/2028	$51.25	$9.90	$9.25	$9.11	$0.00	$79.51
For apprentice rates see "Apprentice- LABORER"							
AIR TRACK OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2025	$41.09	$9.90	$9.25	$9.21	$0.00	$69.45
	12/1/2025	$42.47	$9.90	$9.25	$9.21	$0.00	$70.83
	6/1/2026	$43.91	$9.90	$9.25	$9.21	$0.00	$72.27
	12/1/2026	$45.35	$9.90	$9.25	$9.21	$0.00	$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
ASBESTOS WORKER (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 HEAT & FROST INSULATORS LOCAL 6 (SOUTHERN MASS)	6/1/2025	$43.80	$14.50	$4.30	$6.75	$0.00	$69.35
	12/1/2025	$44.80	$14.50	$4.30	$6.75	$0.00	$70.35
ASPHALT RAKER LABORERS LABORERS - ZONE 2	6/1/2025	$40.59	$9.90	$9.25	$9.11	$0.00	$68.85
	12/1/2025	$41.97	$9.90	$9.25	$9.11	$0.00	$70.23
	6/1/2026	$43.41	$9.90	$9.25	$9.11	$0.00	$71.67
	12/1/2026	$44.85	$9.90	$9.25	$9.11	$0.00	$73.11

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	6/1/2027	$46.30	$9.90	$9.25	$9.11	$0.00	$74.56
	12/1/2027	$47.75	$9.90	$9.25	$9.11	$0.00	$76.01
	6/1/2028	$49.25	$9.90	$9.25	$9.11	$0.00	$77.51
	12/1/2028	$50.75	$9.90	$9.25	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
ASPHALT RAKER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2025	$40.59	$9.90	$9.25	$9.21	$0.00	$68.95
	12/1/2025	$41.97	$9.90	$9.25	$9.21	$0.00	$70.33
	6/1/2026	$43.41	$9.90	$9.25	$9.21	$0.00	$71.77
	12/1/2026	$44.85	$9.90	$9.25	$9.21	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2025	$58.33	$15.55	$13.25	$3.25	$0.00	$90.38
	12/1/2025	$59.78	$15.55	$13.25	$3.25	$0.00	$91.83
	6/1/2026	$61.08	$15.55	$13.25	$3.25	$0.00	$93.13
	12/1/2026	$62.53	$15.55	$13.25	$3.25	$0.00	$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
BACKHOE/FRONT-END LOADER OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2025	$58.33	$15.55	$13.25	$3.25	$0.00	$90.38
	12/1/2025	$59.78	$15.55	$13.25	$3.25	$0.00	$91.83
	6/1/2026	$61.08	$15.55	$13.25	$3.25	$0.00	$93.13
	12/1/2026	$62.53	$15.55	$13.25	$3.25	$0.00	$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
BARCO-TYPE JUMPING TAMPER LABORERS LABORERS - ZONE 2	6/1/2025	$40.59	$9.90	$9.25	$9.11	$0.00	$68.85
	12/1/2025	$41.97	$9.90	$9.25	$9.11	$0.00	$70.23
	6/1/2026	$43.41	$9.90	$9.25	$9.11	$0.00	$71.67
	12/1/2026	$44.85	$9.90	$9.25	$9.11	$0.00	$73.11
	6/1/2027	$46.30	$9.90	$9.25	$9.11	$0.00	$74.56
	12/1/2027	$47.75	$9.90	$9.25	$9.11	$0.00	$76.01
	6/1/2028	$49.25	$9.90	$9.25	$9.11	$0.00	$77.51
	12/1/2028	$50.75	$9.90	$9.25	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
BLOCK PAVER, RAMMER / CURB SETTER LABORERS LABORERS - ZONE 2	6/1/2025	$41.09	$9.90	$9.25	$9.11	$0.00	$69.35
	12/1/2025	$42.47	$9.90	$9.25	$9.11	$0.00	$70.73
	6/1/2026	$43.91	$9.90	$9.25	$9.11	$0.00	$72.17
	12/1/2026	$45.35	$9.90	$9.25	$9.11	$0.00	$73.61
	6/1/2027	$46.80	$9.90	$9.25	$9.11	$0.00	$75.06
	12/1/2027	$48.25	$9.90	$9.25	$9.11	$0.00	$76.51
	6/1/2028	$49.75	$9.90	$9.25	$9.11	$0.00	$78.01
	12/1/2028	$51.25	$9.90	$9.25	$9.11	$0.00	$79.51
For apprentice rates see "Apprentice- LABORER"							
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2025	$41.09	$9.90	$9.25	$9.21	$0.00	$69.45
	12/1/2025	$42.47	$9.90	$9.25	$9.21	$0.00	$70.83
	6/1/2026	$43.91	$9.90	$9.25	$9.21	$0.00	$72.27
	12/1/2026	$45.35	$9.90	$9.25	$9.21	$0.00	$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
BOILER MAKER BOILERMAKERS LOCAL 29 BOILERMAKERS LOCAL 29	1/1/2024	$48.12	$7.07	$14.60	$6.00	$0.00	$75.79

Apprentice: BOILER MAKER

Effective Date: 1/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	65.00	$31.28	$7.07	$9.32	$3.90	$0.00	$51.57
2	65.00	$31.28	$7.07	$9.32	$3.90	$0.00	$51.57
3	70.00	$33.68	$7.07	$10.03	$4.20	$0.00	$54.98
4	75.00	$36.09	$7.07	$10.74	$4.50	$0.00	$58.40
5	80.00	$38.50	$7.07	$11.45	$4.80	$0.00	$61.82
6	85.00	$40.90	$7.07	$12.18	$5.10	$0.00	$65.25
7	90.00	$43.31	$7.07	$12.88	$5.40	$0.00	$68.66
8	95.00	$45.71	$7.07	$13.62	$5.70	$0.00	$72.10

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 (FOXBORO)	2/1/2025	$63.66	$11.49	$15.57	$7.33	$0.00	$98.05
	8/1/2025	$65.81	$11.49	$15.57	$7.33	$0.00	$100.20
	2/1/2026	$67.16	$11.49	$15.57	$7.33	$0.00	$101.55
	8/1/2026	$69.36	$11.49	$15.57	$7.33	$0.00	$103.75
	2/1/2027	$70.76	$11.49	$15.57	$7.33	$0.00	$105.15

Apprentice: BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)

Effective Date: 2/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$31.83	$11.49	$15.57	$7.33	$0.00	$66.22
2	60.00	$38.20	$11.49	$15.57	$7.33	$0.00	$72.59
3	70.00	$44.56	$11.49	$15.57	$7.33	$0.00	$78.95
4	80.00	$50.93	$11.49	$15.57	$7.33	$0.00	$85.32
5	90.00	$57.29	$11.49	$15.57	$7.33	$0.00	$91.68

Apprentice: BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)

Effective Date: 8/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$32.91	$11.49	$15.57	$7.33	$0.00	$67.30
2	60.00	$39.49	$11.49	$15.57	$7.33	$0.00	$73.88
3	70.00	$46.07	$11.49	$15.57	$7.33	$0.00	$80.46
4	80.00	$52.65	$11.49	$15.57	$7.33	$0.00	$87.04
5	90.00	$59.23	$11.49	$15.57	$7.33	$0.00	$93.62

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
BULLDOZER/GRADER/SCRAPER OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2025	$57.68	$15.55	$13.25	$3.25	$0.00	$89.73
	12/1/2025	$59.12	$15.55	$13.25	$3.25	$0.00	$91.17
	6/1/2026	$60.40	$15.55	$13.25	$3.25	$0.00	$92.45

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2026	$61.84	$15.55	$13.25	$3.25	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
CAISSON & UNDERPINNING BOTTOM MAN LABORERS LABORERS - FOUNDATION AND MARINE	6/1/2025	$48.85	$9.90	$9.25	$9.80	$0.00	$77.80
	12/1/2025	$50.35	$9.90	$9.25	$9.80	$0.00	$79.30
	6/1/2026	$51.90	$9.90	$9.25	$9.80	$0.00	$80.85
	12/1/2026	$53.40	$9.90	$9.25	$9.80	$0.00	$82.35
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING LABORER LABORERS LABORERS - FOUNDATION AND MARINE	6/1/2025	$47.70	$9.90	$9.25	$9.80	$0.00	$76.65
	12/1/2025	$49.20	$9.90	$9.25	$9.80	$0.00	$78.15
	6/1/2026	$50.75	$9.90	$9.25	$9.80	$0.00	$79.70
	12/1/2026	$52.25	$9.90	$9.25	$9.80	$0.00	$81.20
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING TOP MAN LABORERS LABORERS - FOUNDATION AND MARINE	6/1/2025	$48.03	$9.90	$9.25	$9.80	$0.00	$76.98
	12/1/2025	$49.53	$9.90	$9.25	$9.80	$0.00	$78.48
	6/1/2026	$51.08	$9.90	$9.25	$9.80	$0.00	$80.03
	12/1/2026	$52.58	$9.90	$9.25	$9.80	$0.00	$81.53
For apprentice rates see "Apprentice- LABORER"							
CARBIDE CORE DRILL OPERATOR LABORERS LABORERS - ZONE 2	6/1/2025	$40.59	$9.90	$9.25	$9.11	$0.00	$68.85
	12/1/2025	$41.97	$9.90	$9.25	$9.11	$0.00	$70.23
	6/1/2026	$43.41	$9.90	$9.25	$9.11	$0.00	$71.67
	12/1/2026	$44.85	$9.90	$9.25	$9.11	$0.00	$73.11
	6/1/2027	$46.30	$9.90	$9.25	$9.11	$0.00	$74.56
	12/1/2027	$47.75	$9.90	$9.25	$9.11	$0.00	$76.01
	6/1/2028	$49.25	$9.90	$9.25	$9.11	$0.00	$77.51
	12/1/2028	$50.75	$9.90	$9.25	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
CARPENTER CARPENTERS CARPENTERS -ZONE 2 (Eastern Massachusetts)	3/1/2025	$49.62	$9.83	$11.47	$8.50	$0.00	$79.42
	9/1/2025	$50.87	$9.83	$11.47	$8.50	$0.00	$80.67
	3/1/2026	$52.12	$9.83	$11.47	$8.50	$0.00	$81.92
	9/1/2026	$53.37	$9.83	$11.47	$8.50	$0.00	$83.17
	3/1/2027	$54.62	$9.83	$11.47	$8.50	$0.00	$84.42

Apprentice: CARPENTER

Effective Date: 3/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$22.33	$9.83	$0.00	$1.73	$0.00	$33.89
2	45.00	$22.33	$9.83	$0.00	$1.73	$0.00	$33.89
3	55.00	$27.29	$9.83	$0.00	$3.40	$0.00	$40.52
4	55.00	$27.29	$9.83	$0.00	$3.40	$0.00	$40.52
5	70.00	$34.73	$9.83	$11.41	$5.10	$0.00	$61.07
6	70.00	$34.73	$9.83	$11.41	$5.10	$0.00	$61.07
7	80.00	$39.70	$9.83	$11.44	$6.80	$0.00	$67.77
8	80.00	$39.70	$9.83	$11.44	$6.80	$0.00	$67.77

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
CARPENTER WOOD FRAME	10/1/2024	$26.65	$7.02	$3.80	$1.00	$0.00	$38.47
CARPENTERS	10/1/2025	$27.75	$7.02	$3.80	$1.00	$0.00	$39.57
CARPENTERS-ZONE 3 (Wood Frame)	10/1/2026	$28.85	$7.02	$3.80	$1.00	$0.00	$40.67

All Aspects of New Wood Frame Work

Apprentice: CARPENTER

Effective Date: 9/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$22.89	$9.83	$0.00	$1.73	$0.00	$34.45
2	45.00	$22.89	$9.83	$0.00	$1.73	$0.00	$34.45
3	55.00	$27.98	$9.83	$0.00	$3.40	$0.00	$41.21
4	55.00	$27.98	$9.83	$0.00	$3.40	$0.00	$41.21
5	70.00	$35.61	$9.83	$11.41	$5.10	$0.00	$61.95
6	70.00	$35.61	$9.83	$11.41	$5.10	$0.00	$61.95
7	80.00	$40.70	$9.83	$11.44	$6.80	$0.00	$68.77
8	80.00	$40.70	$9.83	$11.44	$6.80	$0.00	$68.77

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$15.99	$7.02	$0.00	$0.00	$0.00	$23.01
2	60.00	$15.99	$7.02	$0.00	$0.00	$0.00	$23.01
3	65.00	$17.32	$7.02	$0.00	$1.00	$0.00	$25.34
4	70.00	$18.66	$7.02	$0.00	$1.00	$0.00	$26.68
5	75.00	$19.99	$7.02	$3.80	$1.00	$0.00	$31.81
6	80.00	$21.32	$7.02	$3.80	$1.00	$0.00	$33.14
7	85.00	$22.65	$7.02	$3.80	$1.00	$0.00	$34.47
8	90.00	$23.99	$7.02	$3.80	$1.00	$0.00	$35.81

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$16.65	$7.02	$0.00	$0.00	$0.00	$23.67
2	60.00	$16.65	$7.02	$0.00	$0.00	$0.00	$23.67
3	65.00	$18.04	$7.02	$0.00	$1.00	$0.00	$26.06
4	70.00	$19.43	$7.02	$0.00	$1.00	$0.00	$27.45
5	75.00	$20.81	$7.02	$3.80	$1.00	$0.00	$32.63
6	80.00	$22.20	$7.02	$3.80	$1.00	$0.00	$34.02
7	85.00	$23.59	$7.02	$3.80	$1.00	$0.00	$35.41
8	90.00	$24.98	$7.02	$3.80	$1.00	$0.00	$36.80

CEMENT MASONRY/PLASTERING	7/1/2024	$49.19	$13.35	$16.43	$7.78	$1.80	$88.55

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 (FOXBORO)							

Apprentice: CEMENT MASONRY/PLASTERING

Effective Date: 7/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.60	$13.35	$16.43	$0.00	$0.00	$54.38
2	60.00	$29.51	$13.35	$16.43	$2.78	$1.80	$63.87
3	65.00	$31.97	$13.35	$16.43	$3.78	$1.80	$67.33
4	70.00	$34.43	$13.35	$16.43	$4.78	$1.80	$70.79
5	75.00	$36.89	$13.35	$16.43	$5.78	$1.80	$74.25
6	80.00	$39.35	$13.35	$16.43	$6.78	$1.80	$77.71
7	90.00	$44.27	$13.35	$16.43	$7.78	$1.80	$83.63

CHAIN SAW OPERATOR LABORERS LABORERS - ZONE 2	6/1/2025	$40.59	$9.90	$9.25	$9.11	$0.00	$68.85
	12/1/2025	$41.97	$9.90	$9.25	$9.11	$0.00	$70.23
	6/1/2026	$43.41	$9.90	$9.25	$9.11	$0.00	$71.67
	12/1/2026	$44.85	$9.90	$9.25	$9.11	$0.00	$73.11
	6/1/2027	$46.30	$9.90	$9.25	$9.11	$0.00	$74.56
	12/1/2027	$47.75	$9.90	$9.25	$9.11	$0.00	$76.01
	6/1/2028	$49.25	$9.90	$9.25	$9.11	$0.00	$77.51
	12/1/2028	$50.75	$9.90	$9.25	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2025	$59.51	$15.55	$13.25	$3.25	$0.00	$91.56
	12/1/2025	$60.98	$15.55	$13.25	$3.25	$0.00	$93.03
	6/1/2026	$62.31	$15.55	$13.25	$3.25	$0.00	$94.36
	12/1/2026	$63.79	$15.55	$13.25	$3.25	$0.00	$95.84
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
COMPRESSOR OPERATOR OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2025	$37.52	$15.55	$13.25	$3.25	$0.00	$69.57
	12/1/2025	$38.47	$15.55	$13.25	$3.25	$0.00	$70.52
	6/1/2026	$39.33	$15.55	$13.25	$3.25	$0.00	$71.38
	12/1/2026	$40.28	$15.55	$13.25	$3.25	$0.00	$72.33
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
DELEADER (BRIDGE) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 2	1/1/2025	$58.46	$9.95	$11.85	$12.10	$0.00	$92.36

Apprentice: DELEADER (BRIDGE)

Effective Date: 1/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.23	$9.95	$0.00	$0.00	$0.00	$39.18
2	55.00	$32.15	$9.95	$0.00	$6.66	$0.00	$48.76
3	60.00	$35.08	$9.95	$0.00	$7.26	$0.00	$52.29

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: DELEADER (BRIDGE)

Effective Date: 1/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
4	65.00	$38.00	$9.95	$0.00	$7.87	$0.00	$55.82
5	70.00	$40.92	$9.95	$11.85	$8.47	$0.00	$71.19
6	75.00	$43.85	$9.95	$11.85	$9.08	$0.00	$74.73
7	80.00	$46.77	$9.95	$11.85	$9.68	$0.00	$78.25
8	90.00	$52.61	$9.95	$11.85	$10.89	$0.00	$85.30

DEMO: ADZEMAN	6/2/2025	$47.75	$9.90	$9.25	$9.65	$0.00	$76.55
LABORERS	12/1/2025	$49.25	$9.90	$9.25	$9.65	$0.00	$78.05
LABORERS - ZONE 2	6/1/2026	$50.80	$9.90	$9.25	$9.65	$0.00	$79.60
	12/7/2026	$52.30	$9.90	$9.25	$9.65	$0.00	$81.10
	6/7/2027	$53.90	$9.90	$9.25	$9.65	$0.00	$82.70
	12/6/2027	$55.50	$9.90	$9.25	$9.65	$0.00	$84.30
	6/5/2028	$57.18	$9.90	$9.25	$9.65	$0.00	$85.98
	12/4/2028	$58.85	$9.90	$9.25	$9.65	$0.00	$87.65

For apprentice rates see "Apprentice- LABORER"

DEMO: BACKHOE/LOADER/HAMMER OPERATOR	6/2/2025	$48.75	$9.90	$9.25	$9.65	$0.00	$77.55
LABORERS	12/1/2025	$50.25	$9.90	$9.25	$9.65	$0.00	$79.05
LABORERS - ZONE 2	6/1/2026	$51.80	$9.90	$9.25	$9.65	$0.00	$80.60
	12/7/2026	$53.30	$9.90	$9.25	$9.65	$0.00	$82.10
	6/7/2027	$54.90	$9.90	$9.25	$9.65	$0.00	$83.70
	12/6/2027	$56.50	$9.90	$9.25	$9.65	$0.00	$85.30
	6/5/2028	$58.18	$9.90	$9.25	$9.65	$0.00	$86.98
	12/4/2028	$59.85	$9.90	$9.25	$9.65	$0.00	$88.65

For apprentice rates see "Apprentice- LABORER"

DEMO: BURNERS	6/2/2025	$48.50	$9.90	$9.25	$9.65	$0.00	$77.30
LABORERS	12/1/2025	$50.00	$9.90	$9.25	$9.65	$0.00	$78.80
LABORERS - ZONE 2	6/1/2026	$51.55	$9.90	$9.25	$9.65	$0.00	$80.35
	12/7/2026	$53.05	$9.90	$9.25	$9.65	$0.00	$81.85
	6/7/2027	$54.65	$9.90	$9.25	$9.65	$0.00	$83.45
	12/6/2027	$56.25	$9.90	$9.25	$9.65	$0.00	$85.05
	6/5/2028	$57.93	$9.90	$9.25	$9.65	$0.00	$86.73
	12/4/2028	$59.60	$9.90	$9.25	$9.65	$0.00	$88.40

For apprentice rates see "Apprentice- LABORER"

DEMO: CONCRETE CUTTER/SAWYER	6/2/2025	$48.75	$9.90	$9.25	$9.65	$0.00	$77.55
LABORERS	12/1/2025	$50.25	$9.90	$9.25	$9.65	$0.00	$79.05
LABORERS - ZONE 2	6/1/2026	$51.80	$9.90	$9.25	$9.65	$0.00	$80.60
	12/7/2026	$53.30	$9.90	$9.25	$9.65	$0.00	$82.10
	6/7/2027	$54.90	$9.90	$9.25	$9.65	$0.00	$83.70
	12/6/2027	$56.50	$9.90	$9.25	$9.65	$0.00	$85.30
	6/5/2028	$58.18	$9.90	$9.25	$9.65	$0.00	$86.98
	12/4/2028	$59.85	$9.90	$9.25	$9.65	$0.00	$88.65

For apprentice rates see "Apprentice- LABORER"

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
DEMO: JACKHAMMER OPERATOR	6/2/2025	$48.50	$9.90	$9.25	$9.65	$0.00	$77.30
LABORERS	12/1/2025	$50.00	$9.90	$9.25	$9.65	$0.00	$78.80
LABORERS - ZONE 2	6/1/2026	$51.55	$9.90	$9.25	$9.65	$0.00	$80.35
	12/7/2026	$53.05	$9.90	$9.25	$9.65	$0.00	$81.85
	6/7/2027	$54.65	$9.90	$9.25	$9.65	$0.00	$83.45
	12/6/2027	$56.25	$9.90	$9.25	$9.65	$0.00	$85.05
	6/5/2028	$57.93	$9.90	$9.25	$9.65	$0.00	$86.73
	12/4/2028	$59.60	$9.90	$9.25	$9.65	$0.00	$88.40
For apprentice rates see "Apprentice- LABORER"							
DEMO: WRECKING LABORER	6/2/2025	$47.75	$9.90	$9.25	$9.65	$0.00	$76.55
LABORERS	12/1/2025	$49.25	$9.90	$9.25	$9.65	$0.00	$78.05
LABORERS - ZONE 2	6/1/2026	$50.80	$9.90	$9.25	$9.65	$0.00	$79.60
	12/7/2026	$52.30	$9.90	$9.25	$9.65	$0.00	$81.10
	6/7/2027	$53.90	$9.90	$9.25	$9.65	$0.00	$82.70
	12/6/2027	$55.50	$9.90	$9.25	$9.65	$0.00	$84.30
	6/5/2028	$57.18	$9.90	$9.25	$9.65	$0.00	$85.98
	12/4/2028	$58.85	$9.90	$9.25	$9.65	$0.00	$87.65
For apprentice rates see "Apprentice- LABORER"							
DIRECTIONAL DRILL MACHINE OPERATOR	6/1/2025	$57.68	$15.55	$13.25	$3.25	$0.00	$89.73
OPERATING ENGINEERS LOCAL 4	12/1/2025	$59.12	$15.55	$13.25	$3.25	$0.00	$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	$60.40	$15.55	$13.25	$3.25	$0.00	$92.45
	12/1/2026	$61.84	$15.55	$13.25	$3.25	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
DIVER	8/1/2024	$78.11	$10.08	$11.62	$10.04	$0.00	$109.85
PILE DRIVER LOCAL 56							
PILE DRIVER LOCAL 56 (ZONE 1)							
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Diver wage 70/80/90 2A $69.83, 3A $91.79,4A $102.14 Total Rate							
DIVER TENDER	8/1/2024	$55.79	$10.08	$11.62	$12.67	$0.00	$90.16
PILE DRIVER LOCAL 56							
PILE DRIVER LOCAL 56 (ZONE 1)							
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Piledriver wage 70/80/90 2A $54.20, 3A $73.93,4A $82.05 Total Rate							
DIVER TENDER (EFFLUENT)	8/1/2024	$83.69	$10.08	$11.62	$12.67	$0.00	$118.06
PILE DRIVER LOCAL 56							
PILE DRIVER LOCAL 56 (ZONE 1)							
For apprentice rates see "Apprentice- PILE DRIVER"							
DIVER/SLURRY (EFFLUENT)	8/1/2024	$117.16	$10.08	$11.62	$12.67	$0.00	$151.53
PILE DRIVER LOCAL 56							
PILE DRIVER LOCAL 56 (ZONE 1)							
For apprentice rates see "Apprentice- PILE DRIVER"							
DRAWBRIDGE OPERATOR (Construction)	7/1/2020	$26.77	$6.67	$3.93	$0.00	$0.16	$37.53
DRAWBRIDGE - SEIU LOCAL 888							
DRAWBRIDGE - SEIU LOCAL 888							
ELECTRICIAN	9/1/2024	$50.02	$12.00	$14.22	$3.50	$0.00	$79.74
ELECTRICIANS LOCAL 223	9/1/2025	$52.25	$12.25	$14.86	$3.75	$0.00	$83.11
ELECTRICIANS LOCAL 223							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	9/1/2026	$54.72	$12.50	$15.56	$4.00	$0.00	$86.78

Apprentice: ELECTRICIAN

Effective Date: 9/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$20.01	$12.00	$0.60	$0.00	$0.00	$32.61
2	45.00	$22.51	$12.00	$0.68	$0.00	$0.00	$35.19
3	50.00	$25.01	$12.00	$0.75	$0.00	$0.00	$37.76
4	55.00	$27.51	$12.00	$6.34	$2.25	$0.00	$48.10
5	60.00	$30.01	$12.00	$6.90	$2.25	$0.00	$51.16
6	65.00	$32.51	$12.00	$7.49	$2.25	$0.00	$54.25
7	70.00	$35.01	$12.00	$8.05	$2.25	$0.00	$57.31
8	75.00	$37.52	$12.00	$8.64	$2.25	$0.00	$60.41

Apprentice: ELECTRICIAN

Effective Date: 9/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$20.90	$12.25	$0.63	$0.00	$0.00	$33.78
2	45.00	$23.51	$12.25	$0.71	$0.00	$0.00	$36.47
3	50.00	$26.13	$12.25	$0.78	$0.00	$0.00	$39.16
4	55.00	$28.74	$12.25	$6.61	$2.50	$0.00	$50.10
5	60.00	$31.35	$12.25	$7.21	$2.50	$0.00	$53.31
6	65.00	$33.96	$12.25	$7.82	$2.50	$0.00	$56.53
7	70.00	$36.58	$12.25	$8.41	$2.50	$0.00	$59.74
8	75.00	$39.19	$12.25	$9.02	$2.50	$0.00	$62.96

ELEVATOR CONSTRUCTOR ELEVATOR CONSTRUCTORS LOCAL 4 ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2022	$65.62	$16.03	$10.71	$9.50	$0.00	$101.86

Apprentice: ELEVATOR CONSTRUCTOR

Effective Date: 1/1/2022

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$32.81	$16.03	$0.00	$0.00	$0.00	$48.84
2	55.00	$36.09	$16.03	$10.71	$9.50	$0.00	$72.33
3	65.00	$42.65	$16.03	$10.71	$9.50	$0.00	$78.89
4	70.00	$45.93	$16.03	$10.71	$9.50	$0.00	$82.17
5	80.00	$52.50	$16.03	$10.71	$9.50	$0.00	$88.74

ELEVATOR CONSTRUCTOR HELPER ELEVATOR CONSTRUCTORS LOCAL 4 ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2022	$45.93	$16.03	$10.71	$9.50	$0.00	$82.17

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY)	6/1/2025	$40.59	$9.90	$9.25	$9.21	$0.00	$68.95
LABORERS	12/1/2025	$41.97	$9.90	$9.25	$9.21	$0.00	$70.33
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$43.41	$9.90	$9.25	$9.21	$0.00	$71.77
	12/1/2026	$44.85	$9.90	$9.25	$9.21	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY	5/1/2025	$53.22	$15.30	$13.15	$3.25	$0.00	$84.92
OPERATING ENGINEERS LOCAL 4	11/1/2025	$54.51	$15.30	$13.15	$3.25	$0.00	$86.21
OPERATING ENGINEERS LOCAL 4	5/1/2026	$55.95	$15.30	$13.15	$3.25	$0.00	$87.65
	11/1/2026	$57.24	$15.30	$13.15	$3.25	$0.00	$88.94
	5/1/2027	$58.67	$15.30	$13.15	$3.25	$0.00	$90.37
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY	5/1/2025	$54.82	$15.30	$13.15	$3.25	$0.00	$86.52
OPERATING ENGINEERS LOCAL 4	11/1/2025	$56.12	$15.30	$13.15	$3.25	$0.00	$87.82
OPERATING ENGINEERS LOCAL 4	5/1/2026	$57.57	$15.30	$13.15	$3.25	$0.00	$89.27
	11/1/2026	$58.87	$15.30	$13.15	$3.25	$0.00	$90.57
	5/1/2027	$60.32	$15.30	$13.15	$3.25	$0.00	$92.02
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY	5/1/2025	$26.22	$15.30	$13.15	$3.25	$0.00	$57.92
OPERATING ENGINEERS LOCAL 4	11/1/2025	$26.98	$15.30	$13.15	$3.25	$0.00	$58.68
OPERATING ENGINEERS LOCAL 4	5/1/2026	$27.83	$15.30	$13.15	$3.25	$0.00	$59.53
	11/1/2026	$28.59	$15.30	$13.15	$3.25	$0.00	$60.29
	5/1/2027	$29.44	$15.30	$13.15	$3.25	$0.00	$61.14
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIRE ALARM INSTALLER	9/1/2024	$50.02	$12.00	$14.22	$3.50	$0.00	$79.74
ELECTRICIANS LOCAL 223	9/1/2025	$52.25	$12.25	$14.86	$3.75	$0.00	$83.11
ELECTRICIANS LOCAL 223	9/1/2026	$54.72	$12.50	$15.56	$4.00	$0.00	$86.78
For apprentice rates see "Apprentice- ELECTRICIAN"							
FIRE ALARM REPAIR / MAINTENANCE	9/1/2024	$50.02	$12.00	$14.22	$3.50	$0.00	$79.74
/ COMMISSIONING	9/1/2025	$52.25	$12.25	$14.86	$3.75	$0.00	$83.11
ELECTRICIANS LOCAL 223	9/1/2026	$54.72	$12.50	$15.56	$4.00	$0.00	$86.78
ELECTRICIANS LOCAL 223							
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"							
FIREMAN (ASST. ENGINEER)	6/1/2025	$47.02	$15.55	$13.25	$3.25	$0.00	$79.07
OPERATING ENGINEERS LOCAL 4	12/1/2025	$48.19	$15.55	$13.25	$3.25	$0.00	$80.24
OPERATING ENGINEERS LOCAL 4	6/1/2026	$49.25	$15.55	$13.25	$3.25	$0.00	$81.30
	12/1/2026	$50.43	$15.55	$13.25	$3.25	$0.00	$82.48
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FLAGGER & SIGNALER (HEAVY & HIGHWAY)	6/1/2025	$28.09	$9.90	$9.25	$9.21	$0.00	$56.45
LABORERS	12/1/2025	$28.09	$9.90	$9.25	$9.21	$0.00	$56.45
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$29.21	$9.90	$9.25	$9.21	$0.00	$57.57
	12/1/2026	$29.21	$9.90	$9.25	$9.21	$0.00	$57.57
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
FLOORCOVERER	3/1/2025	$57.73	$8.83	$11.47	$8.80	$0.00	$86.83

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
FLOORCOVERERS LOCAL 2168	9/1/2025	$59.23	$8.83	$11.47	$8.80	$0.00	$88.33
FLOORCOVERERS LOCAL 2168 ZONE I	3/1/2026	$60.73	$8.83	$11.47	$8.80	$0.00	$89.83
	9/1/2026	$62.23	$8.83	$11.47	$8.80	$0.00	$91.33
	3/1/2027	$63.73	$8.83	$11.47	$8.80	$0.00	$92.83

Apprentice: FLOORCOVERER

Effective Date: 3/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$25.98	$8.83	$0.00	$1.76	$0.00	$36.57
2	45.00	$25.98	$8.83	$0.00	$1.76	$0.00	$36.57
3	55.00	$31.75	$8.83	$0.00	$3.52	$0.00	$44.10
4	55.00	$31.75	$8.83	$0.00	$3.52	$0.00	$44.10
5	70.00	$40.41	$8.83	$11.47	$5.28	$0.00	$65.99
6	70.00	$40.41	$8.83	$11.47	$5.28	$0.00	$65.99
7	80.00	$46.18	$8.83	$11.47	$7.04	$0.00	$73.52
8	80.00	$46.18	$8.83	$11.47	$7.04	$0.00	$73.52

Apprentice: FLOORCOVERER

Effective Date: 9/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$26.65	$8.83	$0.00	$1.76	$0.00	$37.24
2	45.00	$26.65	$8.83	$0.00	$1.76	$0.00	$37.24
3	55.00	$32.58	$8.83	$0.00	$3.52	$0.00	$44.93
4	55.00	$32.58	$8.83	$0.00	$3.52	$0.00	$44.93
5	70.00	$41.46	$8.83	$11.47	$5.28	$0.00	$67.04
6	70.00	$41.46	$8.83	$11.47	$5.28	$0.00	$67.04
7	80.00	$47.38	$8.83	$11.47	$7.04	$0.00	$74.72
8	80.00	$47.38	$8.83	$11.47	$7.04	$0.00	$74.72

FORK LIFT/CHERRY PICKER	6/1/2025	$58.33	$15.55	$13.25	$3.25	$0.00	$90.38
OPERATING ENGINEERS LOCAL 4	12/1/2025	$59.78	$15.55	$13.25	$3.25	$0.00	$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	$61.08	$15.55	$13.25	$3.25	$0.00	$93.13
	12/1/2026	$62.53	$15.55	$13.25	$3.25	$0.00	$94.58

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GENERATOR/LIGHTING PLANT/HEATERS	6/1/2025	$37.52	$15.55	$13.25	$3.25	$0.00	$69.57
OPERATING ENGINEERS LOCAL 4	12/1/2025	$38.47	$15.55	$13.25	$3.25	$0.00	$70.52
OPERATING ENGINEERS LOCAL 4	6/1/2026	$39.33	$15.55	$13.25	$3.25	$0.00	$71.38
	12/1/2026	$40.28	$15.55	$13.25	$3.25	$0.00	$72.33

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)	6/1/2020	$39.18	$10.80	$6.70	$3.75	$0.00	$60.43
GLAZIERS LOCAL 1333							
GLAZIERS LOCAL 1333							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
HOISTING ENGINEER/CRANES/GRADALLS OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2025	$58.33	$15.55	$13.25	$3.25	$0.00	$90.38
	12/1/2025	$59.78	$15.55	$13.25	$3.25	$0.00	$91.83
	6/1/2026	$61.08	$15.55	$13.25	$3.25	$0.00	$93.13
	12/1/2026	$62.53	$15.55	$13.25	$3.25	$0.00	$94.58
HVAC (DUCTWORK)	2/1/2025	$59.13	$14.91	$18.74	$9.53	$2.98	$105.29

Apprentice: GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)

Effective Date: 6/1/2020

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$19.59	$10.80	$1.50	$0.30	$0.00	$32.19
2	56.25	$22.04	$10.80	$1.50	$0.30	$0.00	$34.64
3	62.50	$24.49	$10.80	$1.95	$0.50	$0.00	$37.74
4	68.75	$26.94	$10.80	$1.95	$0.50	$0.00	$40.19
5	75.00	$29.39	$10.80	$2.50	$0.65	$0.00	$43.34
6	81.25	$31.83	$10.80	$2.50	$0.65	$0.00	$45.78
7	87.50	$34.28	$10.80	$6.70	$3.75	$0.00	$55.53
8	93.75	$36.73	$10.80	$6.70	$3.75	$0.00	$57.98

Apprentice: HOISTING ENGINEER/CRANES/GRADALLS

Effective Date: 6/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	$32.08	$0.00	$0.00	$0.00	$0.00	$32.08
2	60.00	$35.00	$15.55	$13.25	$3.25	$0.00	$67.05
3	65.00	$37.91	$15.55	$13.25	$3.25	$0.00	$69.96
4	70.00	$40.83	$15.55	$13.25	$3.25	$0.00	$72.88
5	75.00	$43.75	$15.55	$13.25	$3.25	$0.00	$75.80
6	80.00	$46.66	$15.55	$13.25	$3.25	$0.00	$78.71
7	85.00	$49.58	$15.55	$13.25	$3.25	$0.00	$81.63
8	90.00	$52.50	$15.55	$13.25	$3.25	$0.00	$84.55

Apprentice: HOISTING ENGINEER/CRANES/GRADALLS

Effective Date: 12/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	$32.88	$0.00	$0.00	$0.00	$0.00	$32.88
2	60.00	$35.87	$15.55	$13.25	$3.25	$0.00	$67.92
3	65.00	$38.86	$15.55	$13.25	$3.25	$0.00	$70.91
4	70.00	$41.85	$15.55	$13.25	$3.25	$0.00	$73.90
5	75.00	$44.84	$15.55	$13.25	$3.25	$0.00	$76.89
6	80.00	$47.82	$15.55	$13.25	$3.25	$0.00	$79.87
7	85.00	$50.81	$15.55	$13.25	$3.25	$0.00	$82.86
8	90.00	$53.80	$15.55	$13.25	$3.25	$0.00	$85.85

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
SHEETMETAL WORKERS LOCAL 17	8/1/2025	$60.98	$14.91	$18.74	$9.53	$2.98	$107.14
SHEETMETAL WORKERS LOCAL 17 - A	2/1/2026	$62.93	$14.91	$18.74	$9.53	$2.98	$109.09
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (ELECTRICAL CONTROLS)	9/1/2024	$50.02	$12.00	$14.22	$3.50	$0.00	$79.74
ELECTRICIANS LOCAL 223	9/1/2025	$52.25	$12.25	$14.86	$3.75	$0.00	$83.11
ELECTRICIANS LOCAL 223	9/1/2026	$54.72	$12.50	$15.56	$4.00	$0.00	$86.78
For apprentice rates see "Apprentice- ELECTRICIAN"							
HVAC (TESTING AND BALANCING - AIR)	2/1/2025	$59.13	$14.91	$18.74	$9.53	$2.98	$105.29
SHEETMETAL WORKERS LOCAL 17	8/1/2025	$60.98	$14.91	$18.74	$9.53	$2.98	$107.14
SHEETMETAL WORKERS LOCAL 17 - A	2/1/2026	$62.93	$14.91	$18.74	$9.53	$2.98	$109.09
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (TESTING AND BALANCING -WATER)	8/26/2024	$52.49	$10.80	$16.80	$4.60	$0.00	$84.69
PLUMBERS & PIPEFITTERS LOCAL 51	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44
PLUMBERS & PIPEFITTERS LOCAL 51							
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
HVAC MECHANIC	8/26/2024	$52.49	$10.80	$16.80	$4.60	$0.00	$84.69
PLUMBERS & PIPEFITTERS LOCAL 51	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44
PLUMBERS & PIPEFITTERS LOCAL 51							
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
HYDRAULIC DRILLS	6/1/2025	$41.09	$9.90	$9.25	$9.11	$0.00	$69.35
LABORERS	12/1/2025	$42.47	$9.90	$9.25	$9.11	$0.00	$70.73
LABORERS - ZONE 2	6/1/2026	$43.91	$9.90	$9.25	$9.11	$0.00	$72.17
	12/1/2026	$45.35	$9.90	$9.25	$9.11	$0.00	$73.61
	6/1/2027	$46.80	$9.90	$9.25	$9.11	$0.00	$75.06
	12/1/2027	$48.25	$9.90	$9.25	$9.11	$0.00	$76.51
	6/1/2028	$49.75	$9.90	$9.25	$9.11	$0.00	$78.01
	12/1/2028	$51.25	$9.90	$9.25	$9.11	$0.00	$79.51
For apprentice rates see "Apprentice- LABORER"							
HYDRAULIC DRILLS (HEAVY & HIGHWAY)	6/1/2025	$41.09	$9.90	$9.25	$9.21	$0.00	$69.45
LABORERS	12/1/2025	$42.47	$9.90	$9.25	$9.21	$0.00	$70.83
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$43.91	$9.90	$9.25	$9.21	$0.00	$72.27
	12/1/2026	$45.35	$9.90	$9.25	$9.21	$0.00	$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
INSULATOR (PIPES & TANKS)	9/1/2024	$51.23	$14.75	$9.52	$10.09	$0.00	$85.59
HEAT & FROST INSULATORS LOCAL 6	9/1/2025	$54.31	$14.75	$9.52	$10.09	$0.00	$88.67
HEAT & FROST INSULATORS LOCAL 6 (SOUTHERN MASS)	9/1/2026	$57.38	$14.75	$9.52	$10.09	$0.00	$91.74

Apprentice: INSULATOR (PIPES & TANKS)

Effective Date: 9/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$25.62	$14.75	$9.27	$5.05	$0.00	$54.69
2	60.00	$30.74	$14.75	$9.32	$6.05	$0.00	$60.86

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: INSULATOR (PIPES & TANKS)							
Effective Date: 9/1/2024							
Step / Percent		**Apprentice Base Wage**					
3 / 70.00		$35.86	$14.75	$9.37	$7.06	$0.00	$67.04
4 / 80.00		$40.98	$14.75	$9.42	$8.07	$0.00	$73.22
Apprentice: INSULATOR (PIPES & TANKS)							
Effective Date: 9/1/2025							
Step / Percent		**Apprentice Base Wage**					
1 / 50.00		$27.16	$14.75	$9.27	$5.05	$0.00	$56.23
2 / 60.00		$32.59	$14.75	$9.32	$6.05	$0.00	$62.71
3 / 70.00		$38.02	$14.75	$9.37	$7.06	$0.00	$69.20
4 / 80.00		$43.45	$14.75	$9.42	$8.07	$0.00	$75.69
IRONWORKER/WELDER	3/16/2021	$42.46	$7.70	$12.10	$5.00	$0.00	$67.26
IRONWORKERS LOCAL 37							
IRONWORKERS LOCAL 37							
Apprentice: IRONWORKER/WELDER							
Effective Date: 3/16/2021							
Step / Percent		**Apprentice Base Wage**					
1 / 70.00		$29.72	$7.70	$12.10	$5.00	$0.00	$54.52
2 / 75.00		$31.85	$7.70	$12.10	$5.00	$0.00	$56.65
3 / 80.00		$33.97	$7.70	$12.10	$5.00	$0.00	$58.77
4 / 85.00		$36.09	$7.70	$12.10	$5.00	$0.00	$60.89
5 / 90.00		$38.21	$7.70	$12.10	$5.00	$0.00	$63.01
6 / 95.00		$40.34	$7.70	$12.10	$5.00	$0.00	$65.14
JACKHAMMER & PAVING BREAKER OPERATOR	6/1/2025	$40.59	$9.90	$9.25	$9.11	$0.00	$68.85
LABORERS	12/1/2025	$41.97	$9.90	$9.25	$9.11	$0.00	$70.23
LABORERS - ZONE 2	6/1/2026	$43.41	$9.90	$9.25	$9.11	$0.00	$71.67
	12/1/2026	$44.85	$9.90	$9.25	$9.11	$0.00	$73.11
	6/1/2027	$46.30	$9.90	$9.25	$9.11	$0.00	$74.56
	12/1/2027	$47.75	$9.90	$9.25	$9.11	$0.00	$76.01
	6/1/2028	$49.25	$9.90	$9.25	$9.11	$0.00	$77.51
	12/1/2028	$50.75	$9.90	$9.25	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
LABORER	6/1/2025	$40.34	$9.90	$9.25	$9.11	$0.00	$68.60
LABORERS	12/1/2025	$41.72	$9.90	$9.25	$9.11	$0.00	$69.98
LABORERS - ZONE 2	6/1/2026	$43.16	$9.90	$9.25	$9.11	$0.00	$71.42
	12/1/2026	$44.60	$9.90	$9.25	$9.11	$0.00	$72.86
	6/1/2027	$46.05	$9.90	$9.25	$9.11	$0.00	$74.31

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2027	$47.50	$9.90	$9.25	$9.11	$0.00	$75.76
	6/1/2028	$49.00	$9.90	$9.25	$9.11	$0.00	$77.26
	12/1/2028	$50.50	$9.90	$9.25	$9.11	$0.00	$78.76

Apprentice: LABORER

Effective Date: 6/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$24.20	$9.90	$9.25	$9.11	$0.00	$52.46
2	70.00	$28.24	$9.90	$9.25	$9.11	$0.00	$56.50
3	80.00	$32.27	$9.90	$9.25	$9.11	$0.00	$60.53
4	90.00	$36.31	$9.90	$9.25	$9.11	$0.00	$64.57

Apprentice: LABORER

Effective Date: 12/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$25.03	$9.90	$9.25	$9.11	$0.00	$53.29
2	70.00	$29.20	$9.90	$9.25	$9.11	$0.00	$57.46
3	80.00	$33.38	$9.90	$9.25	$9.11	$0.00	$61.64
4	90.00	$37.55	$9.90	$9.25	$9.11	$0.00	$65.81

LABORER (HEAVY & HIGHWAY)	6/1/2025	$40.34	$9.90	$9.25	$9.21	$0.00	$68.70
LABORERS	12/1/2025	$41.72	$9.90	$9.25	$9.21	$0.00	$70.08
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$43.16	$9.90	$9.25	$9.21	$0.00	$71.52
	12/1/2026	$44.60	$9.90	$9.25	$9.21	$0.00	$72.96

Apprentice: LABORER (HEAVY & HIGHWAY)

Effective Date: 6/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$24.20	$9.90	$9.25	$9.21	$0.00	$52.56
2	70.00	$28.24	$9.90	$9.25	$9.21	$0.00	$56.60
3	80.00	$32.27	$9.90	$9.25	$9.21	$0.00	$60.63
4	90.00	$36.31	$9.90	$9.25	$9.21	$0.00	$64.67

Apprentice: LABORER (HEAVY & HIGHWAY)

Effective Date: 12/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$25.03	$9.90	$9.25	$9.21	$0.00	$53.39
2	70.00	$29.20	$9.90	$9.25	$9.21	$0.00	$57.56
3	80.00	$33.38	$9.90	$9.25	$9.21	$0.00	$61.74
4	90.00	$37.55	$9.90	$9.25	$9.21	$0.00	$65.91

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORER: CARPENTER TENDER LABORERS LABORERS - ZONE 2	6/1/2025	$40.34	$9.90	$9.25	$9.11	$0.00	$68.60
	12/1/2025	$41.72	$9.90	$9.25	$9.11	$0.00	$69.98
	6/1/2026	$43.16	$9.90	$9.25	$9.11	$0.00	$71.42
	12/1/2026	$44.60	$9.90	$9.25	$9.11	$0.00	$72.86
	6/1/2027	$46.05	$9.90	$9.25	$9.11	$0.00	$74.31
	12/1/2027	$47.50	$9.90	$9.25	$9.11	$0.00	$75.76
	6/1/2028	$49.00	$9.90	$9.25	$9.11	$0.00	$77.26
	12/1/2028	$50.50	$9.90	$9.25	$9.11	$0.00	$78.76
For apprentice rates see "Apprentice- LABORER"							
LABORER: CEMENT FINISHER TENDER LABORERS LABORERS - ZONE 2	6/1/2025	$40.34	$9.90	$9.25	$9.11	$0.00	$68.60
	12/1/2025	$41.72	$9.90	$9.25	$9.11	$0.00	$69.98
	6/1/2026	$43.16	$9.90	$9.25	$9.11	$0.00	$71.42
	12/1/2026	$44.60	$9.90	$9.25	$9.11	$0.00	$72.86
	6/1/2027	$46.05	$9.90	$9.25	$9.11	$0.00	$74.31
	12/1/2027	$47.50	$9.90	$9.25	$9.11	$0.00	$75.76
	6/1/2028	$49.00	$9.90	$9.25	$9.11	$0.00	$77.26
	12/1/2028	$50.50	$9.90	$9.25	$9.11	$0.00	$78.76
For apprentice rates see "Apprentice- LABORER"							
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER LABORERS LABORERS - ZONE 2	6/2/2025	$40.43	$9.90	$9.25	$9.17	$0.00	$68.75
	12/1/2025	$41.81	$9.90	$9.25	$9.17	$0.00	$70.13
	6/1/2026	$43.25	$9.90	$9.25	$9.17	$0.00	$71.57
	12/7/2026	$44.69	$9.90	$9.25	$9.17	$0.00	$73.01
	6/7/2027	$46.14	$9.90	$9.25	$9.17	$0.00	$74.46
	12/6/2027	$47.59	$9.90	$9.25	$9.17	$0.00	$75.91
	6/5/2028	$49.09	$9.90	$9.25	$9.17	$0.00	$77.41
	12/4/2028	$50.59	$9.90	$9.25	$9.17	$0.00	$78.91
For apprentice rates see "Apprentice- LABORER"							
LABORER: MASON TENDER LABORERS LABORERS - ZONE 2	6/1/2025	$40.59	$9.90	$9.25	$9.11	$0.00	$68.85
	12/1/2025	$41.97	$9.90	$9.25	$9.11	$0.00	$70.23
	6/1/2026	$43.41	$9.90	$9.25	$9.11	$0.00	$71.67
	12/1/2026	$44.85	$9.90	$9.25	$9.11	$0.00	$73.11
	6/1/2027	$46.30	$9.90	$9.25	$9.11	$0.00	$74.56
	12/1/2027	$47.75	$9.90	$9.25	$9.11	$0.00	$76.01
	6/1/2028	$49.25	$9.90	$9.25	$9.11	$0.00	$77.51
	12/1/2028	$50.75	$9.90	$9.25	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
LABORER: MASON TENDER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2025	$40.59	$9.90	$9.25	$9.21	$0.00	$68.95
	12/1/2025	$41.97	$9.90	$9.25	$9.21	$0.00	$70.33
	6/1/2026	$43.41	$9.90	$9.25	$9.21	$0.00	$71.77
	12/1/2026	$44.85	$9.90	$9.25	$9.21	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
LABORER: MULTI-TRADE TENDER LABORERS LABORERS - ZONE 2	6/1/2025	$40.34	$9.90	$9.25	$9.11	$0.00	$68.60
	12/1/2025	$41.72	$9.90	$9.25	$9.11	$0.00	$69.98
	6/1/2026	$43.16	$9.90	$9.25	$9.11	$0.00	$71.42
	12/1/2026	$44.60	$9.90	$9.25	$9.11	$0.00	$72.86

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	6/1/2027	$46.05	$9.90	$9.25	$9.11	$0.00	$74.31
	12/1/2027	$47.50	$9.90	$9.25	$9.11	$0.00	$75.76
	6/1/2028	$49.00	$9.90	$9.25	$9.11	$0.00	$77.26
	12/1/2028	$50.50	$9.90	$9.25	$9.11	$0.00	$78.76

For apprentice rates see "Apprentice- LABORER"

LABORER: TREE REMOVER LABORERS LABORERS - ZONE 2	6/1/2025	$40.34	$9.90	$9.25	$9.11	$0.00	$68.60
	12/1/2025	$41.72	$9.90	$9.25	$9.11	$0.00	$69.98
	6/1/2026	$43.16	$9.90	$9.25	$9.11	$0.00	$71.42
	12/1/2026	$44.60	$9.90	$9.25	$9.11	$0.00	$72.86
	6/1/2027	$46.05	$9.90	$9.25	$9.11	$0.00	$74.31
	12/1/2027	$47.50	$9.90	$9.25	$9.11	$0.00	$75.76
	6/1/2028	$49.00	$9.90	$9.25	$9.11	$0.00	$77.26
	12/1/2028	$50.50	$9.90	$9.25	$9.11	$0.00	$78.76

This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"

LASER BEAM OPERATOR LABORERS LABORERS - ZONE 2	6/1/2025	$40.59	$9.90	$9.25	$9.11	$0.00	$68.85
	12/1/2025	$41.97	$9.90	$9.25	$9.11	$0.00	$70.23
	6/1/2026	$43.41	$9.90	$9.25	$9.11	$0.00	$71.67
	12/1/2026	$44.85	$9.90	$9.25	$9.11	$0.00	$73.11
	6/1/2027	$46.30	$9.90	$9.25	$9.11	$0.00	$74.56
	12/1/2027	$47.75	$9.90	$9.25	$9.11	$0.00	$76.01
	6/1/2028	$49.25	$9.90	$9.25	$9.11	$0.00	$77.51
	12/1/2028	$50.75	$9.90	$9.25	$9.11	$0.00	$79.01

For apprentice rates see "Apprentice- LABORER"

LASER BEAM OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2025	$40.59	$9.90	$9.25	$9.21	$0.00	$68.95
	12/1/2025	$41.97	$9.90	$9.25	$9.21	$0.00	$70.33
	6/1/2026	$43.41	$9.90	$9.25	$9.21	$0.00	$71.77
	12/1/2026	$44.85	$9.90	$9.25	$9.21	$0.00	$73.21

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)

MARBLE & TILE FINISHERS BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 - MARBLE & TILE	2/1/2025	$50.36	$11.49	$15.57	$6.05	$0.00	$83.47
	8/1/2025	$52.08	$11.49	$15.57	$6.05	$0.00	$85.19
	2/1/2026	$53.16	$11.49	$15.57	$6.05	$0.00	$86.27
	8/1/2026	$54.92	$11.49	$15.57	$6.05	$0.00	$88.03
	2/1/2027	$56.04	$11.49	$15.57	$6.05	$0.00	$89.15

Apprentice: MARBLE & TILE FINISHERS

Effective Date: 2/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$25.18	$11.49	$15.57	$6.05	$0.00	$58.29
2	60.00	$30.22	$11.49	$15.57	$6.05	$0.00	$63.33
3	70.00	$35.25	$11.49	$15.57	$6.05	$0.00	$68.36
4	80.00	$40.29	$11.49	$15.57	$6.05	$0.00	$73.40
5	90.00	$45.32	$11.49	$15.57	$6.05	$0.00	$78.43

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
MARBLE MASONS,TILELAYERS & TERRAZZO MECH BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 - MARBLE & TILE	2/1/2025	$65.82	$11.49	$15.57	$7.99	$0.00	$100.87
	8/1/2025	$67.97	$11.49	$15.57	$7.99	$0.00	$103.02
	2/1/2026	$69.32	$11.49	$15.57	$7.99	$0.00	$104.37
	8/1/2026	$71.52	$11.49	$15.57	$7.99	$0.00	$106.57
	2/1/2027	$72.92	$11.49	$15.57	$7.99	$0.00	$107.97

Apprentice: MARBLE & TILE FINISHERS

Effective Date: 8/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$26.04	$11.49	$15.57	$6.05	$0.00	$59.15
2	60.00	$31.25	$11.49	$15.57	$6.05	$0.00	$64.36
3	70.00	$36.46	$11.49	$15.57	$6.05	$0.00	$69.57
4	80.00	$41.66	$11.49	$15.57	$6.05	$0.00	$74.77
5	90.00	$46.87	$11.49	$15.57	$6.05	$0.00	$79.98

Apprentice: MARBLE MASONS,TILELAYERS & TERRAZZO MECH

Effective Date: 2/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$32.91	$11.49	$15.57	$7.99	$0.00	$67.96
2	60.00	$39.49	$11.49	$15.57	$7.99	$0.00	$74.54
3	70.00	$46.07	$11.49	$15.57	$7.99	$0.00	$81.12
4	80.00	$52.66	$11.49	$15.57	$7.99	$0.00	$87.71
5	90.00	$59.24	$11.49	$15.57	$7.99	$0.00	$94.29

Apprentice: MARBLE MASONS,TILELAYERS & TERRAZZO MECH

Effective Date: 8/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$33.99	$11.49	$15.57	$7.99	$0.00	$69.04
2	60.00	$40.78	$11.49	$15.57	$7.99	$0.00	$75.83
3	70.00	$47.58	$11.49	$15.57	$7.99	$0.00	$82.63
4	80.00	$54.38	$11.49	$15.57	$7.99	$0.00	$89.43
5	90.00	$61.17	$11.49	$15.57	$7.99	$0.00	$96.22

MECH. SWEEPER OPERATOR (ON CONST. SITES) OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2025	$57.68	$15.55	$13.25	$3.25	$0.00	$89.73
	12/1/2025	$59.12	$15.55	$13.25	$3.25	$0.00	$91.17
	6/1/2026	$60.40	$15.55	$13.25	$3.25	$0.00	$92.45
	12/1/2026	$61.84	$15.55	$13.25	$3.25	$0.00	$93.89

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANICS MAINTENANCE OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2025	$57.68	$15.55	$13.25	$3.25	$0.00	$89.73
	12/1/2025	$59.12	$15.55	$13.25	$3.25	$0.00	$91.17
	6/1/2026	$60.40	$15.55	$13.25	$3.25	$0.00	$92.45

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2026	$61.84	$15.55	$13.25	$3.25	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
MILLWRIGHT (Zone 2)	1/6/2025	$45.09	$10.08	$11.47	$10.00	$0.00	$76.64
MILLWRIGHTS LOCAL 1121 MILLWRIGHTS LOCAL 1121 - Zone 2	1/5/2026	$47.42	$10.08	$11.47	$10.00	$0.00	$78.97

Apprentice: MILLWRIGHT (Zone 2)

Effective Date: 1/6/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	$24.80	$10.08	$0.00	$5.50	$0.00	$40.38
2	65.00	$29.31	$10.08	$0.00	$6.50	$0.00	$45.89
3	75.00	$33.82	$10.08	$11.47	$7.50	$0.00	$62.87
4	85.00	$38.33	$10.08	$11.47	$8.50	$0.00	$68.38

Apprentice: MILLWRIGHT (Zone 2)

Effective Date: 1/5/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	$26.08	$10.08	$0.00	$5.50	$0.00	$41.66
2	65.00	$30.82	$10.08	$0.00	$6.50	$0.00	$47.40
3	75.00	$35.57	$10.08	$11.47	$7.50	$0.00	$64.62
4	85.00	$40.31	$10.08	$11.47	$8.50	$0.00	$70.36

MORTAR MIXER	6/1/2025	$40.59	$9.90	$9.25	$9.11	$0.00	$68.85
LABORERS LABORERS - ZONE 2	12/1/2025	$41.97	$9.90	$9.25	$9.11	$0.00	$70.23
	6/1/2026	$43.41	$9.90	$9.25	$9.11	$0.00	$71.67
	12/1/2026	$44.85	$9.90	$9.25	$9.11	$0.00	$73.11
	6/1/2027	$46.30	$9.90	$9.25	$9.11	$0.00	$74.56
	12/1/2027	$47.75	$9.90	$9.25	$9.11	$0.00	$76.01
	6/1/2028	$49.25	$9.90	$9.25	$9.11	$0.00	$77.51
	12/1/2028	$50.75	$9.90	$9.25	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
OILER (OTHER THAN TRUCK CRANES,GRADALLS)	6/1/2025	$25.97	$15.30	$13.15	$3.25	$0.00	$57.67
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2025	$26.63	$15.30	$13.15	$3.25	$0.00	$58.33
	6/1/2026	$27.22	$15.30	$13.15	$3.25	$0.00	$58.92
	12/1/2026	$27.89	$15.30	$13.15	$3.25	$0.00	$59.59
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
OILER (TRUCK CRANES, GRADALLS)	6/1/2025	$31.80	$15.30	$13.15	$3.25	$0.00	$63.50
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2025	$32.60	$15.30	$13.15	$3.25	$0.00	$64.30
	6/1/2026	$33.32	$15.30	$13.15	$3.25	$0.00	$65.02
	12/1/2026	$34.12	$15.30	$13.15	$3.25	$0.00	$65.82
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
OTHER POWER DRIVEN EQUIPMENT - CLASS II	6/1/2025	$57.68	$15.55	$13.25	$3.25	$0.00	$89.73

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
OPERATING ENGINEERS LOCAL 4	12/1/2025	$59.12	$15.55	$13.25	$3.25	$0.00	$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	$60.40	$15.55	$13.25	$3.25	$0.00	$92.45
	12/1/2026	$61.84	$15.55	$13.25	$3.25	$0.00	$93.89

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

PAINTER (BRIDGES/TANKS) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 2	1/1/2025	$58.46	$9.95	$11.85	$12.10	$0.00	$92.36

Apprentice: PAINTER (BRIDGES/TANKS)

Effective Date: 1/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.23	$9.95	$0.00	$0.00	$0.00	$39.18
2	55.00	$32.15	$9.95	$0.00	$6.66	$0.00	$48.76
3	60.00	$35.08	$9.95	$0.00	$7.26	$0.00	$52.29
4	65.00	$38.00	$9.95	$0.00	$7.87	$0.00	$55.82
5	70.00	$40.92	$9.95	$11.85	$8.47	$0.00	$71.19
6	75.00	$43.85	$9.95	$11.85	$9.08	$0.00	$74.73
7	80.00	$46.77	$9.95	$11.85	$9.68	$0.00	$78.25
8	90.00	$52.61	$9.95	$11.85	$10.89	$0.00	$85.30

PAINTER (SPRAY OR SANDBLAST, NEW) * * If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 2	1/1/2025	$49.36	$9.95	$11.85	$12.10	$0.00	$83.26

Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) *

Effective Date: 1/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.68	$9.95	$0.00	$0.00	$0.00	$34.63
2	55.00	$27.15	$9.95	$0.00	$6.66	$0.00	$43.76
3	60.00	$29.62	$9.95	$0.00	$7.26	$0.00	$46.83
4	65.00	$32.08	$9.95	$0.00	$7.87	$0.00	$49.90
5	70.00	$34.55	$9.95	$11.85	$8.47	$0.00	$64.82
6	75.00	$37.02	$9.95	$11.85	$9.08	$0.00	$67.90
7	80.00	$39.49	$9.95	$11.85	$9.68	$0.00	$70.97
8	90.00	$44.42	$9.95	$11.85	$10.89	$0.00	$77.11

PAINTER (SPRAY OR SANDBLAST, REPAINT) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 2	1/1/2025	$47.42	$9.95	$11.85	$12.10	$0.00	$81.32

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)

Effective Date: 1/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$23.71	$9.95	$0.00	$0.00	$0.00	$33.66
2	55.00	$26.08	$9.95	$0.00	$6.66	$0.00	$42.69
3	60.00	$28.45	$9.95	$0.00	$7.26	$0.00	$45.66
4	65.00	$30.82	$9.95	$0.00	$7.87	$0.00	$48.64
5	70.00	$33.19	$9.95	$11.85	$8.47	$0.00	$63.46
6	75.00	$35.57	$9.95	$11.85	$9.08	$0.00	$66.45
7	80.00	$37.94	$9.95	$11.85	$9.68	$0.00	$69.42
8	90.00	$42.68	$9.95	$11.85	$10.89	$0.00	$75.37

PAINTER / TAPER (BRUSH, NEW) * 1/1/2025 $47.96 $9.95 $11.85 $12.10 $0.00 $81.86
* If 30% or more of surfaces to be painted are new construction,
NEW paint rate shall be used.
PAINTERS LOCAL 35
PAINTERS LOCAL 35 - ZONE 2

Apprentice: PAINTER / TAPER (BRUSH, NEW) *

Effective Date: 1/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$23.98	$9.95	$0.00	$0.00	$0.00	$33.93
2	55.00	$26.38	$9.95	$0.00	$6.66	$0.00	$42.99
3	60.00	$28.78	$9.95	$0.00	$7.26	$0.00	$45.99
4	65.00	$31.17	$9.95	$0.00	$7.87	$0.00	$48.99
5	70.00	$33.57	$9.95	$11.85	$8.47	$0.00	$63.84
6	75.00	$35.97	$9.95	$11.85	$9.08	$0.00	$66.85
7	80.00	$38.37	$9.95	$11.85	$9.68	$0.00	$69.85
8	90.00	$43.16	$9.95	$11.85	$10.89	$0.00	$75.85

PAINTER / TAPER (BRUSH, REPAINT) 1/1/2025 $46.02 $9.95 $11.85 $12.10 $0.00 $79.92
PAINTERS LOCAL 35
PAINTERS LOCAL 35 - ZONE 2

Apprentice: PAINTER / TAPER (BRUSH, REPAINT)

Effective Date: 1/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$23.01	$9.95	$0.00	$0.00	$0.00	$32.96
2	55.00	$25.31	$9.95	$0.00	$6.66	$0.00	$41.92
3	60.00	$27.61	$9.95	$0.00	$7.26	$0.00	$44.82
4	65.00	$29.91	$9.95	$0.00	$7.87	$0.00	$47.73
5	70.00	$32.21	$9.95	$11.85	$8.47	$0.00	$62.48
6	75.00	$34.52	$9.95	$11.85	$9.08	$0.00	$65.40

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: PAINTER / TAPER (BRUSH, REPAINT)							
Effective Date: 1/1/2025							
Step / Percent		**Apprentice Base Wage**					
7 / 80.00		$36.82	$9.95	$11.85	$9.68	$0.00	$68.30
8 / 90.00		$41.42	$9.95	$11.85	$10.89	$0.00	$74.11
PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY)	6/1/2025	$40.34	$9.90	$9.25	$9.21	$0.00	$68.70
LABORERS	12/1/2025	$41.72	$9.90	$9.25	$9.21	$0.00	$70.08
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$43.16	$9.90	$9.25	$9.21	$0.00	$71.52
	12/1/2026	$44.60	$9.90	$9.25	$9.21	$0.00	$72.96
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
PANEL & PICKUP TRUCKS DRIVER	6/1/2025	$40.78	$15.57	$20.17	$0.00	$0.00	$76.52
TEAMSTERS JOINT COUNCIL NO. 10	12/1/2025	$40.78	$15.57	$21.78	$0.00	$0.00	$78.13
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	$40.78	$16.17	$21.78	$0.00	$0.00	$78.73
	6/1/2026	$41.78	$16.17	$21.78	$0.00	$0.00	$79.73
	12/1/2026	$41.78	$16.17	$23.52	$0.00	$0.00	$81.47
	1/1/2027	$41.78	$16.77	$23.52	$0.00	$0.00	$82.07
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)	8/1/2024	$55.79	$10.08	$11.62	$12.67	$0.00	$90.16
PILE DRIVER LOCAL 56							
PILE DRIVER LOCAL 56 (ZONE 1)							
For apprentice rates see "Apprentice- PILE DRIVER"							
PILE DRIVER	8/1/2024	$55.79	$10.08	$11.62	$12.67	$0.00	$90.16
PILE DRIVER LOCAL 56							
PILE DRIVER LOCAL 56 (ZONE 1)							
Apprentice: PILE DRIVER							
Effective Date: 8/1/2024							
Step / Percent		**Apprentice Base Wage**					
1 / 45.00		$25.11	$10.08	$0.00	$2.53	$0.00	$37.72
2 / 55.00		$30.68	$10.08	$0.00	$5.07	$0.00	$45.83
3 / 70.00		$39.05	$10.08	$11.62	$7.60	$0.00	$68.35
4 / 80.00		$44.63	$10.08	$11.62	$10.14	$0.00	$76.47
PIPELAYER	6/1/2025	$40.59	$9.90	$9.25	$9.11	$0.00	$68.85
LABORERS	12/1/2025	$41.97	$9.90	$9.25	$9.11	$0.00	$70.23
LABORERS - ZONE 2	6/1/2026	$43.41	$9.90	$9.25	$9.11	$0.00	$71.67
	12/1/2026	$44.85	$9.90	$9.25	$9.11	$0.00	$73.11
	6/1/2027	$46.30	$9.90	$9.25	$9.11	$0.00	$74.56
	12/1/2027	$47.75	$9.90	$9.25	$9.11	$0.00	$76.01
	6/1/2028	$49.25	$9.90	$9.25	$9.11	$0.00	$77.51
	12/1/2028	$50.75	$9.90	$9.25	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
PIPELAYER (HEAVY & HIGHWAY)	6/1/2025	$40.59	$9.90	$9.25	$9.21	$0.00	$68.95
LABORERS	12/1/2025	$41.97	$9.90	$9.25	$9.21	$0.00	$70.33
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$43.41	$9.90	$9.25	$9.21	$0.00	$71.77
	12/1/2026	$44.85	$9.90	$9.25	$9.21	$0.00	$73.21

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)

PLUMBER & PIPEFITTER	8/26/2024	$52.49	$10.80	$16.80	$4.60	$0.00	$84.69
PLUMBERS & PIPEFITTERS LOCAL 51	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44
PLUMBERS & PIPEFITTERS LOCAL 51							

Apprentice: PLUMBER & PIPEFITTER

Effective Date: 8/26/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$21.00	$10.15	$2.50	$0.00	$0.00	$33.65
2	50.00	$26.25	$10.15	$2.50	$0.00	$0.00	$38.90
3	60.00	$31.49	$10.15	$8.40	$0.50	$0.00	$50.54
4	70.00	$36.74	$10.15	$13.44	$0.80	$0.00	$61.13
5	80.00	$41.99	$10.15	$16.80	$1.00	$0.00	$69.94

Apprentice: PLUMBER & PIPEFITTER

Effective Date: 8/25/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$22.10	$10.15	$2.50	$0.00	$0.00	$34.75
2	50.00	$27.62	$10.15	$2.50	$0.00	$0.00	$40.27
3	60.00	$33.14	$10.15	$8.40	$0.50	$0.00	$52.19
4	70.00	$38.67	$10.15	$13.44	$0.80	$0.00	$63.06
5	80.00	$44.19	$10.15	$16.80	$1.00	$0.00	$72.14

PNEUMATIC CONTROLS (TEMP.)	8/26/2024	$52.49	$10.80	$16.80	$4.60	$0.00	$84.69
PLUMBERS & PIPEFITTERS LOCAL 51	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44
PLUMBERS & PIPEFITTERS LOCAL 51							

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

PNEUMATIC DRILL/TOOL OPERATOR	6/1/2025	$41.09	$9.90	$9.25	$8.29	$0.00	$68.53
LABORERS	12/1/2025	$42.47	$9.90	$9.25	$8.29	$0.00	$69.91
LABORERS - ZONE 2	6/1/2026	$43.91	$9.90	$9.25	$8.29	$0.00	$71.35
	12/1/2026	$45.35	$9.90	$9.25	$8.29	$0.00	$72.79
	6/1/2027	$46.80	$9.90	$9.25	$8.29	$0.00	$74.24
	12/1/2027	$48.25	$9.90	$9.25	$8.29	$0.00	$75.69
	6/1/2028	$49.75	$9.90	$9.25	$8.29	$0.00	$77.19
	12/1/2028	$51.25	$9.90	$9.25	$8.29	$0.00	$78.69

For apprentice rates see "Apprentice- LABORER"

PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY)	6/1/2025	$40.59	$9.90	$9.25	$9.21	$0.00	$68.95
LABORERS	12/1/2025	$41.97	$9.90	$9.25	$9.21	$0.00	$70.33
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$43.41	$9.90	$9.25	$9.21	$0.00	$71.77

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2026	$44.85	$9.90	$9.25	$9.21	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
POWDERMAN & BLASTER	6/1/2025	$41.34	$9.90	$9.25	$9.11	$0.00	$69.60
LABORERS	12/1/2025	$42.72	$9.90	$9.25	$9.11	$0.00	$70.98
LABORERS - ZONE 2	6/1/2026	$44.16	$9.90	$9.25	$9.11	$0.00	$72.42
	12/1/2026	$45.60	$9.90	$9.25	$9.11	$0.00	$73.86
	6/1/2027	$47.05	$9.90	$9.25	$9.11	$0.00	$75.31
	12/1/2027	$48.50	$9.90	$9.25	$9.11	$0.00	$76.76
	6/1/2028	$50.00	$9.90	$9.25	$9.11	$0.00	$78.26
	12/1/2028	$51.50	$9.90	$9.25	$9.11	$0.00	$79.76
For apprentice rates see "Apprentice- LABORER"							
POWDERMAN & BLASTER (HEAVY & HIGHWAY)	6/1/2025	$41.34	$9.65	$9.25	$9.21	$0.00	$69.45
LABORERS	12/1/2025	$42.72	$9.65	$9.25	$9.21	$0.00	$70.83
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$44.16	$9.65	$9.25	$9.21	$0.00	$72.27
	12/1/2026	$45.60	$9.65	$9.25	$9.21	$0.00	$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
POWER SHOVEL/DERRICK/TRENCHING MACHINE	6/1/2025	$58.33	$15.55	$13.25	$3.25	$0.00	$90.38
OPERATING ENGINEERS LOCAL 4	12/1/2025	$59.78	$15.55	$13.25	$3.25	$0.00	$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	$61.08	$15.55	$13.25	$3.25	$0.00	$93.13
	12/1/2026	$62.53	$15.55	$13.25	$3.25	$0.00	$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
PUMP OPERATOR (CONCRETE)	6/1/2025	$57.68	$15.55	$13.25	$3.25	$0.00	$89.73
OPERATING ENGINEERS LOCAL 4	12/1/2025	$59.12	$15.55	$13.25	$3.25	$0.00	$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	$60.40	$15.55	$13.25	$3.25	$0.00	$92.45
	12/1/2026	$61.84	$15.55	$13.25	$3.25	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
PUMP OPERATOR (DEWATERING, OTHER)	6/1/2025	$37.52	$15.55	$13.25	$3.25	$0.00	$69.57
OPERATING ENGINEERS LOCAL 4	12/1/2025	$38.47	$15.55	$13.25	$3.25	$0.00	$70.52
OPERATING ENGINEERS LOCAL 4	6/1/2026	$39.33	$15.55	$13.25	$3.25	$0.00	$71.38
	12/1/2026	$40.28	$15.55	$13.25	$3.25	$0.00	$72.33
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
READY-MIX CONCRETE DRIVER	1/1/2025	$27.60	$11.26	$6.15	$0.00	$0.00	$45.01
TEAMSTERS 170							
TEAMSTERS 170 - Dauphinais (Bellingham)							
RECLAIMERS	6/1/2025	$57.68	$15.55	$13.25	$3.25	$0.00	$89.73
OPERATING ENGINEERS LOCAL 4	12/1/2025	$59.12	$15.55	$13.25	$3.25	$0.00	$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	$60.40	$15.55	$13.25	$3.25	$0.00	$92.45
	12/1/2026	$61.84	$15.55	$13.25	$3.25	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
RIDE-ON MOTORIZED BUGGY OPERATOR	6/1/2025	$40.59	$9.90	$9.25	$9.11	$0.00	$68.85
LABORERS	12/1/2025	$41.97	$9.90	$9.25	$9.11	$0.00	$70.23
LABORERS - ZONE 2	6/1/2026	$43.41	$9.90	$9.25	$9.11	$0.00	$71.67
	12/1/2026	$44.85	$9.90	$9.25	$9.11	$0.00	$73.11

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	6/1/2027	$46.30	$9.90	$9.25	$9.11	$0.00	$74.56
	12/1/2027	$47.75	$9.90	$9.25	$9.11	$0.00	$76.01
	6/1/2028	$49.25	$9.90	$9.25	$9.11	$0.00	$77.51
	12/1/2028	$50.75	$9.90	$9.25	$9.11	$0.00	$79.01

For apprentice rates see "Apprentice- LABORER"

ROLLER/SPREADER/MULCHING MACHINE	6/1/2025	$57.68	$15.55	$13.25	$3.25	$0.00	$89.73
OPERATING ENGINEERS LOCAL 4	12/1/2025	$59.12	$15.55	$13.25	$3.25	$0.00	$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	$60.40	$15.55	$13.25	$3.25	$0.00	$92.45
	12/1/2026	$61.84	$15.55	$13.25	$3.25	$0.00	$93.89

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg)	2/1/2025	$52.03	$13.28	$12.67	$9.03	$0.00	$87.01
ROOFERS LOCAL 33	8/1/2025	$53.53	$13.28	$12.67	$9.03	$0.00	$88.51
ROOFERS LOCAL 33	2/1/2026	$54.78	$13.28	$12.67	$9.03	$0.00	$89.76

Apprentice: ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg)

Effective Date: 2/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$26.02	$13.28	$6.52	$9.03	$0.00	$54.85
2	60.00	$31.22	$13.28	$12.67	$9.03	$0.00	$66.20
3	65.00	$33.82	$13.28	$12.67	$9.03	$0.00	$68.80
4	75.00	$39.02	$13.28	$12.67	$9.03	$0.00	$74.00
5	85.00	$44.23	$13.28	$12.67	$9.03	$0.00	$79.21

Apprentice: ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg)

Effective Date: 8/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$26.77	$13.28	$6.52	$9.03	$0.00	$55.60
2	60.00	$32.12	$13.28	$12.67	$9.03	$0.00	$67.10
3	65.00	$34.79	$13.28	$12.67	$9.03	$0.00	$69.77
4	75.00	$40.15	$13.28	$12.67	$9.03	$0.00	$75.13
5	85.00	$45.50	$13.28	$12.67	$9.03	$0.00	$80.48

ROOFER SLATE / TILE / PRECAST CONCRETE	2/1/2025	$52.28	$13.28	$12.67	$9.03	$0.00	$87.26
ROOFERS LOCAL 33	8/1/2025	$53.78	$13.28	$12.67	$9.03	$0.00	$88.76
ROOFERS LOCAL 33	2/1/2026	$55.03	$13.28	$12.67	$9.03	$0.00	$90.01

For apprentice rates see "Apprentice- ROOFER"

SHEETMETAL WORKER	2/1/2025	$59.13	$14.91	$18.74	$9.53	$2.98	$105.29
SHEETMETAL WORKERS LOCAL 17	8/1/2025	$60.98	$14.91	$18.74	$9.53	$2.98	$107.14
SHEETMETAL WORKERS LOCAL 17 - A	2/1/2026	$62.93	$14.91	$18.74	$9.53	$2.98	$109.09

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: SHEETMETAL WORKER

Effective Date: 2/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	42.00	$24.83	$14.91	$6.13	$0.00	$0.00	$45.87
2	42.00	$24.83	$14.91	$6.13	$0.00	$0.00	$45.87
3	47.00	$27.79	$14.91	$11.01	$1.25	$1.62	$56.58
4	47.00	$27.79	$14.91	$11.01	$1.25	$1.62	$56.58
5	52.00	$30.75	$14.91	$11.74	$1.50	$1.74	$60.64
6	52.00	$30.75	$14.91	$11.74	$1.75	$1.75	$60.90
7	60.00	$35.48	$14.91	$12.90	$2.00	$1.93	$67.22
8	65.00	$38.43	$14.91	$13.63	$2.25	$2.04	$71.26
9	75.00	$44.35	$14.91	$15.09	$2.75	$2.28	$79.38
10	85.00	$50.26	$14.91	$16.55	$2.75	$2.49	$86.96

Apprentice: SHEETMETAL WORKER

Effective Date: 8/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	42.00	$25.61	$14.91	$6.13	$0.00	$0.00	$46.65
2	42.00	$25.61	$14.91	$6.13	$0.00	$0.00	$46.65
3	47.00	$28.66	$14.91	$11.01	$1.25	$1.62	$57.45
4	47.00	$28.66	$14.91	$11.01	$1.25	$1.62	$57.45
5	52.00	$31.71	$14.91	$11.74	$1.50	$1.74	$61.60
6	52.00	$31.71	$14.91	$11.74	$1.75	$1.75	$61.86
7	60.00	$36.59	$14.91	$12.90	$2.00	$1.93	$68.33
8	65.00	$39.64	$14.91	$13.63	$2.25	$2.04	$72.47
9	75.00	$45.74	$14.91	$15.09	$2.75	$2.28	$80.77
10	85.00	$51.83	$14.91	$16.55	$2.75	$2.49	$88.53

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
SPECIALIZED EARTH MOVING EQUIP < 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2025	$41.24	$15.57	$20.17	$0.00	$0.00	$76.98
	12/1/2025	$41.24	$15.57	$21.78	$0.00	$0.00	$78.59
	1/1/2026	$41.24	$16.17	$21.78	$0.00	$0.00	$79.19
	6/1/2026	$42.24	$16.17	$21.78	$0.00	$0.00	$80.19
	12/1/2026	$42.24	$16.17	$23.52	$0.00	$0.00	$81.93
	1/1/2027	$42.24	$16.77	$23.52	$0.00	$0.00	$82.53
SPECIALIZED EARTH MOVING EQUIP > 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2025	$41.53	$15.57	$20.17	$0.00	$0.00	$77.27
	12/1/2025	$41.53	$15.57	$21.78	$0.00	$0.00	$78.88
	1/1/2026	$41.53	$16.17	$21.78	$0.00	$0.00	$79.48
	6/1/2026	$42.53	$16.17	$21.78	$0.00	$0.00	$80.48
	12/1/2026	$42.53	$16.17	$23.52	$0.00	$0.00	$82.22
	1/1/2027	$42.53	$16.77	$23.52	$0.00	$0.00	$82.82
SPRINKLER FITTER SPRINKLER FITTERS LOCAL 550 SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1	3/1/2025	$72.14	$11.51	$7.30	$16.50	$0.00	$107.45

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: SPRINKLER FITTER							
Effective Date: 3/1/2025							
Step / Percent		**Apprentice Base Wage**					
1 / 35.00		$25.25	$11.51	$13.07	$0.00	$0.00	$49.83
2 / 40.00		$28.86	$11.51	$13.90	$0.00	$0.00	$54.27
3 / 45.00		$32.46	$11.51	$14.73	$0.00	$0.00	$58.70
4 / 50.00		$36.07	$11.51	$15.55	$0.00	$0.00	$63.13
5 / 55.00		$39.68	$11.51	$16.37	$0.00	$0.00	$67.56
6 / 60.00		$43.28	$11.51	$17.20	$0.00	$0.00	$71.99
7 / 65.00		$46.89	$11.51	$18.03	$0.00	$0.00	$76.43
8 / 70.00		$50.50	$11.51	$18.85	$0.00	$0.00	$80.86
9 / 75.00		$54.11	$11.51	$19.67	$0.00	$0.00	$85.29
10 / 80.00		$57.71	$11.51	$20.50	$0.00	$0.00	$89.72
STEAM BOILER OPERATOR	6/1/2025	$57.68	$15.55	$13.25	$3.25	$0.00	$89.73
OPERATING ENGINEERS LOCAL 4	12/1/2025	$59.12	$15.55	$13.25	$3.25	$0.00	$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	$60.40	$15.55	$13.25	$3.25	$0.00	$92.45
	12/1/2026	$61.84	$15.55	$13.25	$3.25	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN	6/1/2025	$57.68	$15.55	$13.25	$3.25	$0.00	$89.73
OPERATING ENGINEERS LOCAL 4	12/1/2025	$59.12	$15.55	$13.25	$3.25	$0.00	$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	$60.40	$15.55	$13.25	$3.25	$0.00	$92.45
	12/1/2026	$61.84	$15.55	$13.25	$3.25	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
TELECOMMUNICATION TECHNICIAN	9/1/2024	$40.69	$11.75	$11.53	$3.00	$0.00	$66.97
ELECTRICIANS LOCAL 223	9/1/2025	$42.52	$12.00	$12.05	$3.25	$0.00	$69.82
ELECTRICIANS LOCAL 223	9/1/2026	$44.41	$12.25	$12.59	$3.50	$0.00	$72.75
	9/1/2027	$46.51	$12.50	$13.18	$3.75	$0.00	$75.94
Apprentice: TELECOMMUNICATION TECHNICIAN							
Effective Date: 9/1/2024							
Step / Percent		**Apprentice Base Wage**					
1 / 0.00		$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
TERRAZZO FINISHERS	2/1/2025	$64.74	$11.49	$15.57	$8.02	$0.00	$99.82
BRICKLAYERS LOCAL 3	8/1/2025	$66.89	$11.49	$15.57	$8.02	$0.00	$101.97
BRICKLAYERS LOCAL 3 - MARBLE & TILE	2/1/2026	$68.24	$11.49	$15.57	$8.02	$0.00	$103.32
	8/1/2026	$70.44	$11.49	$15.57	$8.02	$0.00	$105.52
	2/1/2027	$71.84	$11.49	$15.57	$8.02	$0.00	$106.92

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: TERRAZZO FINISHERS

Effective Date: 2/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$32.37	$11.49	$15.57	$8.02	$0.00	$67.45
2	60.00	$38.84	$11.49	$15.57	$8.02	$0.00	$73.92
3	70.00	$45.32	$11.49	$15.57	$8.02	$0.00	$80.40
4	80.00	$51.79	$11.49	$15.57	$8.02	$0.00	$86.87
5	90.00	$58.27	$11.49	$15.57	$8.02	$0.00	$93.35

Apprentice: TERRAZZO FINISHERS

Effective Date: 8/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$33.45	$11.49	$15.57	$8.02	$0.00	$68.53
2	60.00	$40.13	$11.49	$15.57	$8.02	$0.00	$75.21
3	70.00	$46.82	$11.49	$15.57	$8.02	$0.00	$81.90
4	80.00	$53.51	$11.49	$15.57	$8.02	$0.00	$88.59
5	90.00	$60.20	$11.49	$15.57	$8.02	$0.00	$95.28

TEST BORING DRILLER LABORERS LABORERS - FOUNDATION AND MARINE	6/1/2025	$51.70	$9.90	$9.25	$9.80	$0.00	$80.65
	12/1/2025	$53.20	$9.90	$9.25	$9.80	$0.00	$82.15
	6/1/2026	$54.75	$9.90	$9.25	$9.80	$0.00	$83.70
	12/1/2026	$56.25	$9.90	$9.25	$9.80	$0.00	$85.20
For apprentice rates see "Apprentice- LABORER"							
TEST BORING DRILLER HELPER LABORERS LABORERS - FOUNDATION AND MARINE	6/1/2025	$47.82	$9.90	$9.25	$9.80	$0.00	$76.77
	12/1/2025	$49.32	$9.90	$9.25	$9.80	$0.00	$78.27
	6/1/2026	$50.87	$9.90	$9.25	$9.80	$0.00	$79.82
	12/1/2026	$52.37	$9.90	$9.25	$9.80	$0.00	$81.32
For apprentice rates see "Apprentice- LABORER"							
TEST BORING LABORER LABORERS LABORERS - FOUNDATION AND MARINE	6/1/2025	$47.70	$9.90	$9.25	$9.80	$0.00	$76.65
	12/1/2025	$49.20	$9.90	$9.25	$9.80	$0.00	$78.15
	6/1/2026	$50.75	$9.90	$9.25	$9.80	$0.00	$79.70
	12/1/2026	$52.25	$9.90	$9.25	$9.80	$0.00	$81.20
For apprentice rates see "Apprentice- LABORER"							
TRACTORS/PORTABLE STEAM GENERATORS OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2025	$57.68	$15.55	$13.25	$3.25	$0.00	$89.73
	12/1/2025	$59.12	$15.55	$13.25	$3.25	$0.00	$91.17
	6/1/2026	$60.40	$15.55	$13.25	$3.25	$0.00	$92.45
	12/1/2026	$61.84	$15.55	$13.25	$3.25	$0.00	$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
TRAILERS FOR EARTH MOVING EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10	6/1/2025	$41.82	$15.57	$20.17	$0.00	$0.00	$77.56
	12/1/2025	$41.82	$15.57	$21.78	$0.00	$0.00	$79.17

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	$41.82	$16.17	$21.78	$0.00	$0.00	$79.77
	6/1/2026	$42.82	$16.17	$21.78	$0.00	$0.00	$80.77
	12/1/2026	$42.82	$16.17	$23.52	$0.00	$0.00	$82.51
	1/1/2027	$42.82	$16.77	$23.52	$0.00	$0.00	$83.11
TUNNEL WORK - COMPRESSED AIR	6/1/2025	$59.93	$9.90	$9.25	$10.25	$0.00	$89.33
LABORERS	12/1/2025	$61.43	$9.90	$9.25	$10.25	$0.00	$90.83
LABORERS (COMPRESSED AIR)	6/1/2026	$62.98	$9.90	$9.25	$10.25	$0.00	$92.38
	12/1/2026	$64.48	$9.90	$9.25	$10.25	$0.00	$93.88
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE)	6/1/2025	$61.93	$9.90	$9.25	$10.25	$0.00	$91.33
LABORERS	12/1/2025	$63.43	$9.90	$9.25	$10.25	$0.00	$92.83
LABORERS (COMPRESSED AIR)	6/1/2026	$64.98	$9.90	$9.25	$10.25	$0.00	$94.38
	12/1/2026	$66.48	$9.90	$9.25	$10.25	$0.00	$95.88
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR	6/1/2025	$52.00	$9.90	$9.25	$10.25	$0.00	$81.40
LABORERS	12/1/2025	$53.50	$9.90	$9.25	$10.25	$0.00	$82.90
LABORERS (FREE AIR TUNNEL)	6/1/2026	$55.05	$9.90	$9.25	$10.25	$0.00	$84.45
	12/1/2026	$56.55	$9.90	$9.25	$10.25	$0.00	$85.95
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR (HAZ. WASTE)	6/1/2025	$54.00	$9.90	$9.25	$10.25	$0.00	$83.40
LABORERS	12/1/2025	$55.50	$9.90	$9.25	$10.25	$0.00	$84.90
LABORERS (FREE AIR TUNNEL)	6/1/2026	$57.05	$9.90	$9.25	$10.25	$0.00	$86.45
	12/1/2026	$58.55	$9.90	$9.25	$10.25	$0.00	$87.95
For apprentice rates see "Apprentice- LABORER"							
VAC-HAUL	6/1/2025	$41.24	$15.57	$20.17	$0.00	$0.00	$76.98
TEAMSTERS JOINT COUNCIL NO. 10	12/1/2025	$41.24	$15.57	$21.78	$0.00	$0.00	$78.59
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	$41.24	$16.17	$21.78	$0.00	$0.00	$79.19
	6/1/2026	$42.24	$16.17	$21.78	$0.00	$0.00	$80.19
	12/1/2026	$42.24	$16.17	$23.52	$0.00	$0.00	$81.93
	1/1/2027	$42.24	$16.77	$23.52	$0.00	$0.00	$82.53
WAGON DRILL OPERATOR	6/1/2025	$42.00	$9.65	$9.00	$8.70	$0.00	$69.35
LABORERS	12/1/2025	$43.38	$9.65	$9.00	$8.70	$0.00	$70.73
LABORERS - ZONE 2	6/1/2026	$44.82	$9.65	$9.00	$8.70	$0.00	$72.17
	12/1/2026	$46.26	$9.65	$9.00	$8.70	$0.00	$73.61
	6/1/2027	$47.71	$9.65	$9.00	$8.70	$0.00	$75.06
	12/1/2027	$49.16	$9.65	$9.00	$8.70	$0.00	$76.51
	6/1/2028	$50.66	$9.65	$9.00	$8.70	$0.00	$78.01
	12/1/2028	$52.16	$9.65	$9.00	$8.70	$0.00	$79.51
For apprentice rates see "Apprentice- LABORER"							
WAGON DRILL OPERATOR (HEAVY & HIGHWAY)	6/1/2025	$40.59	$9.90	$9.25	$9.21	$0.00	$68.95
LABORERS	12/1/2025	$41.97	$9.90	$9.25	$9.21	$0.00	$70.33
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$43.41	$9.90	$9.25	$9.21	$0.00	$71.77
	12/1/2026	$44.85	$9.90	$9.25	$9.21	$0.00	$73.21

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
WASTE WATER PUMP OPERATOR	6/1/2025	$58.33	$15.55	$13.25	$3.25	$0.00	$90.38
OPERATING ENGINEERS LOCAL 4	12/1/2025	$59.78	$15.55	$13.25	$3.25	$0.00	$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	$61.08	$15.55	$13.25	$3.25	$0.00	$93.13
	12/1/2026	$62.53	$15.55	$13.25	$3.25	$0.00	$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
WATER METER INSTALLER	8/26/2024	$52.49	$10.80	$16.80	$4.60	$0.00	$84.69
PLUMBERS & PIPEFITTERS LOCAL 51	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44
PLUMBERS & PIPEFITTERS LOCAL 51							
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"							

Additional Apprentice Information

All apprentices must be registered with the Division of Apprenticeship Training(DAS) in accordance with M.G.L.c. 23, §§ 11E-11L. Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the hourly prevailing wage rate established by the Commissioner under the provisions of M.G.L.c. 149, §§ 26-27D.

Apprentice ratios are established by DAS pursuant to M.G.L.c. 23, §§ 11E-11L. Ratios are expressed as the allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified. The ratios listed herein have been taken from relevant private collective bargaining agreements(CBAs) and are provided for illustrative purposes only. They have not been independently verified as being accurate or continuing to be accurate.

Parties having questions regarding what ratio to use should contact DAS.

DOCUMENT 00870

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS
(EXECUTIVE ORDER 11246)
Revised April 9, 2019

1. As used in these specifications:

   a. "Covered area" means the geographical area described in the solicitation from which this contract resulted:

   b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority.

   c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

   d. "Minority" includes:

      (i) Black (all persons having origins in any of the black African racial groups not of Hispanic origin);
      (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
      (iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
      (iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $ 10,000 the provisions of the specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in Paragraphs 7a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

   a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

   b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

   c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.

   d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

   e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

   f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

   g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

   h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisor's adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the Contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female work force participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables of affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11 The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as many be required by the Government and keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

APPENDIX A

The following goals and timetables for female utilization shall be included in all Federal and federally assisted construction contracts and subcontracts in excess of $ 10,000. The goals are applicable to the Contractor's aggregate on-site construction workforce whether or not part of that workforce is performing work on a Federal or federally-assisted construction contract or subcontract.

Area covered: Goal for Women apply nationwide

Goals and Timetables

Timetable	Goals (percent)
From Apr. 1, 1980 until further notice	6.9

APPENDIX B-80

Until further notice, the following goals for minority utilization in each construction craft and trade shall included in all Federal or federally assisted construction contracts and subcontracts in excess of $ 10,000 to be performed in the respective geographical areas. The goals are applicable to each nonexempt contractor's total on- site construction workforce, regardless of whether or not part of that workforce is performing work on a Federal, federally assisted or nonfederally related project, contract or subcontract.

Construction contractors participating in an approved Hometown Plan (see 41 CFR 6-4.5) are required to comply with the goals of the Hometown Plan with regard to construction work they perform in the area covered by the Hometown Plan. With regard to all their other covered construction work, such contractors are required to comply with the applicable SMSA or EA goal contained in this Appendix B-80.

Economic Areas

STATE:	Goals (percent)
MASSACHUSETTS	
004 Boston MA: SMSA Counties: 1123 Boston-Lowell-Brockton-Lawrence-Haverhill, MA-NH	4.0
MA Essex, MA Middlesex, MA Norfolk, MA Plymouth, MA Suffolk, NH Rockingham.	
5403 Fall River- New Bedford MA, Bristol	1.6
9243 Worcester-Fitchburg-Leominster, MA	1.6
6323 Springfield-Chicopee-Holyoke MA-CT MA Hampden, MA Hampshire	4.8
Non-SMSA Counties: MA Barnstable, MA Dukes, MA Nantucket	3.6
Non-SMSA Counties: MA Franklin	5.9

APPENDIX C

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor (hereinafter includes consultants) will comply with the Acts and Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Federal Highway Administration (FHWA), as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, national origin (including limited English proficiency), age, sex, disability, or low-income status in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

3. **Solicitations for Subcontractors, including Procurements of Materials and Equipment:** In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to nondiscrimination on the grounds of race, color, national origin (including limited English proficiency), age, sex, disability, or low-income status.

4. **Information and Reports:** The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto, and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Massachusetts Department of Transportation (MassDOT) or FHWA to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor will so certify to MassDOT or FHWA, as appropriate, and will set forth what efforts it has made to obtain the information.

5. **Sanctions for Noncompliance:** In the event of a contractor's noncompliance with the Nondiscrimination provisions of this contract, MassDOT will impose such contract sanctions as it or FHWA may determine to be appropriate, including, but not limited to:

    a. withholding payments to the contractor under the contract until the contractor complies; and/or
    b. cancelling, terminating, or suspending a control, in whole or in part.

6. **Incorporation of Provisions:** The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations, and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as MassDOT or FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request MassDOT to enter into any litigation to protect the interests of MassDOT. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

APPENDIX D

During the performance of this contact, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor," which includes consultants) agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

PERTINENT NON-DISCRIMINATION AUTHORITIES:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d *et seq.*, 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21

- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 U.S.C. § 4601) (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-Aid programs and projects)

- Federal-Aid Highway Act of 1973 (23 U.S.C. § 324 *et seq.*) (prohibits discrimination on the basis of sex)

- Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. § 794 *et seq.*), as amended (prohibits discrimination on the basis of disability) and 49 CFR Part 27

- The Age Discrimination Act of 1975, as amended (42 U.S.C. § 6101 *et seq.*) (prohibits discrimination on the basis of age)

- Airport and Airway Improvement Act of 1982 (49 U.S.C. § 471, Section 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex)

- The Civil Rights Restoration Act of 1987 (PL 100-209) (broadened the scope, coverage, and applicability of Title VI of the Civil Rights Act of 1964, the Age Discrimination Act of 1975, and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of Federal-Aid recipients, sub-recipients, and contractors, whether such programs or activities are Federally funded or not)

- Titles II and III of the Americans with Disabilities Act (42 U.S.C. §§ 12131-12189), as implemented by Department of Transportation regulations at 49 CFR parts 37 and 38 (prohibits discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities)

- The Federal Aviation Administration's Non-Discrimination Statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex)

- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations)

- Executive Order 13166, Improving Access to Services for People with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100)

- Title IX of the Education Amendments Act of 1972, as amended (20 U.S.C. 1681 *et seq.*) (prohibits discrimination on the basis of sex in education programs or activities)

*** END OF DOCUMENT ***

DOCUMENT 00875
TRAINEE SPECIAL PROVISIONS
Revised October, 2016

THE REQUIRED NUMBER OF TRAINEES TO BE TRAINED UNDER THIS CONTRACT WILL BE **3**

The contractor shall provide on-the job training aimed at developing full journeyworkers in the type of trade of job classification involved.

In the event that a contractor subcontracts a portion of the contract work, the General Contractor shall determine how many, if any, of the trainees are to be trained by the subcontractor, provided, however, that the contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The contractor shall also insure that this training special provision is made applicable to such subcontract. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

The number of trainees shall be distributed among the work classifications on the basis of the contractor's needs and the availability of journeyworkers in the various classifications within a reasonable area of recruitment. Prior to commencing construction, the contractor shall submit to the Massachusetts Department Of Transportation (MassDOT) for approval the number of trainees to be trained in each selected classification and training program to be used. Furthermore, the contractor shall specify the starting time for training in each of the classifications. The contractor will be credited for each trainee employed on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees as provided hereinafter.

Training and upgrading of minorities and women toward journeyworker status is a primary objective of the Training Special Provision. Accordingly, the contractor shall make every effort to enroll minority and women trainees (e.g., by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees) to the extent that such persons are available within a reasonable area of recruitment. The contractor will be responsible for demonstrating the steps that have been taken in pursuance thereof, prior to a determination as to whether the contractor is in compliance with this Training Special Provision. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training.

No employee shall be trained under this Special Provision in any classification in which he or she has successfully completed a training course leading to journeyworker status or in which he or she has been employed as a journeyworker. The contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used the contractor's records should document the finding in each case.

The minimum length and type of training for each classification will be as established in the training program selected by the contractor and approved by the Massachusetts Department Of Transportation and the Federal Highway Administration. The Massachusetts Department Of Transportation and the Federal Highway Administration shall approve a program if it is reasonably calculated to meet the equal employment opportunity obligations of the contractor and to qualify the average trainee for journeyworker status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau and training programs approved but not necessarily sponsored by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training shall also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts. Approval or acceptance of a training program shall be obtained from the State prior to commencing work on the classification covered by the program. It is the intention of these provisions that training is to be provided in the construction crafts rather that clerk-typist or secretarial-type positions. Training is permissible in lower level management positions such as office engineers, estimators, timekeepers, etc. where the training is oriented toward construction applications. Training in the laborer classification may be permitted provided that significant and meaningful training is provided and approved by the Federal Highway Administration division office. Some offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

Reimbursement

Under these Training Special Provisions, reimbursement will be as follows:

The Contractor will only be reimbursed 80 cents for each hour of on the job training as specified in the approved Training Program.

The Contractor is advised and encouraged that it may train additional persons in excess of the number specified and will be reimbursed as stated above. Reimbursement will be made even though the contractor receives additional training program funds from other sources, provided such other source does not specifically prohibit the contractor from receiving other reimbursement.

If less than full training specified in the approved training programs is provided, payment to the contractor will be made at a rate of 80 cents for each hour of training completed under this contract. However, no payment shall be made to the contractor if either the failure to provide the required training, or the failure to hire the trainee as a journeyworker, is caused by the contractor and evidences a lack of good faith on the part of the contractor in meeting the requirements of this Training Special Provision.

Payment

Trainees will be paid:

1. Percentage (%) of the journeyworker's rate as provided in the existing programs approved by the Department of Labor or Transportation as of September 15, 1970.

2. For journeyworker programs submitted by the Contractor and approved by Massachusetts Department Of Transportation and the Federal Highway Administration at least 60 percent of the appropriate minimum journeyworker's rate specified in the contract for the first half of the training period, 75 percent for the third quarter if the training period, and 90 percent for the last quarter of the training period.

3. For skilled laborer programs, the minimum starting wage rate of unskilled laborer. At the conclusion of training, he or she will be paid the minimum wage rate of the Classification for programs submitted by the Contractor and approved by the Massachusetts Department Of Transportation and the Federal Highway Administration.

4. For the purposes of meeting the legal requirements of State Prevailing Wage Law, please be advised that no person may be paid the Apprentice wage rate as listed on a MA Prevailing Wage Rates schedule, unless that person and program is registered with the Department of Labor Standards/Division of Apprentice Standards (DLS/DAS). Any person or program not registered with DLS/DAS, regardless of whether or not they are registered with any other federal, state, local, or private entity must be paid the journeyworker’s rate for the trade.

The contractor shall provide each trainee with a certification showing the type and length of training satisfactorily complete.

The contractor will provide for the maintenance of records and furnish periodic reports documenting his performance under this Training Special Provision.

Form FHWA-1409, Federal-aid Highway Construction Contracting Semi Annual Training Report, shall be submitted as per instructions on the Form.

*** END OF DOCUMENT ***

DOCUMENT 00880

Revised January 12, 2022

DEPARTMENT OF LABOR

Employment Standards Administration

MINIMUM WAGES FOR FEDERAL AND FEDERALLY ASSISTED CONTRACTS

"General Decision Number: MA20250017 07/18/2025

Superseded General Decision Number: MA20240017

State: Massachusetts

Construction Type: Highway

County: Bristol County in Massachusetts.

HIGHWAY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least $17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least $13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2025.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the

Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/03/2025
1	03/14/2025
2	03/21/2025
3	04/04/2025
4	07/11/2025
5	07/18/2025

ELEC0103-003 03/01/2025

	Rates	Fringes
ELECTRICIAN (Includes Traffic Signalization)	$ 64.26	36.99

ENGI0004-021 06/01/2025

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1	$ 57.83	33.70
GROUP 2	$ 57.18	33.70

FOOTNOTE FOR POWER EQUIPMENT OPERATORS:
A. PAID HOLIDAYS: New Year's Day, Washington's Birthday, Labor Day, Memorial Day, Independence Day, Patriot's Day, Columbus Day, Veteran's Day, Thanksgiving Day, Christmas Day

POWER EQUIPMENT OPERATORS CLASSIFICATIONS
Group 1: Backhoe/Excavator/Trackhoe; Bobcat/Skid Steer/Skid Loader; Broom/Sweeper; Crane; Gradall; Loader; Paver (Asphalt, Aggregate, and Concrete); Post Driver (Guardrail/Fences)
Group 2: Bulldozer; Grader/Blade; Milling Machine; Roller

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* IRON0007-029 03/16/2025

	Rates	Fringes

IRONWORKER, ORNAMENTAL.....$ 56.79 37.10

LABO0133-001 12/01/2024

	Rates	Fringes
LABORER (Concrete Surfacer).....	$ 46.20	29.85

LABO0385-001 12/01/2024

	Rates	Fringes
LABORER		
Common or General.....	$ 38.95	29.41
Fence Erection.....	$ 38.95	29.41

LABO0721-001 12/01/2024

	Rates	Fringes
LABORER (Guardrail Installation).....	$ 38.95	29.81

LABO0876-002 06/01/2018

	Rates	Fringes
LABORER (Landscape).....	$ 33.25	22.92

PAIN0035-023 07/01/2024

	Rates	Fringes
PAINTER (Steel).....	$ 56.76	36.00

SUMA2014-007 01/11/2017

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	$ 56.70	21.08
IRONWORKER, REINFORCING.....	$ 42.13	18.15
IRONWORKER, STRUCTURAL.....	$ 45.19	17.30
LABORER: Asphalt, Includes Raker, Shoveler, Spreader and Distributor.....	$ 34.72	16.01
LABORER: Concrete Saw (Hand		

Held/Walk Behind)	$ 44.43	14.18
LABORER: Jack Hammer	$ 35.32	18.48
OPERATOR: Forklift	$ 64.67	0.00
OPERATOR: Mechanic	$ 48.74	11.79
OPERATOR: Piledriver	$ 42.56	17.34
PAINTER: Spray (Linestriping)	$ 47.30	6.42
TRAFFIC CONTROL: Flagger	$ 23.00	20.44
TRAFFIC CONTROL: Laborer-Cones/ Barricades/Barrels - Setter/Mover/Sweeper	$ 53.35	12.78
TRUCK DRIVER: Concrete Truck	$ 33.69	15.79
TRUCK DRIVER: Dump Truck	$ 39.03	12.89
TRUCK DRIVER: Flatbed Truck	$ 48.53	0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates
in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to

reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

a) a survey underlying a wage determination
b) an existing published wage determination
c) an initial WHD letter setting forth a position on

a wage determination matter
d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor

200 Constitution Avenue, N.W.
Washington, DC 20210.

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END OF GENERAL DECISION"

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DOCUMENT A00801

SPECIAL PROVISIONS

MANSFIELD
Federal Aid Project No. NHP (NHS)/ HSI-003S (871) X
Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive

Labor participation goals for this Project shall be 15.3% for minorities and 6.9% for women for each job category. The goals are applicable to both Contractor's and Subcontractor's on-site construction workforce. Refer to Document 00820 for details.

SCOPE OF WORK

All work under this Contract shall be done in conformance with the *2025 Standard Specifications for Highways and Bridges, the Supplemental Specifications* contained in this book, the *Construction Standard Details* in effect as of June, 2025, the *1990 Standard Drawings for Signs and Supports*, the 2015 *Overhead Signal Structure and Foundation Standard Drawings*, the *2009 Manual on Uniform Traffic Control Devices (MUTCD) with Revisions 1, 2, and 3 and the November 2022 Massachusetts Amendments to the MUTCD, the 1968 Standard Drawings for Traffic Signals and Highway Lighting*, the latest edition of The *American Standard for Nursery Stock*, the Plans and these Special Provisions.

The work to be done under this contract consists of furnishing all necessary labor, materials and equipment required for the improvements to Chauncy Street (Route 106) between Commercial Street (Route 140) and Copeland Drive. It also consists of revising traffic signal timings to improve coordination along Commercial Street (Route 140) between School Street and Fisher Street.

The project will include Work necessary to complete the roadway improvements in accordance with the plans and these Special Provisions. The Chauncy Street improvement project includes roadway reconstruction, pavement fine milling, roadway resurfacing, installation of granite curb, construction of a shared use path on the southern side of the road, reconstruction of sidewalks and pedestrian curb ramps on the northern side of the road, modifications to channelization islands including landscape improvements within the islands, a new ramp from Route 106 to Route 140, modifications to drainage systems and reconstruction of traffic signals at the Chauncy Street/Commercial Street intersection and the Chauncy Street/Copeland Drive intersection. Work along Commercial Street includes pavement fine milling, roadway resurfacing and improvements to traffic signal timings and coordination. The Contract includes coordination with utility companies to complete utility pole relocations and below ground conduit relocations.

SUBSECTION 7.05 INSURANCE REQUIREMENTS
B. Public Liability Insurance

The insurance requirements set forth in this subsection are in addition to the requirements of the Standard Specifications and supersede all other requirements.

Paragraphs 1 and 2

The Massachusetts Department of Transportation and applicable railroads shall be named as additional insureds.

Paragraph 4

Asbestos Liability Insurance shall be obtained for this project. The Contractor and the Massachusetts Department of Transportation shall be named as additional insureds.

CONTRACTOR QUESTIONS AND ADDENDUM ACKNOWLEDGEMENTS

Prospective bidders are required to submit all questions to the Construction Contracts Engineer by 3:00 P.M. on the Tuesday of the previous week before the scheduled bid opening date. Any questions received after this time will not be considered for review by the Department.

Contractors should email questions and addendum acknowledgements to the following email address massdotspecifications@dot.state.ma.us The MassDOT proposal number and municipality is to be placed in the subject line.

ADJACENT CONTRACTS
(Supplementing Subsection 5.06)

Concurrent work may be in progress in the project areas by MassDOT, the Town of Mansfield, utility companies or others. The Contractor is required to coordinate his activities with all work by others within and adjacent to the project limits.

The Contractor shall coordinate with private vendors such as FedEx and UPS as well as owners of newspaper boxes to have such boxes removed and stacked from the site in accordance with the progress of the work.

The Contractor shall coordinate with the United States Postal Service (USPS) to have USPS remove their mailboxes.

No additional payments will be allowed for any disruption of work schedule caused by or required to coordinate work in this contract with work to be performed by others.

NOTICE TO OWNERS OF UTILITIES (Supplementing Subsection 7.13)

The Contractor shall give written notice to all public service corporations or officials, owning or having charge of public or privately owned utilities, of his intention to commence operations affecting such utilities one week in advance of the commencement of such operations. The Contractor shall, at the same time, file a copy of such notice with the Engineer.

Before commencing work on service connections, the Contractor shall contact the serving utility to ensure that proper construction procedures are followed.

The following are the names and addresses of some of the agencies which may be affected and must be notified. Completeness of this list is not guaranteed. The Contractor shall ensure that all affected agencies are notified.

Mr. Richard Alves
Town of Mansfield
Town Engineer
6 Park Row
Mansfield MA,02048
508-261-7377

Mr. Joshua Reinke
Town of Mansfield
DPW Director
6 Park Row
Mansfield MA,02048
508-261-7335

Mr. Brendan Pitts
Eversource Gas
995 Belmont Street
Brockton, MA, 02301
508-895-4818

Ralph Bellavance
Mansfield Municipal Electric
125 High Street Unit 2
Mansfield, MA, 02048
508-922-6475

Noah Skole
National Grid Electric
55 Bearfoot Road
Northborough, MA, 01532
617-706-1736

Mark Bonanno
Crown Castle
80 Central Street
Boxborough, MA, 01719
508-616-7818

Ms. Karen Mealey
Verizon
385 Miles Standish Boulevard
Taunton, MA, 02780
774-409-3160

Ms. Wendy Brown
Comcast
PO Box 6505, 5 Omni Way
Chelmsford, MA, 01824
978-848-5163

Stephen Parretti
MCI Verizon Business
PO Bos 600
Charlton, MA,01507
508-248-1305

Mr. Ron Sellon
Town of Mansfield Police Chief
500A East Street
Mansfield, MA 02048
508-261-7300

NOTICE TO OWNERS OF UTILITIES (Continued)

Mr. Justin Desrosiers
Town of Mansfield Police Chief
500A East Street Building A
Mansfield, MA 02048
508-261-7321

Stephen Parretti
MCI Verizon Business
PO Bos 600
Charlton, MA,01507
508-248-1305

OTHER

Renoy Thomas
Lumen
1025 Eldorado Boulevard
Broomfield, CO 80021
516-712-3041

Ms. Liz Glidden
Verizon Wireless Small Cell
20 Alexander Drive
Wallingford, CT, 06492
Elizabeth.glidden@verizonwireless.com

Conner Campbell
MBTA Document Control Group
500 Arborway
Boston, MA 02130
Ccampbell2@mbta.com

Mr. Jonathon Harmon DeVries
Amtrak
30th St Station, Box 64/2955 Market Street
Philadelphia, PA,19104
215-349-1750

Michael Sliper
CSX Transportation
200 West Cabot Blvd, Suite 130
Langhorne, PA, 19047
Michael_Sliper@csx.com

NATIONAL GRID EMERGENCY TELEPHONE NUMBERS

ELECTRIC:
Outage/ Emergency: 1-800-465-1212
New Service: 1-800-375-7405
Customer Support: 1-800-322-3223

EVERSOURCE EMERGENCY TELEPHONE NUMBERS

GAS:
Outage/ Emergency: 800-592-2000
New Service: 866-678-2744
Customer Support: 800-592-2000

MANSFIELD EMERGENCY TELEPHONE NUMBERS -ELECTRIC:
Outage/ Emergency: 508-261-7300
New Service/Customer Support: 508-261-7361

BUILD AMERICA BUY AMERICA PREFERENCE

On Federally-aid projects the Buy America (23.CFR § 635.410) and Build America, Buy America Act. requires the following,

(1) all iron and steel used in the project are produced in the United States--this means all manufacturing processes, from the initial melting stage through the application of coatings, must occur in the United States. Foreign steel and iron can be used if the cost of the materials does not exceed 0.1% of the total Contract cost or $2,500, whichever is greater. The action of applying a coating to a covered material (i.e., steel and iron) is deemed a manufacturing process subject to Buy America. Coating includes epoxy coating, galvanizing, painting and any other coating that protects or enhances the value of a material subject to requirements of Build America, Buy America. Steel used for temporary support of excavation, including H piles, soldier piles, and sheeting when the steel is required to be left in place is subject to requirements of Build America, Buy America. Temporary steel, shall remain in place when it falls within the influence zone of the soil supporting any structure or railroad tracks.

(2) all manufactured products used in the project are produced in the United States—this means the manufactured product was manufactured in the United States and

(3) all construction materials are manufactured in the United States—this means that all manufacturing processes for the construction material occurred in the United States. "Construction materials" includes an article, material, or supply—other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives—that is or consists primarily of:
- non-ferrous metals,
- plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables),
- glass (including optic glass),
- lumber; or
- drywall.

The Buy America preference only applies to articles, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project. As such, it does not apply to tools, equipment, and supplies, such as temporary scaffolding, brought to the construction site and removed at or before the completion of the infrastructure project. Nor does a Buy America preference apply to equipment and furnishings, such as movable chairs, desks, and portable computer equipment, that are used at or within the finished infrastructure project but are not an integral part of the structure or permanently affixed to the infrastructure project.

All articles, materials, and supplies should be classified as an iron or steel product, a manufactured product, or another product as specified by law or in 2 CFR part 184 (such other products specified by law or in 2 CFR part 184 include "excluded materials" and "construction materials"); an article, material, or supply must not be considered to fall into multiple categories.

NOTE: The requirements for manufactured products indicated in paragraph (2) above are not in effect for this contract.

PUBLIC SAFETY AND CONVENIENCE (Supplementing Subsection 7.09)

Vehicular and pedestrian travel on the public way shall be maintained by the Contractor during construction and safe and reasonable access to abutting land shall be provided. If so directed, temporary walkways will be provided by the Contractor to ensure safe passage under various weather conditions.

The work on this project is to be performed on heavily traveled roadways. The Contractor shall furnish, install, maintain and move all warning devices, barricades, signs, bridging materials, special apparatus, and other safety measures deemed necessary by the Engineer for the protection of motorists, pedestrians and the Contractor's own personnel.

All costs in connection with these measures shall be included in the various payment items and no additional compensation will be made.

STEEL PLATES IN CONSTRUCTION ZONES

At the end of each working day where trenches in areas of public travel are covered with steel plates, (Ref. subsection 7.09), each edge of such plates shall either be beveled or protected by a slope of 2 feet horizontally to 1 inch vertically. Any temporary patching material may be used to construct the ramps. The cost of steel plates, necessary patching materials, and their maintenance and removal, will be considered incidental to the item involved with no separate payment.

PROTECTION OF UNDERGROUND FACILITIES

The Contractor's attention is directed to the necessity of making his own investigation in order to assure that no damage to existing structures, drainage lines, traffic signal conduits, etcetera, will occur.

The Contractor shall notify Massachusetts DIG SAFE and procure a Dig Safe Number for each location prior to disturbing existing ground in any way. Contact the Dig Safe Call Center by dialing 811 or 1-888-344-7233 or online at www.digsafe.com.

The Contractor, in constructing or installing facilities alongside or near sanitary sewers, storm drains, water or gas pipes, electric or telephone conduits, poles, sidewalks, walls or other structures, shall, at his expense, sustain them securely in place, cooperating with the officers and agents of the various utility companies and municipal departments which control them, so that the services of these structures shall be maintained. He shall also be responsible for the repair or replacement, at his own expense, of any damage to such structures caused by his acts or neglect, and shall leave them in the same condition as they existed prior to the commencement of work.

PROTECTION OF UNDERGROUND FACILITIES (Continued)

In case of damage to utilities, the Contractor shall promptly notify the owner and shall, if requested by the Engineer, furnish laborers to work temporarily under the owner's direction in providing access to the utility. Pipes or other structures damaged by the operation of the Contractor may be repaired by the Town of Mansfield or by the utility company which suffers the loss. The cost of such repairs shall be borne by the Contractor, without compensation therefore.

If, as the work progresses, it is found that any of the utility structures are so placed as to render it impracticable, in the judgment of the Engineer, to do the work called for under this Contract, the Contractor shall protect and maintain the services in such utilities and structures and MassDOT, Highway Division will, as soon thereafter as it reasonably can, cause the position of the utilities to be changed or take such other action as it deems suitable and proper.

If live service connections are to be interrupted by excavation of any kind, the Contractor shall not break the service until new services are provided. Abandoned services shall also be plugged off or otherwise made secure by the utility company involved.

Full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in protecting or repairing property as specified in this section, shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefore.

The Contractor shall be required to furnish all labor, materials, and equipment necessary to protect underground structures and electrical vaults within the project site from construction debris and water penetration. When underground structures or electrical vault roofs are excavated, the Contractor shall be responsible for maintaining security of these structures or electrical vaults against unauthorized access. The Contractor shall be responsible for leaving the structures and vaults in a state of water tightness equal to that existing at the commencement of the contract.

The Contractor will cooperate fully with all utility companies private or public, and will notify all such companies at least twenty-four hours prior to excavating in the vicinity of any utility. It is understood that the Contractor has considered in his bid the existence of the various utilities and that no additional compensation will be allowed for any delays, inconvenience, or damage sustained by him due to any interference by said utilities.

The Contractor shall pay the serving utility for their services rendered for the connection of the overhead or underground service connections.

CONSTRUCTION SURVEY CONTROL
(Supplementing Subsection 5.07)

Cost of Contractor survey work shall be deemed to be included in the contract bid prices and no additional payment shall be made therefore.

DRAINAGE (Supplementing Subsection 7.13)

Existing pipes and structures not affected by the work of the project shall be maintained in clean working condition by the Town of Mansfield or MassDOT as applicable.

For existing pipe and structures within the limit of work that are under the jurisdiction of the Town, the Contractor shall provide written notice to the designated Town representative at least one week in advance of any drainage construction work to provide the Town the option of cleaning drainage structures and pipes with their own forces prior to the start of any drainage work, otherwise said pipe and structures shall be cleaned by the Contractor as directed by MassDOT with compensation under the appropriate pay item. The Contractor shall also provide work zone access to the Town, if necessary, for conducting this work.

Existing pipe or structures under the jurisdiction of MassDOT shall be cleaned by the Contractor as directed by MassDOT with compensation under the appropriate pay item.

Following initial cleaning, upon commencement of construction it shall be the Contractor's responsibility to maintain proper drainage in the areas under construction until the final system is put into use without additional compensation.

All proposed or impacted existing pipes and structures within the limits of this contract shall be left in a clean and operable condition at the completion of the work. It shall be the responsibility of the Contractor to make certain that new drainage systems carrying run-off from the limit of this project operate efficiently to their points of discharge into existing systems. Debris in pipes and structures, including deposition of hazardous material, as a result of the Contractor's Operations shall be removed by the Contractor in accordance with state and federal guidelines without additional compensation.

PROPERTY BOUNDS (Supplementing Subsection 7.13)

The Contractor shall exercise due care when working around all property bounds which are to remain. Should any damage to a bound result from the actions of the Contractor, the bound shall be replaced and/or realigned by the Contractor as directed by the Engineer. No further compensation will be due the Contractor for the materials and labor required to re-establish the bound in its proper position as shown on the plans or as found in the field.

ENVIRONMENTAL CONTROLS

All construction equipment shall be fitted with suitable muffling devices so that the noise from construction operation shall be properly controlled.

Contractor shall control all dirt, dust erosion and other related construction emissions from the project to the satisfaction of the Engineer.

WATERWORKS AND SEWER CONSTRUCTION (Supplementing Subsection 7.13)

It shall be the Contractor's responsibility to maintain proper water and sewer service in the areas under construction until the final system is put into use.

All work related to waterworks and sewer improvements shall be done in accordance with the Town of Mansfield standards. The Contractor shall coordinate with the Town to obtain a copy of all the latest relevant standards prior to construction.

The Contractor shall notify the Town of Mansfield Water and Sewer Division and/or the Mansfield Fire Department seven (7) business days prior to commencing work on these items. The Contractor shall coordinate the timing of all shut offs to domestic services with the Town of Mansfield Water and Sewer Division and all shut offs to fire protection services with the Town of Mansfield Water and Sewer Division and the Mansfield Fire Department.

All pipe shutdowns shall be coordinate with and approved by the Town of Mansfield Water and Sewer Division and the Mansfield Fire Department prior to performing any work. The work shall be coordinated in a manner to minimize the number and duration of shutdowns. Coordination shall be considered incidental to the item to which it pertains.

The work of this section shall include all work necessary to leave the water and sewer facilities in a clean and operable condition. Temporary shutdowns, dewatering as a result of shutdowns, any temporary facilities, any testing and disinfection shall be considered incidental to the work of the various water and sewer pay items. No additional compensation shall be made.

PERMITS AND LICENSES

Before any electrical connections are made the Contractor shall submit copies of the current licenses of all electricians who will perform the electrical work. Within ten (10) days after opening of bids, the low bidder shall submit a list of the Master Electrician and Journeyman Electricians (MA license) who will perform the electrical work in this contract, along with copies of each Electrician's current Massachusetts license.

The Contractor shall be responsible for obtaining all necessary permits and licensing from the Town and other agencies as required.

TOWN OF MANSFIELD STREET PERMIT

The Contractor will be required to obtain all necessary permits from the Town of Mansfield Public Works Department before the commencement of construction. All requirements, town ordinances, laws and rules of the Town of Mansfield shall be strictly adhered to.

LOW-PROFILE CASTINGS

The use of low-profile drainage castings (6-inch frame) is being proposed at locations where existing drainage line depths inhibit the use of an 8-inch standard frame.

Test pits shall be performed, where necessary, at the locations of existing drainage lines where low-profile castings are proposed to be used prior to installation and results provided to MassDOT. If a test pit reveals that an 8-inch standard frame can be used due to the existing drainage line being deeper or in a different location as shown on the plans, then the standard 8-inch frame must be used. The low-profile drainage castings will only be allowed in the locations shown on the plans, or as directed by the Engineer.

Low-profile drainage casting frames shall be fully compatible with Manhole Covers (MassDOT Std. Drawing E 202.8.0) and Hook Lock Cascade Grates (MassDOT Std. Drawings E 201.7.0 and E 201.7.1). Low-profile castings shall be in full accordance with the MassDOT Standard Specifications, except for height and weight and shall be from a manufacturer on MassDOT's Qualified Construction Materials List. Low-profile castings will be paid for under Items 221., 221.1, 222., and 222.1, with no additional compensation.

EXCAVATION SUPPORT

Where the work of the project requires installation of excavation support systems, or support of utility poles the furnishing, installing, maintaining, and final removal as required shall be considered incidental to the item to which it pertains. Dewatering, when required, including disposal in accordance with State and Federal guidelines shall also be considered incidental to the item of work to which it pertains. Control of water associated with the installation of the culvert replacement at Station 29+78 shall be paid for under Item 991.01.

MATERIALS REMOVED AND STACKED

Materials directed to be removed and stacked which are the property of the Town of Mansfield, shall be removed, transported and stacked 175 Fruit Street, Mansfield, MA.

Materials directed to be removed and stacked, which are privately owned, shall be removed and stacked on the property from which the materials were removed, or shall be removed, transported and stacked as directed by the Engineer.

Materials directed to be removed and stacked, which are the property of MassDOT, Highway Division, shall be removed, transported to, and stacked at the nearest State Maintenance Depot as directed by the Engineer.

If the Engineer determines that any part of the stacked materials are unsuitable for re-use by the Town of Mansfield or MassDOT, or if other owners decide to abandon part or all of their materials, such materials shall become the property of the Contractor and the Contractor shall dispose of them away from the site in accordance with State and Federal requirements. The contract prices for the various items shall include full compensation for the services noted above.

TEMPORARY FENCE

The Contractor shall erect Temporary fencing as required to secure the site for the purpose of public safety.

The work shall include furnishing, installing, maintaining, removing, resetting, and final removal of chain-link fence in a location directed by the Engineer. The fence shall be used to close off the construction area from adjacent sidewalks and public ways whose use conflicts with the construction activities.

Fencing shall conform to the relevant provisions of Section 644 of the Standard Specifications. The Contractor will be responsible for providing the Engineer with an acceptable method for the installation of the temporary fence that will provide for the pedestrian and worker safety and security for which it is intended.

All posts, including but not limited to end, corner, and intermediate brace posts, and all gates and gate posts, shall be provided by the Contractor. Materials shall be in good condition, shall not be deteriorated, nor in a condition which in any way may jeopardize the safety and security purposes intended. All materials shall meet the approval of the Engineer. The Contractor shall be responsible for maintenance of the temporary fence and for ensuring that the work area remains secure and is inaccessible to the general public at all times. Any removing and resetting of Temporary Fence by the Contractor to facilitate his construction operations shall be done at no additional cost. The temporary fence shall not be removed until the construction is completed, or until directed by the Engineer.

The Contractor shall replace and/or restore sections of fence damaged due to the construction, and/or accidents, vandalism or in any other manner for the duration of the project.

All work to furnish, install, relocate and remove temporary fencing shall be considered incidental to the Contract and no separate payment will be made.

STOCKPILING AND DISPOSAL OF EXCESS MATERIAL

Soil to be removed from the project area shall not be assumed to be uncontaminated, and must be evaluated prior to off-site management for potential contamination with hazardous materials. No soil may be disposed of off-site without proper assessment by the contractor and approval from the Resident Engineer (RE), District Environmental Engineer (DEE), or the project designee

Any stockpiling of soil must be performed in compliance with Policy Directive P-22-001, Off-Site Stockpiling of Soil from MassDOT Construction Projects. This directive limits the allowable locations for off-site stockpiling of soil generated during MassDOT projects and includes various requirements that must be satisfied by the contractor prior to off-site stockpiling.

TEMPORARY TRAFFIC CONTROL PLAN

Construction Staging and Scheduling
The Temporary Traffic Control Plan and Typical Details show the suggested construction staging with pertinent traffic controls. The Contractor may submit an alternate temporary traffic control plan, in writing, for approval by the Engineer and the Town.

The Contractor shall prepare and submit to the Engineer a proposed work schedule which complies with the plans and specifications. No work shall start until the Engineer's approval of the schedule is received.

The Contractor shall notify the Town of Mansfield 14 days before construction starts.

Any area outside the limits of Town, County or State layout or temporary or permanent easements which the Contractor may require for storage of equipment and materials, or for other purposes necessary in the performance of the work, shall be secured by the Contractor at his own expense.

Materials, including excavation intended for backfill, shall not be stored or stacked on roadway surfaces unless specifically permitted by the Engineer.

The following are the suggested stages to be followed in the prosecution of this contract. Typical traffic control layouts are shown on the plans. No work on any stage may begin unless all requirements of the previous stages have been met. It shall be the Engineer's option to alter the sequence of work for the project at any time during the project when a change in sequence of work is deemed to be in the best interest of the Public. It should be noted that any costs of delays, incurred by these procedures, or changes in these procedures shall be deemed to be included in the contract prices bid and not cause for additional compensation.

General Construction Stages

1. Full-Depth Roadway Excavation and Construction

    a. Construct all proposed utilities to below subgrade, and bring all existing utilities within the proposed roadway limits down to below subgrade in areas of full depth construction.
    b. Construct areas of full depth roadway to existing grade.

2. Sidewalks
    a. Construct sidewalk, shared use path, brick buffer and islands

3. Micromilling
    a. Mill roadway surface at areas of milling and pavement widening.

4. Top Course
    a. Apply tack coat and place surface course for the entire length of the project. Surface course shall be placed after the intermediate course within time frame indicated on the plans.

TEMPORARY TRAFFIC CONTROL PLAN (Continued)

5. Pavement Markings
   a. Apply pavement markings for entire length of project.

General Provisions for Travel and Prosecution of Work

The Contractor's attention is directed to the suggested traffic control as shown on the plans and in the specifications. The contractor, as directed by the Engineer, is responsible for the furnishing erecting, and maintaining the signing of the roadways, and the proper removal of the signs upon the completion of the project. Compensation for signing will be provided under the provisions of Section 850 and under the respective items therein.

Reconstruction work on the project shall not commence until the stage construction signing and traffic barriers as described in the MUTCD have been installed and approved.

Particular care shall be taken to establish and maintain such methods and procedures as will not create hazards of an unusual nature. Access to abutting properties shall be maintained in a responsible and safe manner for the duration of the construction period.

The design and placing of all safety devices shall be with the approval of the Engineer. Payments of work and materials involved in providing adequate safety procedures shall be as specified in Section 850.

The Contractor shall carry on his work concurrently and in conjunction with the Utility Companies involved with the project so as to provide for all possible cooperation towards the satisfactory completion of the work with minimum delay and inconvenience. The Contractor shall be responsible for coordination of all utility work within the project limits.

Roadway excavation must be squared-off at the end of each day. At the end of each work day, any open utility trenches shall be backfilled and covered with steel plates. Backfilling and plating shall be considered incidental to the project and not be cause for additional compensation.

The Contractor shall be responsible for maintenance of flow in all water courses, drains and other pipes in the way of the proposed work or for any conveyance of the flow to a suitable point of discharge in such a manner that there will be no flow upon or hindrance to other work or cause nuisance of any kind.

Lowering and plating of structures in areas of full depth construction shall be considered to be for the Contractors convenience and not cause for additional compensation. Remodeling and adjustment of such structures shall be measured and paid for under the appropriate pay items. The castings of all structures, which are required to be set or reset under this project, shall not be set complete in place to the final grade until after the bituminous concrete binder course has been completed and top course is scheduled to be completed within two weeks.

The Contractor shall order all materials and services required for the work immediately after the execution of the contract. The Contractor shall not start any operation until all materials required for the operation are at the site or until the Engineer is satisfied that the materials will be delivered in such order that there will be no interruption to continuous and efficient progress.

TEMPORARY TRAFFIC CONTROL PLAN (Continued)

Roadways under construction shall remain open to local traffic at all times during the period of time required for the completion of the work except when specifically directed otherwise by the Engineer. Reasonable facilities shall be provided by the Contractor for the safe and convenient passage of pedestrians and vehicles through the project at all times.

The placement of warning devices will be for daily work periods and shall be removed after the completion of work operations. Signs having messages that are irrelevant to normal traffic conditions will be removed or properly covered at the end of each work period. Signs are to be kept clean at all times and legends shall be distinctive and unmarred.

The Contractor shall take necessary precautions to avoid spillage from his trucks onto the traveled ways. Any material which may drop from the vehicles when being hauled over the street shall be removed immediately by the Contractor.

Sequence of Construction
It is the intent of these Special Provisions to minimize the construction impacts to the traveling public and abutting property owners by limiting the extent of roadway excavation and requiring the restoration of a weather-tight pavement surface as stipulated in the plans and specifications. All proposed underground installations must be in place prior to the beginning of any roadway paving.

The Contractor shall as required or as directed by the Engineer, lower utility castings to ensure that any interim roadway condition is safe for the traveling public. The demolition, plating, and rebuilding of utility structures as required by interim conditions shall be considered incidental to the project and not cause for additional compensation.

In areas of full depth construction, the Contractor shall as required or as directed by the Engineer, provide temporary backfill to ensure that any interim roadway condition is safe for the traveling public. The placement, compaction and subsequent removal of temporary fill as required by interim conditions shall be considered incidental to the project and not cause for additional compensation. Gravel may be used as temporary fill. Except as indicated on the staging plans or unless directed otherwise by the Engineer, temporary roadway surfaces shall remain in place for no more than 2 days where upon the temporary fill will be removed and replaced with the base course or other finish surface.

The Contractor shall as required or as directed by the Engineer, provide temporary backfill to ensure that any interim sidewalk condition is safe for the traveling public and provides access to all abutters. Gravel may be used as temporary fill. The placement, compaction and subsequent removal of temporary fill as required by interim conditions shall be considered incidental to the project and not cause for additional compensation. Unless directed otherwise by the Engineer, temporary gravel sidewalk surfaces shall remain in place for no more than 2 days where upon the temporary fill will be removed and replaced with the final sidewalk surface.

TEMPORARY TRAFFIC CONTROL PLAN (Continued)

The Contractor may begin excavation at either end of the project but must continue from that end to the completion of the project. The excavated and/or reclaimed segment shall be squared-off and ramped longitudinally at a rate of 12:1 or flatter to meet existing surfaces. During non-working hours, no lateral drop-offs will be permitted within the area of excavation.

Intermediate course will be placed on completed base course sections when there is sufficient distance to permit efficient placement operations. Only after the entire project has been completed to intermediate course level will the top course material be allowed to be placed.

Base course surface shall be thoroughly cleaned and a tack coat shall be applied on the base course surface before binder course is placed. A tack coat shall also be applied on the binder course surface before the top course is placed unless directed otherwise by the Engineer.

The Engineer reserves the right to alter the lengths of excavation and other operations in order to ensure the safety of the traveling public and abutting property owners.

General
The following general conditions will be followed unless otherwise directed by the Engineer. The Contractor is referred to the staging plans for additional requirements in the areas of full depth construction.

- Except as permitted by the Engineer the following shall apply to maintenance of travel lanes during the day:

  Chauncy Street (Route 106) and Copeland Drive: - a minimum of one travel lane in each direction must be maintained at all times. Left turn lanes shall be maintained at all times.

  Commercial Street (Route 140): - Unless otherwise directed by the Engineer, work affecting traffic flow shall not be conducted in the northbound travel lanes and the southbound travel lanes at the same time. When work is being performed, a minimum of one travel lane shall be maintained at all times. Left turn lanes shall be maintained at all times.

- At least one sidewalk on one side of the street shall remain open at all times.
- Reconstruction of intersections shall be undertaken so as to maintain all existing turning movements.
- Pedestrian and vehicle access to all abutting properties shall be maintained except for very short periods of time. When it is necessary to deny access to a property, the owner shall be informed at least 48 hours in advance.
- Utility work shall be done prior to the roadway construction operations. The Contractor shall coordinate his work with the Town and the utility companies.
- The Contractor shall coordinate his activities with construction operations that may be undertaken concurrently by others.

TEMPORARY TRAFFIC CONTROL PLAN (Continued)

- Work involving fire hydrants shall be done in accordance with instructions of the Town of Mansfield.
- Alternating fire hydrants shall be kept operative at all stages of the construction, unless otherwise directed in writing by the Engineer. No fire hydrant shall be out of order for more than 12 hours.
- Removed and reset street lights shall be installed and activated within 48 hours of de-activation of the existing light.
- No detouring of traffic from Chauncy Street (Route 106), Copeland Drive or Commercial Street (Route 140) shall be permitted without 72-hour advance approval by MassDOT.
- All traffic controller swap outs shall be done during off-peak hours or on weekends.

SUMMARY OF POTENTIALLY IMPACTING CONDITIONS

A review of the Massachusetts Department of Environmental Protection (MassDEP) sites list for releases of oil and hazardous materials revealed that there are two sites in the vicinity of the project area that may impact the proposed work.

The following is a summary of the information obtained during the file review for the release sites at Copeland and Chauncy St and 261 Chauncy St.

RTN 4-12459, Copeland and Chauncy St, Osco Store #18-362

- The site is currently occupied by a Walgreens Pharmacy.
- Prior to the construction of the pharmacy building in 1997 residences were located on the property; a farm may also have been located there in the past.
- During the redevelopment of the property, ash fill was identified on the northern two-thirds of the property, ranging from two to 10 feet bgs (below ground surface).
- RTN 4-12459 was assigned to the site in 1996.
- Samples of the ash fill found levels of lead and polycyclic aromatic hydrocarbons (PAHs) above applicable reporting concentrations.
- A contractor reported during redevelopment that they were aware of similar ash fill located beneath Giles Place and Copeland Drive and Giles Place to the north and northeast.
- Response actions on the site included the installation of at least two feet of “clean” fill over any materials with visible signs of contamination and the placement of an Activity and Use Limitation (AUL) on the property.
- An A-3 RAO was submitted for the site in 1998.
- The boundaries of the release site are contiguous with those of the 243 Chauncy Street property.
- It does not appear that any excavation is planned within the area of the release site that is known to contain the contaminated material.
- Any work on the 243 Chauncy Street property will be taking place within the boundaries of an AUL.

SUMMARY OF POTENTIALLY IMPACTING CONDITIONS (Continued)

- The AUL requires that existing paving be maintained, that long-term utility work (greater than 10 days in a year) which results in excavation of soil below pavement or below a depth of one foot in landscaped areas have the approval of a Licensed Site Professional (LSP), that any activity which results in excavation of soil below the pavement or below a depth of one foot in landscaped areas be performed in accordance with a Health and Safety Plan prepared by a qualified environmental professional, and soil be managed appropriately.
- No excavation or damage to paving on the 243 Chauncy Street property shall take place without the prior approval of an LSP.

RTN 4-14150, 261 Chauncy St, Intersection of Chauncy and Giles

- The property is currently occupied by a CVS pharmacy.
- Prior to its development as a commercial site in approximately 1990, the site was residential.
- RTN 4-14150 was assigned to the site in 1998 after an environmental site assessment identified total petroleum hydrocarbons (TPH), PAHs, lead, and aldrin in soil above applicable reporting concentrations.
- Pre-construction, ash fill was found on the site at depths ranging from 1.5 to 5 feet bgs.
- Response actions included the excavation and management of contaminated soil / fill material and the placement of an AUL on two portions of the property.
- The contaminated material was re-used as fill on-site under a layer of clean off-site fill material at least three feet deep.
- An A-3 RAO was submitted to the site in 2002.
- The boundaries of the release site are contiguous with those of the 261 Chauncy Street property.
- The AUL applies to the two locations where contaminated soil / fill material were placed during construction. These locations are not within the boundaries of the MassDOT project and should not be impacted by it.
- Any work within the boundaries of the 261 Chauncy Street property will be taking place within the boundaries of a known contaminated materials release site. The contractor must be especially attentive to signs of contamination in this area.

EMERALD ASH BORER ADVISORY

To the extent possible, all trees and brush shall be disposed on site, typically chipped and spread in place. When trees or brush must be removed, such as in urban, or otherwise populated areas, Contractor shall identify proposed location for disposal, and provide written notification to the Engineer for approval. Disposal shall be in city or town of project, or at minimum, within county, of construction operations.

MAINTENANCE OF TRAFFIC SIGNALS

The Contractor shall give written notice to the Town of Mansfield of the date the Contractor has assumed responsibility for the maintenance of the traffic signal equipment and provide the Town with emergency telephone numbers. This written notice must be given before the Contractor may proceed with any work on any traffic signal equipment.

It shall be the responsibility of the Contractor to provide all labor, equipment and material required for the total maintenance of all proposed traffic signal equipment within the project limits, including damage by automobile accident except as provided for under Subsection 7.17, from the date of written notice given to the Engineer, until the date when the Town shall recommend acceptance of the completed project. For the purpose of these paragraphs, the phrase "traffic signal equipment" is intended to include, but is not limited to, controllers, detectors, signal housing, supporting structures, cabinets, wires, conduit and all other ancillary electrical equipment used for traffic control.

The cost of maintenance of signals shall be deemed to be included in the various traffic signal contract items, and no additional payments shall be made therefor, except as provided by Subsection 7.17 of the Standard Specifications as amended. Cost of electric power for the existing signals will be paid by the Town of Mansfield.

The Contractor shall provide response to reported traffic signal failures within two (2) hours from 7:00 AM to 7:00 PM, and four (4) hours otherwise. The Contractor shall supply the Engineer and the Town of Mansfield with a 24-hour telephone number for response.

NORTHERN LONG-EARED BAT AND TRICOLORED BAT PROTECTION

The northern long-eared bat (*Myotis septentrionalis*; NLEB) and tricolored bat (*Perimyotis subflavus*; TCB) are listed as federally endangered or proposed endangered, respectfully, under the Endangered Species Act (ESA). The U.S. Fish and Wildlife Service (USFWS) developed this guidance to address ESA compliance and promote conservation of NLEB and TCB. MassDOT, on behalf of FHWA, submitted a Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key Consultation through Information for Planning and Consultation (IPaC) and generated a May Affect, Not Likely to Adversely Affect (NLAA) determination (see Appendix D). Subsequently, the project has completed Section 7 consultation under the ESA.

In advance of the uplisting of the TCB to endangered under the ESA, the following Avoidance and Minimization Measures (AMMs) must be strictly adhered to in order to protect NLEB and TCB and to be in compliance with the ESA. Contact MassDOT Environmental Services - Wildlife Unit Supervisor for questions about project limits, restrictions, or conservation measures.

General AMMs

- The Contractor shall ensure all personnel working in on the project site are aware of all environmental commitments related to NLEB and TCB, including all applicable AMMs. NLEB and TCB information (https://www.fws.gov/midwest/endangered/mammals/nleb/ and https://www.fws.gov/species/tricolored-bat-perimyotis-subflavus) shall be made available to all personnel.
- On June 14, 2023, Tetra Tech, on behalf of MassDOT Highway Division Environmental Services, conducted a northern long-eared bat summer presence/absence survey, in accordance with the 2023 survey guidelines. The survey did not confirm the presence of NLEB and/or TCB. If work is proposed by the Contractor past June 14 2028, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by the USFWS.

Lighting AMMs

- Direct temporary lighting away from suitable habitat during the active season: **April 15 to October 31**

Tree Removal AMMs

- *If additional cutting is proposed by the Contractor that is outside the scope of this contract, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by the USFWS.*
- Ensure tree removal is limited to that specified in project plans and ensure that contractors understand clearing limits and how they are marked in the field (e.g., install bright colored flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits).
- No tree cutting, trimming, or removal of trees and/or woody vegetation >3-inch in diameter shall be conducted between: **June 1 - August 15**
- The Contractor shall ensure all personnel working in on the project site are aware of all environmental commitments related to NLEB and/or TCB, including the **TOY** restriction. If this restriction needs to be waived at any location(s) the Resident Engineer shall send a locus map of the proposed work to MassDOT Highway Division's Environmental Services Section for review and a determination if the restriction can be waived.

HOLIDAY WORK RESTRICTIONS

(Supplementing Subsection 7.09)

The District Highway Director (DHD) may authorize work to continue during these specified time periods if it is determined by the District that the work will not negatively impact the traveling public. DHD may allow work in those areas on a case by case basis and where work is behind barrier and will not impact traffic

Below are the holiday work restrictions:

New Years Day (Federal Holiday)
No work on major arterial roadways from 5:00 AM on the day before until the normal start of business on the next subsequent business day. No work on local roadways on the holiday without permission by the DHD and the local police chief.

Martin Luther King's Birthday (Federal Holiday)
No work restrictions due to traffic concerns, however work on local roadways requires permission by the DHD and local police chief.

President's Day (Federal Holiday)
No work restrictions due to traffic concerns, however work on local roadways requires permission by the DHD and local police chief.

Evacuation Day (Suffolk County State Holiday)
No work restrictions due to traffic concerns.

Patriot's Day (State Holiday)
Work restrictions will be in place for Districts 3 and 6 along the entire Boston Marathon route and any other locations that the DHD in those districts determine are warranted so as to not to impact the marathon. All other districts work restrictions will be as per DHD.

Mother’s Day
No work on Western Turnpike and Metropolitan Highway System from 5:00 AM on the Friday before, until the normal start of business on the following day.

Memorial Day (Federal Holiday)
No work on major arterial roadways from 5:00 AM on the Friday before, until the normal start of business on the following day.

Bunker Hill Day (Suffolk County State Holiday)
No work restrictions due to traffic concerns.

Juneteenth
No work restrictions due to traffic concerns, however work on local roadways requires permission by the DHD and local police chief.

HOLIDAY WORK RESTRICTIONS (Continued)

Independence Day (Federal Holiday)
No work on major arterial roadways from 5:00 AM on the day before until the normal start of business on the next subsequent business day. No work on local roadways on the holiday without permission by the DHD and the local police chief.

Labor Day (Federal Holiday)
No work on major arterial roadways from 5:00 AM on the Friday before, until the normal start of business on the following day.

Columbus Day (Federal Holiday)
No work on major arterials from 5:00 AM on the Friday before, until the normal start of business on the following day

Veterans' Day (Federal Holiday)
No work restrictions due to traffic concerns.

Thanksgiving Day (Federal Holiday)
No work on major arterials from 5:00 AM two days before until the normal start of business on the following Monday.

Christmas Day (Federal Holiday)
No work on major arterial roadways from 5:00 AM on the day before until the normal start of business on the next subsequent business day.

SOIL STOCKPILING DIRECTIVE P-22-001

Any stockpiling of soil must be performed in compliance with Policy Directive P-22-001, Off-Site Stockpiling of Soil from MassDOT Construction Projects. This directive limits the allowable locations for off-site stockpiling of soil generated during MassDOT projects and includes various requirements that must be satisfied by the contractor prior to off-site stockpiling. The Contractor is responsible for identifying a suitable stockpile location.

SUBSECTION 8.02 SCHEDULE OF OPERATIONS
Replace this subsection with the following:

An integrated cost and schedule controls program shall be implemented by the Contractor to track and document the progress of the Work from Notice to Proceed (NTP) through the Contractor Field Completion (CFC) Milestone. The Contractor's schedules will be used by the Engineer to monitor project progress, plan the level-of-effort required by the Department's work force and consultants and as a critical decision-making tool. Accordingly, the Contractor shall ensure that it complies fully with the requirements specified herein and that its schedules are both accurate and updated as required by the specification throughout the life of the project. Detailed requirements are provided in Division II, Section 722 Construction Scheduling.

TRUCK SAFETY DEVICES

(Supplementing Subsection 7.04: Motor Vehicles)

All motor vehicles subject to Section 7 of Chapter 90 to be operated under this Contract shall be equipped with safety devices as provided therein and in 540 CMR 4.00.

By December 31, 2025, the Contractor shall certify to the Registry of Motor Vehicles, in a manner prescribed by the Registrar, that all applicable vehicles are equipped with Lateral Protective Devices, Convex Mirrors, Cross Over Mirror(s) and Back Up Cameras in accordance with the requirements of 540 CMR 4.00.

The Contractor shall provide evidence satisfactory to the Department to demonstrate compliance with the above certification requirement for all applicable vehicles operated under this Contract by the Contractor and its subcontractors and vendors in a manner set forth by the Department. Thereafter, the Contractor shall have an affirmative obligation to continue to provide such evidence of compliance on an ongoing basis and no later than 7 days after certification with the Registry of Motor Vehicles of any additional vehicles operated under this Contract by the Contractor and its subcontractors and vendors.

Non-compliance with respect to a vehicle that is subject to 540 CMR 4.00 may subject the Contractor to statutory fines as established in M.G.L. c. 90, § 7 and/or contractual remedies up to and including termination of the Contract.

BIDDERS LIST

Pursuant to the provisions of 49 CFR Part 26.11 all official bidders will be required to report the names, addresses and telephone numbers of all firms that submitted bids or quotes in connection with this project. Failure to comply with a written request for this information within 15 business days may result in a recommendation to the Prequalification Committee that prequalification status be suspended until the information is received.

The Department will survey all firms that have submitted bids or quotes during the previous year prior to setting the annual goal and shall request that each firm report its age and gross receipts for the year.

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION FILE NUMBER SIGN

This project is subject to Massachusetts General Laws, Chapter 131, Section 40 as amended. Signs shall be in accordance with the latest MassDOT Construction Standards. All costs for the manufacture, erection, maintenance, moving, and removal of the signs shall be absorbed by the contractor with no additional compensation other than the contract unit prices.

For this project the Massachusetts Department of Environmental Protection File Number is 211-1017.

COMPLIANCE WITH THE NATIONAL DEFENSE AUTHORIZATION ACT

(Supplementing Subsection 7.01)

On all projects, the "Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment" Regulation (2 CFR 200.216) prohibits the Contractor from using or furnishing the following telecommunications equipment or services:

- Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
- For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
- Telecommunications or video surveillance services provided by such entities or using such equipment.
- Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

This prohibition applies to all products manufactured by the aforementioned companies, including any individual components or parts.

By submitting a bid on a project, the Contractor certifies that all work will be in compliance with the terms of 2 CFR 200.216. The Contractor shall submit a COC indicating compliance with the above provisions for all telecommunications equipment or services included in the Contract.

Payment for the item in which the materials are incorporated may be withheld until these COCs are received. Any cost involved in furnishing the certificate(s) shall be borne by the Contractor.

EMERALD ASH BORER ADVISORY

To the extent possible, all trees and brush shall be disposed on site, typically chipped and spread in place. When trees or brush must be removed, such as in urban, or otherwise populated areas, Contractor shall identify proposed location for disposal, and provide written notification to the Engineer for approval. Disposal shall be in city or town of project, or at minimum, within county, of construction operations.

EQUIVALENT SINGLE AXLE LOADS (ESALS)

The estimated traffic level to be used for SUPERPAVE HMA mixture designs for this contract, expressed in Equivalent Single Axle Loads (ESALs) for the design travel lane over a 20-year period, is 3.3 Million 18-kip (80-kn) ESALs.

2026 FIFA WORLD CUP – BOSTON, MASSACHUSETTS

The 2026 FIFA World Cup will be held at Gillette Stadium in Foxborough and related events will be held throughout the region. Matches and Fan Fest activities are scheduled from June 11, 2026 through July 19, 2026. MassDOT will impose work restrictions as necessary to minimize traffic impacts during FIFA events when the Contractor's operations could impact vehicular traffic, particularly on interstate highways and major arterials throughout the region and local roads near the event site. No additional compensation will be allowed for work restrictions except as determined under Subsection 8.10

NOTIFICATION OF FUNDING SOURCES FOR WORK TO BE PAID BY OTHERS

This contract contains work that shall be paid by the Town of Mansfield. The said Town shall be responsible for construction costs associated with a Non-Participating Agreement with MassDOT.

VALUE ENGINEERING CHANGE PROPOSAL

This Subsection defines the conditions and requirements which apply to Value Engineering Change Proposals ("VECPs"). The purpose of this provision is to encourage the Contractor to propose changes in certain project requirements that will maintain the project's functional requirements at a savings in contract time, contract price, or both. The net savings obtained by using a VECP that meets the conditions and requirements set forth here will be shared by the Contractor and MassDOT.

VECP's under this provison are to be initiated, developed and submitted to MassDOT by the Contractor. The VECP must show the contemplated changes to the Drawings, Specifications and other requirements in the Contract. When a VECP submitted pursuant to this section is fully accepted by MassDOT, the VECP will be implemented by the Contractor and paid using the current cost and resource loaded schedule. Contractor shall demonstrate that the VECP is equal to, or better than, the original design or material; that there is an interest in public safety within the VECP; that there is a life-cycle cost benefit; and/or that end users will benefit from the shortened schedule. VECPs shall be consistent with the MassHighway/MassDOT Standard Specifications for Highways and Bridges and other applicable reference documents and directives. Any proposed deviation from these documents will need to be clearly identified in the VECP Proposal Documents, and must be approved by MassDOT's Chief Engineer before accepting this VECP.

A. In order to be considered for MassDOT review each VECP shall:

1. Be clearly labeled pursuant to this Subsection;

2. Yield a net savings at least two hundred and fifty thousand (250,000.00) Dollars and/or a net saving of contract completion duration of at least three (3) months;

3. The proposed changes to contract items must:

    a. maintain the specified items' required functions (service life, reliability);

    b. meet applicable safety regulations and codes;

    c. material substitutions must be in accordance with DOT prequalified/preapproved products and must be tested in accordance with standard material specs/testing methods (and considering all relevant environmental, load, and other relevant factors);

    d. show economy of operation, ease of maintenance, ease of construction, and necessary standardized features and appearance; and

4. Shall not require an extension of Contract Time or Contract Milestones, with the exception of cases when there are anticipated significant cost saving.

VALUE ENGINEERING CHANGE PROPOSAL (Continued)

The thresholds above are considered to be a general guideline. MassDOT will consider VECPs outside of these thresholds if a significant benefit is demonstrated. Additionally, notwithstanding this VECP process, MassDOT will consider minor revisions in the form of a Contract Modification.

Further, any VECP submitted shall be in sufficient detail to clearly define the proposed change. The Contractor's failure to provide information of the type, detail and in a format to facilitate the MassDOT's review, may be grounds for rejection of the VECP. Additionally, the Contractor will not be entitled to any equitable adjustment or increased Time, due to any aspect of any of the proposed VECP including permitting, right of way, utility coordination or delayed responses by MassDOT. If, after the progression of the work associated with the executed Contract Modification for the VECP, any additional costs are realized by the Contractor or any of the sub-consultants, sub-contractors, or suppliers, the Contractor shall be obligated to pay for any and all costs.

B. The following initial items shall be provided by the Contractor for MassDOT's review. *Items 1-6 need to be submitted prior to the start of MassDOT's review of the VECP and item 7 is an important consideration for the pricing of the VECP and the timeline of the proposed VECP schedule.*

1. ***VECP Description***: A description of the difference between the existing and the proposed Contract requirements, and the comparative advantages and disadvantages of each;

2. ***VECP Change Listing***: A listing of the Contract requirements that will need to be changed, modified, or reviewed as well as the proposed Contract document changes in the Instructions to Bidders, Contract, Standard Specifications, General Requirements and Special Provisions required by the VECP.

3. ***Construction Schedule Update*****:** Any changes in the Contract Time(s) or Contract Milestone(s), that will result from acceptance of the VECP, shall be accompanied by a contemporaneous schedule analysis *(i.e, the Contractor's baseline schedule submission, all past/required monthly schedule updates, a detailed assessment of all past delays, and a resource loaded Crticial Path Method schedule as specified in Section 8.0 / Subsection 8.02 of this Contract)* of the projected Work that remains including the proposed VECP related schedule changes *(inclusive of the timeline to review accept the VECP and the timeline for implementing the design changes)* in the remaining work. This shall be submitted in the form of a Proposal Schedule until the VECP has been formally accepted. Note: All of this information is to be updated, recertified, and formally accepted by MassDOT before final acceptance of this this VECP is issued.

VALUE ENGINEERING CHANGE PROPOSAL (Continued)

4. ***Date for MassDOT's Acceptance***: A statement that clearly justifies the date by which the VECP must be accepted to obtain the maximum price reduction, noting any effect upon the Contract Time(s) and/or Contract Milestone(s). This statement must include a narrative that demonstrates the most recent construction schedule has been utilized to justify that proposed acceptance date *(e.g. "in order to start to fabricate critical materials, authorization must be provided to work on the shop drawings by no later than [date]").* The Contractor should allow for at least sixty (60) to ninety (90) days for acceptance by MassDOT once all of the VECP documentation has been provided. Acceptance shall mean that MassDOT has received a finalized and executed contract modification. However, this is a proposed Contract change.

   The Contractor is fully obligated to progress the Work of the original Contract and MassDOT is not liable for any delays or costs that may occur in the review phase of any VECP proposal.

5. ***Cost and Savings Estimates***: A detailed estimate of the anticipated net savings, calculated as follows:

   a. ***Original Scope:*** Isolate the cost of performing the original contract construction activities, in accordance with the original Contract Documents, as originally bid by the Contractor, that are anticipated to be superseded by the VECP. *This cost is to include any original contract scope that is anticipated to be altered or eliminated by the VECP such as, shop drawing preparation, inspection work, testing, maintenance of traffic, or any other original contract costs, that have yet to have been performed at the time of this VECP submission.*

   b. ***New VECP Scope:*** Calculate the cost of performing the comparable construction activities associated with the VECP.

   c. ***Contractor's Engineer & Inspection***: Calculate the cost of engineering, inspection, and design work by the Contractor's Engineer/Designer. This should be a realistic estimate of the costs of any required engineering, design and review work by the Contractor's Engineer.

   d. ***MassDOT's Costs:*** MassDOT's estimate of costs to perform engineering/design reviews, cost estimate reviews, schedule reviews, and any other administrative costs to review and recommend implementation of the proposed VECP. *(including all anticipated increased costs to MassDOT on other Contracts and all anticipated follow-on increased costs to MassDOT, if any)* as provided by MassDOT. MassDOT's estimated costs must be included the VECP calculation and will be provided by MassDOT in support of the VECP evaluation process.

   e. ***Other Costs:*** Estimated costs associated with any revisions to other project related costs, such as Environmental Permits or Right of Way acquisitions, including other agency or municipality costs, as provided by MassDOT.

VALUE ENGINEERING CHANGE PROPOSAL (Continued)

Net Savings:
The net savings to be split between MassDOT and the Contractor shall be calculated using the items above as follows: a - (b+c+d+e) = net savings

6. *The Contractor shall also provide:*

   a. A proposed Change Order, which explains and justifies any required Equitable Adjustment in the Contract Price.

   b. The Contractor's actual costs expended for developing the VECP as of the date of the VECP submission;

7. ***Design Changes and Drawings*:** The costs that are outlined above should be inclusive of the following design and engineering responsibilities.

   a. Design changes shall be prepared and stamped by the Contractor's professional designer and/or engineer. In addition, in the development of the VECP; the Contractor is responsible for anticipating and managing all aspects associated with any VECP design work that must be performed by a licensed Engineer.

   b. The Contractor's engineer must analyze and stamp all components of any aspect of the project that has been redesigned, changed, or altered as a result of this VECP.

   c. The Contractor's engineer shall provide all calculations and supporting design/engineering documentation that was utilized to develop the changes and stamped drawings. These will be used by MassDOT's Designer-of-Record to review the VECP changes. The Contractor is limited to selecting only those engineer's that have been pre-qualified by MassDOT's A&E Board.

   d. MassDOT's Designer-of-Record will review and respond to all completed design submissions related to this VECP within thirty (30) calendar days, unless determined to be a non-critical path item.

   e. MassDOT will be responsible for estimating and managing MassDOT's Designer-of-Record during the VECP review and implementation. Should any significant conflicts arise, between the Contractor's Engineer and MassDOT's Designer-of-Record, the DOT and the Contractor will work expeditiously to resolve the conflict. Should this type of conflict continue for greater than five (5) days, the Contractor is to bear all financial and time related impacts of such delay and must seek to resolve the design conflict, in an acceptable manner to MassDOT. The resolution of this conflict will be funded at the Contractor's expense – exclusive of the net saving that was agreed to at the execution of the contract modification for this VECP.

   f. The Contractor's Engineer may also be required to inspect the construction work. The Contractor is to include such anticipated inspection costs in the initial VECP.

VALUE ENGINEERING CHANGE PROPOSAL (Continued)

g. MassDOT's Designer of Record will remain the Designer-of-Record for the entire Project. Any costs incurred in the use of MassDOT's Designer-of-Record by MassDOT or Contractor associated with the review of a VECP are to be included in the calculated net savings.

C. Approval of the VECP shall not occur until a Contract Modification, incorporating the VECP, is issued by MassDOT and properly executed by the Contractor. MassDOT may accept or reject part or all of any VECP at any time prior to an executed Contract Modification for the applicable VECP. The decision of MassDOT, concerning acceptance or rejection of any VECP, shall be final and shall not be subject to dispute resolution.

It is expected that several weeks may go by before the final VECP documentation has been executed with a Contract Modification. Therefore, MassDOT intends to make certain that the initial cost estimate information has not changed before entering into a Contract Modification. As the VECP evaluation process is finalized, and prior to the signed Contract Modification for the VECP, the Contractor and MassDOT must re-certify the current status of the originally proposed cost and/or schedule savings.

Until a contract modification is issued and schedule and cost/savings re-certification is complete and accepted by MassDOT, the Contractor shall remain obligated to perform the Work in accordance with the terms and conditions of the original Contract Documents.

Upon completion of the work associated with the VECP, MassDOT may require verification that the VECP savings has been achieved.

D. VECPs will be processed (distributed, reviewed, commented upon, accepted or rejected) expeditiously (pursuant to M.G.L. c. 30, § 39R); however, as this is an elective modification to the contract, MassDOT shall not be liable for any delay or cost in the review and acceptance of the VECP. During the review of the VECP, the Contractor remains obligated to progress the original Contract scope, and schedule, as planned; until a Contract Modification, accepting the Contractor re-certified VECP, has been executed by MassDOT.

The Contractor has the right to withdraw part, or all of any VECP, prior to acceptance by MassDOT. Such withdrawal shall be made in writing to the Engineer. The Contractor shall state the period of time, from the date of the initial VECP submittal, that the VECP shall remain valid and feasible. Revision of this validity and feasibility period shall be allowed only by mutual agreement of the Contractor and the Engineer in writing.

If the Contractor desires to withdraw the proposal prior to the expiration of this period for non-technical reason, MassDOT reserves the right to recover all actual costs that have been incurred to MassDOT.

VALUE ENGINEERING CHANGE PROPOSAL (Continued)

If the Contractor withdraws the VEC Proposal, MassDOT reserves the right to proceed with the VECP or any portion of the VECP as a normal change and the Contractor waives any right it may have had to share in net savings thereunder.

For purposes of this provision, expiration of the time established by the Contractor for approval shall be considered as withdrawal by the Contractor if MassDOT requests an extension of that time and the Contractor does not provide a written extension.

E. With regard to unknown conditions or sub-surface work, in general, the expectation is that the Contractor and MassDOT will strive to gain enough knowledge about the risks in order to provide a forward-priced Change Proposal. Therefore, any costs to fully evaluate the proposal, such as additional borings and/or test pits, must be considered in the cost evaluation of whether the VECP is worth pursuing. However, if it is impractical to gather conclusive exploratory information, before the VECP is executed, MassDOT may consider provisions in the VECP that clearly identifies the risk sharing (cost and time) related specifically to the unknown/sub-surface conditions. If these VECP provisions are acceptable to MassDOT they are to include supplemental language to provide a determination of the final savings/cost, and time impacts, no later than 45 days after the sub-surface work is completed. All other aspects of the VECP, unrelated to these Provisions, will be binding upon execution of the VECP.

SECTION 722
CONSTRUCTION SCHEDULING
DESCRIPTION

722.20 General

The Contractor's approach to prosecution of the Work shall be disclosed to the Department by submission of a Critical Path Method (CPM) schedule and a cost/resource loaded Construction Schedule as defined by the schedule type set forth below. These requirements are in addition to any requirements imposed in other sections.

This section establishes the requirement for scheduling submissions. There are four schedule types identified as types A, B, C and D.

All schedules shall be prepared and submitted in accordance with this specification and the instructions contained in the Construction Schedule Toolkit located on the MassDOT-Highway Division website at https://www.mass.gov/info-details/massdot-highway-contractors-schedule-toolkit.

Type A –

- Schedule Planning Session
- Baseline CPM Schedule
- Monthly Update CPM Schedule
- Short-term Construction Schedule
- Contract Schedule Update Meeting
- Cost-loaded & Resource Loaded CPM
- Resources Graphic Reporting
- Cash Flow Projections from the CPM
- Cash Flow Charts
- Monthly Projected Spending Report (PSR)
- Contractor-furnished CPM software and computer

Type B –

- Schedule Planning Session
- Baseline CPM Schedule
- Monthly Update CPM Schedule
- Short-term Construction Schedule
- Contract Schedule Update Meeting
- Cost-loaded & Resource Loaded CPM
- Monthly Projected Spending Report (PSR)
- Contractor-furnished CPM software and computer

Type C –

- Schedule Planning Session
- Baseline CPM Schedule
- Monthly Update CPM Schedule
- Short-term Construction Schedule
- Contract Schedule Update Meeting
- Monthly Projected Spending Report (PSR)
- Contractor-furnished CPM software and computer

SECTION 722 (Continued)

Type D -

- Bar chart schedule updated monthly or at the request of the Engineer
- Short-term Construction Schedule
- Monthly Projected Spending Report (PSR)

EQUIPMENT, PERSONNEL

722.40 General

A. **Software Requirements**

The Contractor shall use Primavera P6 computer scheduling software.

In addition to the requirements of Section 740 – Engineer's Field Office and Equipment, the Contractor shall provide to the Department one (1) copy of the scheduling software, one (1) software license and one (1) computer capable of running the scheduling software for the duration of the Contract. This computer and software shall be installed in the Engineer's Field Office. The computer and software shall be maintained and serviced at no additional cost to the Department.

B. Scheduler Requirements

The Scheduler shall be approved by the Engineer.

For Type A, B and C Schedules the name of the Contractor's Project Scheduler together with his/her qualifications shall be submitted to the Department for approval by the Engineer within seven (7) Calendar Days after NTP. The Project Scheduler shall have a minimum of five (5) years of project CPM scheduling experience, three (3) years of which shall be on projects of similar scope and value as the project for which the Project Scheduler is being proposed. References shall be provided from past projects that can attest to the capabilities of the Project Scheduler.

SCHEDULING METHODS

722.60 General

A. **Schedule Planning Session**

The Contractor shall conduct a schedule planning session prior to submission of the Baseline Schedule. This session will be attended by the Department and its consultants. During this session, the Contractor shall present its planned approach to the project including, but not limited to:

1. the Work to be performed by the Contractor and its subcontractors;
2. the planned construction sequence and phasing; planned crew sizes;
3. summary of equipment types, sizes, and numbers to be used for each work activity;
4. all early work related to third party utilities;
5. identification of the most critical submittals and projected submission timelines;
6. estimated durations of major work activities;
7. the anticipated Critical Path of the project and a summary of the activities on that Critical Path;
8. a summary of the most difficult schedule challenges the Contractor is anticipating and how it plans to manage and control those challenges;

SECTION 722 (Continued)

9. a summary of the anticipated quarterly cash flow over the life of the project.

This will be an interactive session and the Contractor shall answer all questions that the Department and its consultants may have. The Contractor shall provide a written summary of the information presented and discussed during the session to the Engineer. The Contractor's Baseline Schedule and accompanying Schedule Narrative shall incorporate the information discussed at this Schedule Planning Session.

B. **Schedule Reviews by the Department**

1. Baseline Schedule Reviews
   The Engineer will respond to the Baseline Schedule Submission within thirty (30) Calendar Days of receipt providing comments, questions and/or disposition that either accepts the schedule or requires revision and resubmittal. Rejected Baseline Schedules shall be resubmitted within fifteen (15) Calendar Days after receipt of the Engineer's comments.
2. Contract Progress Schedule / Monthly Update Reviews / Recovery Schedules
   The Engineer will respond to each submittal within twenty-one (21) Calendar Days. Rejected schedules shall be resubmitted by the Contractor within five (5) Calendar Days after receipt of the Engineer's comments.

The Engineer's review comments shall not be construed as direction to change the Contractor's means and methods. The review and acceptance of the CPM schedule does not relieve the Contractor of the responsibility for accomplishing the work within the contract required completion dates. Omissions and errors in the accepted CPM schedule shall not excuse performance less than that required by the Contract.

722.61 Schedule Content and Preparation Requirements

All schedules shall be prepared and submitted in accordance with the instructions contained in the Construction Schedule Toolkit located on the MassDOT-Highway Division website at:
https://www.mass.gov/info-details/massdot-highway-contractors-schedule-toolkit
and the following:

A. **LOGIC**

The schedules shall divide the Work into activities with appropriate logic ties to show:

1. conformance with the requirements of this Section and Division I, Subsection 8.02 - Schedule of Operations
2. the Contractor's overall approach to the planning, scheduling, and execution of the Work
3. conformance with any additional sequences of Work required by the Contract Documents, including, but not limited to, Subsection 8.03 - Prosecution of Work and Subsection 8.06 – Limitations of Operations.

SECTION 722 (Continued)

B. **ACTIVITIES**

The schedule shall clearly define the progression of the Work from the Notice to Proceed (NTP) to Contractor Field Completion (CFC) by using separate activities, or including attributes within appropriate activities, to address each of the following:

1. Notice to Proceed
2. Work Breakdown Structure
3. The Critical Path is clearly defined and organized.
4. Float shall be clearly identified.
5. Detailed activities to satisfy permit requirements.
6. Subcontractor approvals at fifteen (15) Calendar Days from submittal to response
7. The preparation and submission of shop drawings, procedures, and other required submittals, with a planned duration that is to be demonstrated to the Engineer as reasonable.
8. The review and return of shop drawings, procedures, and other required submittals, approved or with comments, the duration of which shall be thirty (30) Calendar Days, unless otherwise specified or as approved by the Engineer.
9. Procurement of fabricated materials and equipment with long lead times, including time for review and approval of submittals required before procuring and fabricating.
10. Each component of the Work defined by specific activities.
11. Right-of-Way (ROW) takings that have been identified in the Contract.
12. Early Utility Relocation (by others) that has been identified in the Contract.
13. Interfaces with adjacent work, utility companies, other public agencies, sensitive abutters, and/or any other third-party work affecting the Contract.
14. Utility work to be performed in accordance with the Project Utility Coordination (PUC) Form as provided in Section 8.14 - Utilities Coordination, Documentation and Monitoring Responsibilities
15. Access Restraints – restrictions on access to areas of the Work that are defined by the Department in the bid package, in Subsection 8.06 – Limitations of Operations or elsewhere in the Contract
16. Limitations of Work – time of year restrictions and any other limitations identified in the contract
17. Traffic work zone set-up and removal, night work and phasing
18. Material Certifications
19. Milestones listed in Subsection 8.03 - Prosecution of Work or elsewhere in the Contract Documents
20. For Type A and B Contracts only: All items to be paid for, including all Unit Price and Lump Sum pay items, shall be identified by activity. This shall include all non-construction activities such as engineering work; purchase of permanent materials and equipment, purchase of structural steel stock, equipment procurement, equipment delivery to the site or storage location and the representative amount of overhead/indirect costs that was included in the Contractor's Bid Prices.

SECTION 722 (Continued)

21. Contractor's request for validation of FBU (ready to open to traffic)
22. Full Beneficial Use (FBU) Contract Milestone per the following requirements: The majority of contract Work has been completed and the asset(s) has been opened for full multi-modal transportation use, except for limited contract work items that do not materially impair or hinder the intended public use of the transportation facility. All anticipated lane takings have been completed, except for minor, short term work items and as defined in Subsection 8.03 - Prosecution of Work
23. The Department's confirmation of completed work to allow for FBU.
24. Contractor's request for validation of Substantial Completion
25. Department generated punch list of twenty-one (21) Calendar Days
26. Substantial Completion Contract Milestone as defined in the standard specifications.
27. Punch list Completion Period of at least thirty (30) Calendar Days per the requirements of Subsections 5.11 - Final Acceptance, 7.15 - Claims Against Contractors for Payment of Labor, Materials and Other Purposes
28. Contractor confirmation that all punchlist work and documentation has been completed.
29. Physical Completion of the Work Contract Milestone per the requirements of Subsections 5.11 - Final Acceptance and 8.03 - Prosecution of Work
30. Documentation Completion per the requirements of Subsections 5.11 - Final Acceptance and 8.03 - Prosecution of Work
31. Contractor Field Completion Contract Milestone (which can also be considered the completion date) per the following requirements: All physical contract Work is complete including punchlist. The Contractor has fully de-mobilized from field operations and as defined in Subsection 5.11

C. **EARLY AND LATE DATES**

Early Dates shall be based on proceeding with the Work or a designated part of the Work exactly on the date when the corresponding Contract Time commences. Late Dates shall be based on completing the Work or a designated part of the Work exactly on the corresponding Contract Time, even if the Contractor anticipates early completion.

D. **DURATIONS**

Activity durations shall be in Work Days. Planned Original Durations shall be established with consideration of resources and production rates that correspond to the Contractor's Bid Price. Within all of the Department-required schedules, the Contractor shall plan the Work using durations for all physical construction activities of no less than one (1) Work Day and no greater than fourteen (14) Work Days, unless approved by the Engineer as part of the Baseline Schedule Review.

SECTION 722 (Continued)

Should there be an activity with a duration that is determined by the Engineer to be unreasonable, the Contractor will be asked to provide a basis of the duration using bid documents, historic production rates for similar work, or other form of validation that is acceptable to the Engineer. Should the Contractor and the Engineer be unable to agree on reasonable activity durations, the Engineer will, at a minimum, note the disagreement in the Baseline Schedule Review along with a duration the Engineer considers reasonable and the basis for that duration. A schedule that contains a substantial number of activities with durations that are deemed unreasonable by the Engineer will not be accepted.

E. **MATERIALS ON HAND**

The Contractor shall identify in the Baseline Schedule all items of permanent materials (Materials On Hand) for which the Contractor intends to request payment prior to the incorporation of such items into the Work.

F. **ACTIVITY DESCRIPTIONS**

The Contractor shall use activity descriptions in all schedules that clearly describe the work to be performed using a combination of words, structure numbers, station numbers, bid item numbers, work breakdown structure (WBS) and/or elevations in a concise and compact label.

G. **ACTIVITY IDENTIFICATION NUMBERS**

The Contractor shall use the activity identification numbering system specified in the MassDOT Highway Division Contractor Construction Schedule Toolkit.

H. **ACTIVITY CODES**

The Contractor shall use the activity codes specified in the MassDOT Highway Division Contractor Construction Schedule Toolkit.

I. **CALENDARS**

Different calendars may be created and assigned to all activities or to individual activities. Calendars define the available hours of work in each Calendar Day, holidays and general or project-specific non-Work Days such as Fish Migration Periods, time-of-year (TOY) restrictions and/or area roadway restrictions. All calendars shall extend two years beyond the current project completion date.

Project Special Provisions identify specific calendar restrictions some examples of special calendars include, but are not limited to:

- Winter Shutdown Period, specific work is required by separate special provision to be performed during the winter. See Special Provision 8.03 (if applicable)
- Peak traffic hours on heavily traveled roadways. This shall be from 6:30 am to 9:30 am and from 3:30 pm to 7:00 pm, unless specified differently elsewhere in the Contract.
- Special requirements by sensitive abutters, railroads, utilities and/or other state agencies as defined in the Contract.
- Planting seasons for trees, shrubs and grasses and wetlands mitigation work.

SECTION 722 (Continued)

- Cape Cod and the Islands Summer Roadway Work Restrictions: A general restriction against highway and bridge construction is enforced between Memorial Day and Labor Day, unless otherwise directed by the Engineer. Cape Ann Summer Roadway Work Restrictions: While there are no general restrictions for Cape Ann as there are for Cape Cod and the Islands, project-specific restrictions may be enforced.
- Turtle and/or Fish Migration Periods and/or other in-water work restrictions: Refer to the Project Special Provisions for specific restrictions.
- Working over Waterways Restricted Periods.
- Night-time paving and striping operations, traffic, and temperature restrictions.
- Utility Restrictions shall be as specified within the Contract.

J. **FLOAT**

For the calculation of float in the CPM schedule, the setting for *Retained Logic* is required for all schedule submissions, starting with the Baseline Schedule Submission. Should the Contractor have a reason to propose that an alternative calculation setting such as *Progress Override* be used, the Contractor shall obtain the Engineer's approval prior to modifying to this setting.

K. **COST AND RESOURCE LOADING (Types A and B only)**

For all Type A and B Schedules, the Contractor shall provide a cost and resource-loaded schedule with an accurate allocation of the costs and resources necessary to complete the Work. The costs and resources shall be assigned to all schedule activities in order to enable the Contractor to efficiently execute the Contract requirements and the Engineer to validate the original plan, monitor progress, provide cash flow projections, and analyze delays.

1. Each schedule activity shall have an assigned cost that accurately represents the value of the Work. Each schedule activity shall have its resources assigned to it by craft and the anticipated hours to accomplish the work. Each schedule activity's equipment resources shall be assigned to it by equipment type and hours operated. Front-loading or other unbalancing of the cost distribution will not be permitted.
2. The sum of the cost of all schedule activities shall be equal to the Contractor's Bid Price.
3. Indicating the labor hours per individual, per day, by craft and equipment hours/day will be acceptable.
4. The Engineer reserves the right to use the cost-loading as a means to resolve changes, disputes, time entitlement evaluations, increases or decreases in the scope of Work, unit price renegotiations and/or claims.
5. For all Type A and B Schedules, all subnets, fragnets, Proposal Schedules, and Recovery Schedules shall be cost and resource- loaded to help to quickly validate and monitor the duration of the Work to be performed.
6. For Type A Schedules, cost-loading of the schedule will also be used for cash flow projection purposes.
7. The cost-loading of each activity shall indicate the portion of the cost for that activity that is applicable to a specific bid item (cost account.) The total cost for each cost account must equal the bid item price.

SECTION 722 (Continued)

L. **NOT TO BE USED IN THE CONTRACTOR'S CPM SCHEDULE**

1. Milestones or constraint dates not specified in the Contract.
2. Scheduled work not required for the accomplishment of a Contract Milestone
3. Use of activity durations, logic ties and/or sequences deemed unreasonable by the Engineer.
4. Delayed starts of follow-on trades.
5. Float suppression techniques.
6. Leads such as leads, lags, SS, SF, & FF relationships without the expressed permission of the Department.

722.62 Submittal Requirements

All schedules shall be prepared and submitted in accordance with the requirements listed below.

Each monthly Contract Progress Schedule submittal shall be uniquely identified.

Each Submission shall, at a minimum, include the following:

a. Narrative
b. Schedule submittals shall be signed by the Scheduler
c. Schedule Printout - All Activities
d. Schedule Printout - Critical Path Layout
e. Schedule Printout - Remaining Work
f. Schedule Printout - Top 3 Float Path
g. Work Breakdown Structure (WBS) Summary
h. Project Spending Report (PSR) in Portable Document Format (.PDF)
i. Project Spending Report (PSR) in Microsoft Excel spreadsheet (.XLS)
j. Oracle Primavera P6 Schedule File (.XER)

All digital file submittals will be labeled with the following information.

- Contract Number
- Project Number
- Project locations (i.e., town(s))
- Brief description
- Submittal description (i.e., UP07)
- Data Date (MM-DD-YY)
- File Description (i.e., Critical Path)

Example: C110464 (P606309) - Orange Route 2 over 202 – UP23 (07-15-22) - Critical Path

A. **Narratives**

A written narrative shall be submitted with every schedule submittal. The narrative shall:

1. itemize and describe the flow of work for all activities on the Critical Path in a format that includes any changes made to the schedule since the previous Contract Progress Schedule / Monthly Update or the Baseline Schedule, whichever is most recent.
2. provide a description of any specification requirements that are not being followed. Identify those that are improvements and those that are not considered to be meeting the requirements.

SECTION 722 (Continued)

3. provide all references to any Notice of Delay that has been issued, within the time period of the Contract Progress Schedule Update, by letter to the Engineer. Note that any Notice of Delay that is not issued by letter will not be recognized by the Engineer. See Subsection 722.64.A – Notice of Delay.
4. provide a description of each third-party utility's planned vs. actual progress and note any that are trending late or are late per the durations and commitments as provided in the PUC Form; provide a description of the five (5) most important responses needed from the Department and the need date for the responses in order to maintain the current Schedule of Record.
5. provide a description of all critical issues that are not within the control of the Contractor or the Department (third party) and any impact they had or may have on the Critical Path.
6. provide a description of any possible considerations to improve the probability of completing the project early or on time.
7. compare Early and Late Dates for activities on the Critical Path and describe reasons for changes in the top three (3) most critical paths.
8. describe the Contractor's plan, approach, methodologies, and resources to be employed for completing the various operations and elements of the Work for the top three (3) most critical paths. For update schedules, describe and propose changes to those plans and verify that a Proposal Schedule is not required.
9. describe, in general, the need for shifts that are not 5 days/week, 8 hours/day, the holidays that are inserted into each calendar and a tabulation of each calendar that has been used in the schedule.
10. describe any out-of-sequence logic and provide an explanation of why each out-of-sequence activity does not require a correction, if one has not been provided, and an adequate demonstration that these changes represent the basis of how these activities will be built, including considerations for resources, dependencies, and previously approved production rates.
11. identify any possible duration increases resulting from actual or anticipated unit price item quantity overruns as compared to the baseline duration, with a corresponding suggestion to mitigate any possible delays to the Critical Path. If the delay is anticipated to impact the Critical Path, refer to Subsections 4.06 – Increased or Decreased Contract Quantities and 8.10 – Determination and Extension of Contract Time for Completion and submit a letter to the Engineer notifying of a potential delay.
12. include a schedule log consisting of the name of the schedule, the data date and the date submitted.
13. include and describe any notifications, communications and coordination meetings with third-parties such as utility companies that occurred from the last update including personnel names, job titles and contact information, date of meeting(s)/correspondence(s), topics discussed, and reasons the third party provided for deviations from the PUC form.

SECTION 722 (Continued)

B. **CPM Bar Charts**

One (1) timescaled bar chart containing all activities shall be prepared and submitted using a scale that yields readable plots and that meets the requirements of Subsection 722.61 – Schedule Content and Preparation Requirements Activities shall be linked by logic ties and shown on their Early Dates. Critical Paths shall be highlighted, and Total Float shall be shown for all activities.

A second timescaled bar chart shall also be prepared containing only the Critical Path or, if the Critical Path is not the longest path, the Longest Path using a scale that yields readable plots and that meets the requirements of Subsection 722.61 – Schedule Content and Preparation Requirements. Activities shall be linked by logic ties and shown on their Early Dates. Total Float shall be shown for all activities.

C. Detailed Activity Schedule Comparisons

A Detailed Activity Schedule Comparison (DASC) is a simple reporting tool in the format of a graphical report that will provide Resident Engineers with immediate, timely and up-to-date information. The DASC consists of an updated bar chart that overlays the current time period's bar chart onto the previous time period's bar chart for an easily read comparison of progress during the present and previous reporting periods.

D. Activity Cost Report and Monthly Cash Flow Projections (Type A only)

With each Contractor Quantity Estimate (CQE), the Contractor shall submit an Activity Cost Report and Cash Flow Projection that includes all activities grouped by Contract Bid Item.

The Activity Cost Report shall be generated from the Schedule of Record and shall be the basis of the Monthly Cash Flow Projection. Within each contract Bid Item, activities shall be sequenced by ascending activity identification number and shall show:

1. activity ID and description,
2. forecast start and finish dates for each activity and,
3. when submitted as a revised schedule, actual start, and finish dates for each completed activity.
4. any variance to the estimated contract quantity shall be shown.

E. Resource Graphs (Type A only)

Monthly and cumulative resource graphs for the remaining Contract period using the Early Dates and Late Dates in the Contract Progress Schedule shall be included as part of each schedule submittal.

SECTION 722 (Continued)

F. Projected Spending Reports

A Projected Spending Report (PSR) shall be prepared and submitted monthly. The PSR shall indicate the monthly spending (cash flow) projection for each month from NTP to Contractor Field Completion (CFC). Each month's actual spending shall be calculated using all CQEs paid during that month. The Projected Spending Report (PSR) shall be depicted in a tabular format and provided in both an .XLS and .PDF.

722.63. Progress Schedule Requirements

A. Baseline Schedule

The Baseline Schedule shall be due thirty (30) Calendar Days after Notice to Proceed (NTP). The Baseline Schedule shall only reflect the Work awarded to the Contractor and shall not include any additional work involving Extra Work Orders or any other type of alleged delay. The Baseline Schedule shall be prepared and submitted in accordance with Subsections 722.61 - Schedule Content and Preparation Requirements and 722.62 - Submittal Requirements. Once the Baseline Schedule has been accepted by the Engineer, with or without comments, it shall represent the as-planned schedule for the Work and become the Contract Progress Schedule of Record until such time as the schedule is updated or revised under Subsections 722.63.C - Contract Progress Schedules / Monthly Updates, 722.64.C - Recovery Schedules and 722.64.D - Proposal Schedules.

The Cost and Resource-Loading information (Types A and B only) shall be provided by the Contractor within forty-five (45) Calendar Days after NTP.

The Engineer's review comments on the Baseline Schedule and the Contractor's responses to them will be maintained for the duration of the Contract and will be used by the Engineer to monitor the Contractor's work progress by comparing it to the Contract Progress Schedule / Monthly Update.

B. Interim Progress-Only Schedule Submissions

The first monthly update of the Contract Progress Schedule/Monthly Update is due within seventy (70) Calendar Days after Notice to Proceed (NTP.) The Baseline Schedule review period ends at sixty (60) Calendar Days after NTP, see Subsection 722.60.B - Schedule Reviews by the Department. If the Baseline Schedule has not been accepted within sixty (60) Calendar Days after NTP, an Interim Progress-Only Schedule shall be due within seventy (70) Calendar Days after NTP. The purpose of the Interim Progress-Only Schedule is to document the actual progress of all activities, including non-construction activities, from NTP until the Baseline Schedule is accepted.

SECTION 722 (Continued)

C. Contract Progress Schedules / Monthly Updates

The first Contract Progress Schedule shall be submitted by the Contractor no later than seventy (70) Calendar Days after NTP. The data date for this first Progress Schedule shall be two months (approximately sixty (60) Calendar Days) after NTP. Subsequent Progress Schedules shall be submitted monthly.

Each Contract Progress Schedule shall reflect progress up to the data date. Updated progress shall be limited to asbuilt sequencing and asbuilt dates for completed and inprogress activities. Asbuilt data shall include actual start dates, remaining Work Days and actual finish dates for each activity, but shall not change any activity descriptions, the Original Durations, or the Original Resources (as planned at the time of bid), without the acceptance of the Engineer. If any activities have been completed out-of-sequence, the Contractor shall propose new logic ties for affected in-progress and future activities that accurately reflect the previously approved sequencing. Alternatively, the Contractor may submit to the Engineer for approval an explanation of why an out-of-sequence activity does not require a correction and an adequate demonstration that the changes accurately represent how the activities will be built, including considerations for resources, dependencies, and previously approved production rates. Once approved by the Engineer, the Contractor may incorporate the changes in the next Contract Progress Schedule/Monthly Update with the affected activities clearly identified and explained in the Schedule Narrative.

No revisions to logic ties, sequence, description, or duration of future activities; or planned resource costs shall be made without prior approval by the Engineer.

Any proposed logic changes for in-progress or future activities shall be submitted to the Engineer for approval before being incorporated into a Contract Progress Schedule. The logic changes must be submitted using a Proposal Schedule or a schedule fragnet submission. Once approved by the Engineer, the Contractor may incorporate the logic in the next Contract Progress Schedule/Monthly Update with the affected activities clearly identified and explained in the Schedule Narrative.

For any proposed changes to the original sequence, description or duration of future activities, the Contractor shall submit to the Engineer for approval an explanation of how the proposed description or duration change reflects how the activity will be progressed, including considerations for resources and previously approved production rates. Any description or duration change that does not accurately reflect how the activity will be progressed will not be approved by the Engineer. Once approved by the Engineer, the Contractor may incorporate the changes in the next Contract Progress Schedule/Monthly Update with the affected activities clearly identified and explained in the Schedule Narrative.

Contract Progress Schedules that extend performance beyond the Contract Time or beyond any Contract Milestone shall not be approved by the Engineer. The Contractor shall submit a Recovery Schedule, or a Time Entitlement Analysis, if any Contract Progress Schedule/Monthly Update indicates a failure to meet the Contract Dates.

SECTION 722 (Continued)

D. Short-Term Construction Schedule

The Contractor shall provide a Short-Term Construction Schedule that details daily work activities, including any multiple shift work that the Contractor intends to conduct, in a spreadsheet format. The daily activities shall directly correspond to the Contract Progress Schedule activities, with a matching reference to the activity identification number in the Contract Progress Schedule and may be at a greater level of detail. The Short-Term Construction Schedule shall be submitted every two weeks. It shall display all work for a thirty-five (35) Calendar Day period consisting of completed work for the two (2) week period prior and all planned work for the following three (3) week period. The initial submission shall be provided no later than thirty (30) Calendar Days after NTP or as required by the Engineer.

The Contractor shall be prepared to discuss the Short-Term Construction Schedule, in detail, with the Engineer in order to coordinate field inspection staff requirements, the schedule of work affecting abutters and any corresponding work with affected utilities. Short-Term Construction Schedules shall be prepared and submitted in accordance with Subsections 722.61 - Schedule Content and Preparation Requirements and 722.62 - Submittal Requirements.

722.64 Impacted Schedule Requirements

A. Notice of Delay

The Contractor shall notify the Engineer in writing, with copies to the District and State Construction Engineers, within fifteen (15) of the start of any delays to the Critical Path that are caused by actions or inactions that were not within the control of the Contractor. Delay notifications that are not provided in a letter to the Engineer, such as a delay notification in the schedule narrative, will not be recognized as contractual notice in the determination of any Time Extension related to the impacts to the work associated with this specific alleged delay. Should such a delay continue for more than one (1) week, the Contractor shall note it in the Schedule Narrative until the delay is no longer impacting the Critical Path for the completion of the Contract Milestones. The Engineer will evaluate the alleged delay and its impact and will respond to the Contractor within ten (10) Calendar Days after receipt of a notice of delay.

B. Time Entitlement Analysis

A Time Entitlement Analysis (TEA) shall consist of a descriptive narrative, prepared in accordance with Subsection 722.62.A - Narratives, and an as-built CPM schedule, which may be in the form of a schedule fragnet that has been developed from the project's Contract Progress Schedule of Record, and illustrates the impact of a delay to the Critical Path, Contract Milestones and/or Contract Completion Date as required in Subsection 8.10 - Determination and Extension of Contract Time for Completion. TEAs shall also be used to determine the schedule impact of proposed Extra Work Orders (EWO) as also required in Subsection 8.10.

TEAs shall be prepared and submitted in accordance with the requirements of Subsections 722.61 - Schedule Content and Preparation Requirements and 722.62 - Submittal Requirements and shall be based on the Contract Progress Schedule of Record applicable at the start of the delay or impact from an EWO. A TEA fragnet must start with a specific new activity describing the work contained in either a Notice of Delay previously submitted to the Department per Subsection 722.64.A - Notice of Delay or an EWO.

SECTION 722 (Continued)

TEAs shall be submitted:

1. as part of any Extra Work Order that may impact Contract Time,
2. with a request for a Time Extension,
3. within fifteen (15) Calendar Days after a request for a TEA by the Engineer for any other reason.

A TEA shall be submitted to the Engineer before any Time Extension is granted to the Contractor. Time Extensions will not be granted unless the TEA accurately reflects an evaluation of all past delays and the actual events that occurred that impacted the Critical Path. The TEA must also demonstrate a plan for the efficient completion of all of the remaining work through an optimized CPM Schedule. The analysis shall include all delays, including Contractor-caused delays, and shall be subdivided into timeframes and causes of delays.

TEAs shall incorporate any proposed activities, logic ties, resource considerations, and activity costs required to demonstrate the schedule impacts most efficiently in addition to detailing all impacts to existing activities, logic ties, the Critical Path, Contract Milestones, and the Contract Completion Date. In addition, TEAs shall accurately reflect any changes made to activities, logic ties, restraints, and activity costs, necessitated by an Extra Work Order or other schedule impact, for the completion of the remaining work. The Contractor shall provide TEAs that demonstrate that all delays have been mitigated to the fullest extent possible without requiring an Equitable Adjustment to the original bid basis.

All TEAs shall clearly indicate any overtime hours, additional shifts and the resources that are proposed to be incorporated in the schedule. The Engineer shall have final discretion over the use of overtime hours and additional shifts. The Engineer shall have the right to require that overtime hours and/or additional shifts be used to minimize the duration of Time Extensions if it is determined to be in the best interest of the Department to do so.

When accepted, the changes included in a TEA shall be incorporated into the next Contract Progress Schedule per the requirements of Subsection 722.63.C - Contract Progress Schedules / Monthly Updates. During the review of any TEA, all Contract Progress Schedules shall continue to be submitted as required.

The Engineer may request that the Contractor prepare a Proposal Schedule or a Recovery Schedule to further mitigate any delays that are shown in the accepted TEA or Contract Progress Schedule.

C. Recovery Schedules

The Contractor shall promptly report to the Engineer all schedule delays during the prosecution of the Work. Contract Progress Schedules that predict performance extended beyond the Contract Time or beyond any Contract Milestone shall not be approved as the schedule of record. This requirement is critical to the Department's ability to make informed decisions regarding Contract Time and costs.

The Contractor shall submit a Recovery Schedule within fifteen (15) Calendar Days of a Contract Progress Schedule submission that shows failure to meet the Contract Dates unless a recovery schedule is waived by the Department. Waiving the recovery schedule does not relieve the contractor of the responsibility for the delay. The Department may revoke the waiver of a Recovery Schedule, at which time a Recovery Schedule shall be submitted within fifteen (15) Calendar Days of the Contractor being notified.

Changes represented in accepted Recovery Schedules shall be incorporated into the next Contract Progress Schedule.

SECTION 722 (Continued)

D. Proposal Schedules

A Proposal Schedule is an alternative schedule used to evaluate proposed changes to the Contract scope or significant alternatives to previously approved approaches to complete the Work, which may include changes to activity durations, logic, and sequence. For Types A and B Schedules, the Proposal Schedule shall be cost and resource loaded.

A Proposal Schedule may be requested by the Department at any time or may be offered by the Contractor. The Engineer may request that the Contractor prepare a Proposal Schedule to further mitigate any delays that are shown in an accepted TEA or Contract Progress Schedule.

The Contractor shall submit the Proposal Schedule within thirty (30) Calendar Days of a request from the Department.

The Proposal Schedule shall not be considered a Schedule of Record until the logic, durations, narrative, and basis of the Proposal Schedule have been accepted by the Engineer. If the Proposal Schedule took the form of a fragnet, it must be incorporated into the Contract Progress Schedule of Record showing the current progress of all other activities and the impacts/results of the changes made by the Proposal Schedule before the Proposal Schedule is accepted by the Department.

Proposal Schedules shall clearly indicate any proposed acceleration including overtime hours, additional shifts, and the resources that are proposed to be incorporated in the schedule. The Engineer shall have final discretion over the use of overtime hours and additional shifts. Proposal Schedules that contain a cost element shall be submitted with a separate Cost Proposal.

Changes represented in the accepted Proposal Schedules shall be incorporated into the next Contract Progress Schedule. During the review of any Proposal Schedule, all Contract Progress Schedules shall continue to be required every month.

E. Disputes

All schedules shall be submitted, reviewed, dispositioned, and accepted in the timely manner specified herein so as to provide the greatest possible benefit to the execution of this Contract.

The Contractor may dispute a decision by the Engineer by filing a claim notice within seven (7) days after the Contractor's request for additional time has been denied or if the Contractor does not accept the number of days granted in a time extension. The Contractor's claim notice shall include a revised time entitlement analysis that sufficiently explains the basis of the time-related claim. Failure to submit the required time entitlement analysis with the claim notice shall result in denial of the Contractor's claim. A determination on the Contractor’s claim shall be in accordance with Subsection 7.16 Claims of Contractor for Compensation. Pending resolution of any dispute, the last schedule accepted by the Engineer will remain the Contract Schedule of Record.

SECTION 722 (Continued)

722.65 Schedule Type D Requirements

This section is to detail the requirements for Type D Schedules and is separate from the requirements listed above. These schedules are intended for a project in which a more formal schedule would not be practical.

Schedules for Type D projects shall be submitted for each work assignment. The Schedule Type D shall be submitted electronically in .XLS and .PDF format and meet the following requirements.

The schedule requirements for work assignments that are anticipated to last three weeks or less shall conform to the requirements for Short-term Construction Schedules below.

Work assignments that are anticipated to last longer than three weeks shall submit a bar chart baseline and provided update schedules upon request of the engineer as required under Bar Chart Schedule below in addition to meeting the Short-term Construction schedule requirements.

A. **Bar Chart Schedule**

A Bar Chart that shall include the following:

- Work Assignment start date.
- Activities to identify.
  - Major work operations broken down to be no longer than 14 days.
  - Procurement of fabricated materials and equipment with long lead times, including time for review and approval of submittals required before procuring and fabricating.
  - The preparation and submission of shop drawings, procedures, and other required submittals, with a planned duration that is to be demonstrated to the Engineer as reasonable.
  - The review and return of shop drawings, procedures, and other required submittals, approved or with comments, the duration of which shall be shown as thirty (30) Calendar Days,
  - Detailed activities to satisfy permit requirements.
  - Subcontractor approvals at fifteen (15) Calendar Days from submittal to response
  - Project Close out activities including a 21-calendar day creation of a punchlist activity and 30 calendar day minimum completion of punchlist activity.
- Interfaces with adjacent work, utility companies, other public agencies, sensitive abutters, and/or any other third-party work affecting the Contract.
- Access Restraints – restrictions on access to areas of the Work
- Traffic work zone set-up and removal, night work and phasing
- Contract Milestones including Full beneficial Use, Substantial Completion and Contractor Field Completion

The Bar Char Schedule shall be provided at the beginning of the project and updated with each work order created for the project.

SECTION 722 (Continued)

B. **Short-Term Construction Schedule**

The Contractor shall provide a Short-Term Construction Schedule that details daily work activities, including any multiple shift work that the Contractor intends to conduct, in a spreadsheet format. The daily activities shall directly correspond to the Contract Progress Schedule activities, with a matching reference to the activity identification number in the Contract Progress Schedule and may be at a greater level of detail. See schedule toolkit for suggested format.

The Short-Term Construction Schedule shall be submitted every two weeks. It shall display all work for a thirty-five (35) Calendar Day period consisting of completed work on the assignment for the two week period prior and all planned work for the following three week period. The initial submission shall be provided no later than thirty (30) Calendar Days after NTP or as required by the Engineer.

The Contractor shall be prepared to discuss the Short-Term Construction Schedule, in detail, with the Engineer in order to coordinate field inspection staff requirements, the schedule of work affecting abutters and any corresponding work with affected utilities.

C. **Project Spending Report (PSR)**

A Projected Spending Report (PSR) shall be prepared and submitted monthly. The PSR shall be for all active work assignments, broken down by work assignment. The PSR shall indicate the monthly spending (cash flow) projection for each month from NTP to Contractor Field Completion (CFC). Each month's actual spending shall be calculated using all CQEs paid during that month. The Projected Spending Report (PSR) shall be depicted in a tabular format and provided in both an .XLS and .PDF

SECTION 722 (Continued)

COMPENSATION

722.80 Method of Measurement

Schedule of Operations (Type A, B and C)

The project bid documents specify the fixed-price amounts to be paid to the Contractor for the Project Schedule requirements contained herein. Each bidder shall include this fixed price bid item amounts in their bid. Failure to do so may be grounds for the rejection of the bid.

This fixed price amount is for payment purposes only and is separate from what the Department considers to be the Contractor's General Condition costs. If the Contractor deems it necessary to include additional costs to provide all of the requirements of this section, these additional costs shall be included in the Contractor's overall bid price.

All required schedule-related work, including, but not limited to computers, computer software, the planning and coordination with utilities, training, schedule preparation and schedule submittals will be paid for under the fixed price amount.

Twenty percent (20%) of this pay item will be paid upon the Engineer's acceptance of the Contractor's Baseline Schedule, prepared and submitted in accordance with Subsection 722.63.A.

The remaining eighty percent (80%) of this pay item will be paid in equal monthly installments distributed across the Contract Duration from Notice to Proceed (NTP) to Contractor Field Completion (CFC), less the 2 months required for the submittal and review of the Baseline Schedule in accordance with the following formula:

$$\text{Monthly Payment} = \frac{\text{Remaining Fixed Price amount (80\% of the Item Cost.)}}{\text{Contract Duration in whole months} - 2 \text{ months}}$$

The Schedule of Operations pay item will be adjusted to pay for only the actual quantity of schedules that have been submitted in accordance with this section.

Should there be a Time Extension granted to the Contractor, the Engineer may provide an Equitable Adjustment for additional Contract Progress Schedule Updates at intervals directed by the Engineer. The monthly payment will be the basis for this Equitable Adjustment.

Schedule of Operations (Type D)

For projects assigned with Type D schedule requirements, all scheduling work shall be considered incidental to the project with no separate payment under this section.

SECTION 722 (Continued)

722.81 Basis of Payment

The timely and accurate submission of the Baseline Schedule is critical to the Contract and the Department's ability to make informed decisions. Only payments under Item 740 - Engineer's Field Office and Item 748 – Mobilization will be made until the Baseline Schedule is accepted by the Engineer.

All required schedule-related work, including, but not limited to computers, computer software, the planning and coordination with utilities, training, schedule preparation and schedule submittals (including monthly progress schedules, short-term schedules, project spending reports, TEAs, recovery schedules or impacted schedules) shall be included in this work.

No payment for any other pay item will be processed beyond seventy-five (75) Calendar Days from Notice to Proceed (NTP) until the Baseline Schedule is accepted by the Engineer. Until the Engineer's acceptance of the Baseline Schedule, the combined total of all payments made to the Contractor will be limited to an amount no greater than the total price for Item 748 - Mobilization or 3% of the contract price, whichever is less.

All Contract Progress Schedule Updates submitted later than ten (10) Calendar Days after the CQE (Contract Quantity Estimate) completion date, or greater than forty (40) Calendar Days from the Data Date of the previous submission, will be deemed to be no longer useful and will not qualify for payment. The late submission of Impacted schedules, including TEAs, recovery schedules and proposal schedules will result in the forfeiture of the monthly payment for the month in which they were due and subsequent months until the submission is made. Late submission of missed submittals will not result in recovery of the previously forfeited portion of the Schedule of Operations Fixed Price Payment Item.

Failure to submit schedules as and when required may result in the forfeiture of that portion of the Schedule of Operations Fixed Price Payment and/or the withholding of the full or partial CQE payments by the Engineer.

Failure to submit schedules that are acceptable to the Engineer may result in the forfeiture of that portion of the Schedule of Operations Fixed Price Payment and/or the withholding of the full or partial CQE payments by the Engineer.

The Schedule of Operations pay item will be adjusted to pay for only the actual quantity of schedules that have been submitted in accordance with this section.

The Contractor's failure or refusal to comply with the requirements of this Section shall be reasonable evidence that the Contractor is not prosecuting the Work with due diligence and may result in the Engineer withholding of full or partial payments of all work performed.

722.82 Payment Items

722.3 SCHEDULE OF OPERATIONS (TYPE C) - FIXED PRICE $61,500 LUMP SUM

ITEM 102.2 TREE TRIMMING LUMP SUM

Tree trimming shall conform to the relevant provisions of Subsections 8.08 and 101 of the Standard Specifications.

Work shall consist of removing all living, dead, dying, broken and certain other limbs and branches in areas adjacent to proposed overhead wire relocations, highway lighting, traffic signals, traffic signage, and other areas as described on the plans, as required by the Engineer.

Tree trimming shall be done as directed by the Engineer. Any tree trimming for overhead wire relocations shall meet the current requirements of each Utility. Prior to commencing work the Contractor shall verify each location with the Utility Companies.

All pruning and tree work shall be in conformance with the most current version of the American National Standards Institute (ANSI) Standard Z-133.1 and A300 Standard Practices for Tree, Shrub, and Other Woody Plant Maintenance.

All tree trimming work within 10 feet of energized power lines and equipment shall be in conformance with the most current version of the United States Department of Labor (DOL) OSHA Standard 1910.269(r) along with subsections (1) through (8).

All work under this Item will be performed or supervised by a Massachusetts Certified Arborist.

Contractor shall be required to provide a crew, consisting of a bucket truck with operator and grounds man for pruning and removal. The minimum crew shall consist of the following: a supervisor and three tree-trimmers/laborers. The crew shall be equipped with all necessary equipment needed to complete the work including, but not limited to, pickup trucks, chippers, gas powered chain saws, hand saws, loppers, shears, pruners, branch trimmers, ladders, tree-climbing equipment, etc. Fuel for equipment shall also be considered incidental to this Item. The crew shall be OSHA certified as line-clearance tree trimmers to work within 10 feet of energized power lines and equipment.

SUBMITTALS

Prior to start of work, the Contractor shall submit to the Engineer the name, certification number and resume of the Massachusetts Certified Arborist referenced herein. Cost for Certified Arborist for all activities pertaining to this Item shall be incidental to this Item.

Incidental to this Item, the Contractor shall provide to the Engineer one (1) copy of the most current version of the American National Standards Institute (ANSI) Standard Z-133.1 and A300 Standard Practices for Tree, Shrub, and Other Woody Plant Maintenance, Part 1: Pruning. These references shall be kept by the Engineer at his/her office for the length of the Contract.

Prior to start of work, the Contractor shall coordinate with the MassDOT Landscape Design Section, the Electric Utility Company, and the Utility Company with pole set in the field to confirm number, location, and extent of selective tree trimming

ITEM 102.2 (Continued)

DESCRIPTION OF WORK

Line-clearance Tree Trimming: Shall be defined as the pruning, trimming, repairing, maintaining, removing, or clearing of trees or the cutting of brush that is near (within 10 feet of) energized power lines.

TREE: Shall be defined as having a diameter of 4 inches or over, measured at a point 3 feet above the average ground.

LIMBS AND BRANCHES: Shall be defined as wood having a diameter of ½ inch or over and wood that has a diameter of less than ½ inch shall be considered a TWIG.

A DYING LIMB OR BRANCH: May have live growth at some point but shall be removed if found to be in an unhealthy condition.
While it is not the intent that every dead, dying and/or broken twig be removed from trees requiring trimming, the tree worker will be required to remove all such twigs accessible in the areas of the tree in which he/she is working.

If required by the Engineer, specific trees or parts thereof which are so located that damage may result from dropping shall be reduced by rope or cable lowering.

Tree shaping may be required on trees, where up-branching done under this contract has distorted the natural symmetry of the tree. Tree shaping shall consist of the removal of limbs and branches from other locations of the tree where removal is desirable to restore natural symmetry.

All sucker growth on all tree trunks within the limits of the contract shall be removed from the ground level to the beginning of the main branch system.

Any and all trees, branches, or brush conflicting with utility poles, equipment, overhead wires, and service connections, shall be removed and/or cut back using best practices to satisfy the requirements of all Utilities with an attachment to the pole line.

Any and all branches extending directly below a street luminaire as to limit the light reaching the street or path/sidewalk surfaces shall be removed and all branches shall be cut back to afford a minimum of 5-foot clearance on all sides of the luminaire. The path/sidewalk surface shall be considered as the area from the edge of the roadway surface to the edge of the path/sidewalk surface farthest from the roadway.

By cutting nearly, but not quite, flush with the trunk, limb or branch, the "collar" is left at the top of the wound (in the crotch of the union). This will permit the callus growth to cover the wound in a shorter period of time.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

This work will be measured and paid for at the Lump Sum Bid Price and is considered full compensation for all labor, certifications, materials, equipment, apparatus, tools and incidentals necessary for the satisfactory completion of the work.

ITEM 102.3 HERBICIDE TREATMENT OF INVASIVE PLANTS HOUR

This work must be performed by persons who meet the qualifications below and are approved by the Landscape Design Section.

Work under this item consists of herbicide treatment of invasive plants currently existing within the project limits and as directed. An Invasive Plant Management Strategy (IPMS) shall be submitted to the Engineer for review and approval and the IPMS shall be implemented on-site. The IPMS shall be written and submitted per Item 102.33 Invasive Plant Management Strategy and shall be measured and paid for under that Item.

Work under this item shall be coordinated with work and schedule for Selective Clearing, Clearing and Grubbing, Mowing, Tree Removal, Planting, and Wetland Mitigation items.

Payment is per hour on-site and shall be compensation for a minimum crew of 2 licensed applicators, 2 back-pack sprayers and mist-blowers, a properly equipped spray truck with spray hoses, and a tank with sufficient capacity for a full day of work. If there is only one applicator, hourly payment shall be adjusted to 50 percent of the unit price.

Date and time stamped photos indicating start and stop time of work must be submitted if requested.

This item is not intended for manual removal of plants.

Management of plants determined to have been introduced to the site via imported loam, compost, mulch, plants, equipment, or other construction activities will be the Contractor's responsibility and at the Contractor's expense.

Herbicide shall be applied during daytime hours only.

Measures to prevent the introduction of invasive plant species to the site and to address introduction due to construction-related activities shall be covered under the Standard Specifications, Division I - Subsections 7.01(D) Plant Pest Control and 7.13 Protection and Restoration of Property as amended in these Special Provisions.

Plant species targeted for management under this item shall be as determined in the field per the site walk and as specified in the IPMS.

The definition of invasive plant species shall be as described by Massachusetts Invasive Plant Advisory Group (MIPAG): "non-native species that have spread into native or minimally managed plant systems in Massachusetts, causing economic or environmental harm by developing self-sustaining populations and becoming dominant and/or disruptive to those systems."

ITEM 102.3 (Continued)

Control of invasive plants shall begin immediately with the initiation of construction activities and prior to any clearing or site disturbance. Treatment areas shall include stockpile locations and may, upon approval of the Engineer, extend outside the project limit. Treatment shall be done each consecutive year for the duration of the contract unless specified otherwise in the IMPS or unless directed otherwise by the MassDOT invasive species contact. Work shall be done during the growing season from May – October unless otherwise specified in the IPMS.

Areas identified for vegetation control measures shall be as shown on the plans and as determined in the field by the Engineer and a MassDOT Landscape Architect. Contact at MassDOT Landscape Design Section may be contacted at: Andrew.Schlenker@dot.state.ma.us. (DESIGNER: Croy@BETA-inc.com.)

QUALIFICATIONS

The applicators shall submit and meet the qualifications outlined below. A list of contractors specializing in invasive management and approved by MassDOT Landscape Design Section is available on the following website: https://www.mass.gov/lists/landscape-design-and-roadside-maintenance under Invasive Plant Management.

Requirements

1. Company must provide proof of qualifications by providing the following:
    a. Narrative describing company, its expertise and experience with invasive plant control.
    b. Demonstrate experience with herbicide treatment as part of restorations and in sensitive areas.
    c. Describe company's technical qualifications and past performance.

2. Company must meet licensing requirements:
    a. All crew applicators must have a Massachusetts Commercial Applicator License (CORE).
    b. At least one or more applicator must have a ROW certification, if required for work.
    c. Company must provide name(s) of applicator(s) and Applicator License/Certification number for all contractor crew leaders working on the project.
    d. Company must provide documentation of any warnings, penalties or fines received in the last three (3) years.

3. Company must provide proof of experience with invasive plant control and include following:
    a. At least five (5) references from prior invasive plant control work completed in last five (5) years. Provide contact information including address, phone number and email.
    b. Provide a summary of each of these projects including nature of the problem, specific invasive vegetation treated, dates and period of treatment, methodologies used, and summary of success or not in terms of meeting performance objectives. Include summary of equipment used.
    c. Photo documentation of these projects.
    d. GPS coordinates of project locations, if available.

ITEM 102.3 (Continued)

4. Crew leader must have expertise with invasive plant control and provide the following:
   a. Have held Core license for at least five (5) years.
   b. Resume listing five (5) or more years of experience applying pesticides with the company or with another company specializing in vegetation management.

SUBMITTALS

No work shall begin without approval of the submittals.

Submittals include the following items:

Invasive Plant Management Strategy (IPMS)

At least thirty (30) days prior to proposed treatment the IPMS shall be submitted for approval by the Engineer and MassDOT Landscape Architect. All chemicals, methods and work done under this item shall be consistent with the IPMS. The IPMS shall be as described under Item 102.33.

Herbicide Use Report

Within two (2) weeks after each application, the Contractor shall provide to the Engineer and the MassDOT Landscape Architect a completed and signed MassDOT Herbicide Use Report.

Photo Documentation

Digital photos with date and time of herbicide application work, showing start time and completion time, are required and must be submitted for measurement of payment upon request.

MATERIALS

All proposed herbicides shall be as approved in the IPMS. Herbicides shall be labeled for the method of treatment and shall meet all federal, state and local regulation requirements. Application rates will depend on herbicide proposed and shall be per the manufacturer's label for specific application.

METHODS

All methods used shall be as approved in the IPMS which shall be determined during the Initial Site Walk as described under Item 102.33 Invasive Plant Management Strategy.

The Contractor shall be responsible for marking delineated areas and plants to be preserved, removed, or otherwise treated. Fencing or other materials needed for marking and delineating protected areas shall be incidental to this item.

ITEM 102.3 (Continued)

The Contractor shall notify the Engineer a minimum of 3 days prior to date of expected herbicide application. Applicators shall notify the Engineer upon arriving on-site and upon leaving the site.

Herbicide Applications

All herbicide application shall conform to Massachusetts Pesticide Laws and Regulations per the Massachusetts Department of Agricultural Resources (MDAR) Pesticide Bureau.

Mixing, applying and/or disposing of herbicides shall always be in accordance with instructions on their labels and all applicable federal, state, and local regulations. Mixing shall not occur within sensitive areas, wetlands, or buffer zones.

Contractor shall not spray 2 hours prior to precipitation, during rain, or during windy conditions. The Contractor shall be responsible for monitoring weather conditions and adjusting the work schedule as appropriate for the herbicide and application method to be used.

Targeted vegetation shall be identified and marked prior to treatment. Plants treated by foliar spray, injection or glove application or other methods that leave standing vegetation, as opposed to cut-stump application, shall remain clearly marked for identification through the contract period.

Desirable vegetation shall be protected from both spray and other physical damage.

Contractor is responsible for any damage to vegetation not designated for removal or treatment. Vegetation damaged shall be restored. Cost of replacement plants and/or restoration shall be borne by the Contractor.

Contractor shall ensure that the public does not enter a work area while herbicide application or spraying is underway.

Disposal Of Invasive Plant Material

All material to be cleared shall become the property of the Contractor. The satisfactory disposal of all cleared plant material (seeds, roots, woody vegetation, associated soils, etc.) shall be the Contractor's responsibility.

The Contractor shall take measures to prevent viable plant material from leading to further infestations (seeds, roots, woody material, etc.) while stockpiled, in transit, or at final disposal locations. All precautions shall be taken to avoid contamination of natural landscapes with invasive plants or invasive plant material.

Chipping, shredding, or on-site burning of plant material must be approved by the Engineer and included in the IMPS.

For plant material taken to an incinerating facility per the IPMS, a receipt from that facility shall be submitted to the Engineer as proof of disposal.

ITEM 102.3 (Continued)

Where feasible, it is preferable to dispose of plants on-site or to bury them on-site with on-going monitoring for re-sprouting. Disposal locations and methods must be approved and included in the IPMS. Site work such as grading and seeding to stabilize and restore disposal area shall be incidental to this item.

The Contractor shall be responsible for treating or otherwise managing areas of re-growth due to improper disposal. Treatment shall be at the Contractor's expense.

Follow-Up Treatment

Plants and areas shall be re-treated as necessary and as appropriate to the time of year. Treatment shall be for the duration of the contract and per the IPMS.

MEASURE OF SUCCESS

The expectation is a minimum of 85-95 percent control achieved after the first treatment, depending on plants targeted and extent of population, and based on the expectations laid out in the IPMS. The expectation for the contract duration is 95-100% eradication by the end of the treatment period, unless otherwise specified in the IPMS.

METHOD OF MEASUREMENT

Item 102.3 will be measured for payment by the Hour of verified crew time spent on the project doing herbicide application as and where specified herein and in the IPMS. A crew shall be defined as a minimum of two licensed applicators each equipped with (at minimum) back-pack sprayer and mist blower. The crew shall also have a properly equipped spray truck with hoses and a tank with sufficient capacity for a full day of work.

BASIS OF PAYMENT

Item 102.3 will be paid at the contract unit price per Hour, which price shall include all labor, materials, equipment, tools, and all incidentals required to complete the work.

Payment will be based upon verified time spent on the project doing herbicide application as and where specified in the IPMS and upon receipt and approval of submittals. Payment will not include travel time to and from the Contractor's place of business and nor time for investigative field trips.

If there is only one applicator, hourly payment shall be adjusted to 50 percent of the unit price.

The Invasive Plant Management Strategy will be paid for under Item 102.33.

ITEM 102.33 INVASIVE PLANT MANAGEMENT STRATEGY HOUR

This item consists of providing an Invasive Plant Management Strategy (IPMS) for the control of invasive plants currently existing on the project site and/or as directed and shall be coordinated with Item 102.3 Herbicide Treatment of Invasive Plants. Unless otherwise approved, the IPMS shall be submitted in the form of the MassDOT Invasive Plant Management Strategy Report Form.

The IPMS shall be submitted for review and approval by the MassDOT Landscape Design Section or their representative, and the IPMS shall be implemented on-site.

The Invasive Plant Management Strategy Report Form is available online at https://www.mass.gov/lists/landscape-design-and-roadside-maintenance under Invasive Plant Management.

Herbicide treatment for invasive plants shall be as described under Item 102.3 Herbicide Treatment of Invasive Plants and shall be compensated per that Item.

Work under this item shall be coordinated with work and schedule for Selective Clearing, Clearing and Grubbing, Mowing, Tree Removal, Planting, and Wetland Mitigation as relevant to the project.

Individual attending the site walk and determining the Invasive Plant Management Strategy must demonstrate expertise with vegetation management and invasive plant control and submit qualifications as described below.

QUALIFICATIONS

Individual shall be from the same company as that providing services for Item 102.3 Herbicide Treatment of Invasive Plants and shall submit the following, if not submitted under Item 102.3:

- Submit copy of current Core license.
- Submit a resume listing five (5) or more years of experience managing invasive plants with a company specializing in vegetation management.
- References shall be submitted if requested.

SUBMITTALS

Task Summary & Reports

For measurement of payment, the contractor shall submit the total sum and a breakdown of hours for the tasks performed. At a minimum, the tasks shall include the Initial Site Walk, submittal of an approved IPMS, and if requested to accommodate project or site changes, a Follow-up Site Inspection and accompanying IPMS Amendment.

Interim Site Monitoring Reports and/or a Final Report shall be submitted if requested by the MassDOT Landscape Design contact. The MassDOT Landscape Design contact must be notified to attend the site inspection walk when an Interim or Final Report has been requested.

ITEM 102.33 (Continued)

Invasive Plant Management Strategy (IPMS)

At least thirty (30) days prior to construction activities and/or any proposed treatment, the contractor shall submit the IPMS for approval by the Engineer and MassDOT Landscape Architect. All chemicals and methods proposed shall be consistent with applicable Massachusetts Wetlands Protection Act Order of Conditions.

The IPMS shall be completed in coordination with the Prime Contractor and the Engineer and shall include the following as appropriate and applicable to the project and to the IPMS Report Form questions and Guidance:

I. Project Information
- a. Company writing the IPMS and performing the herbicide application.
- b. Date of site walk
- c. Attendees at site walk
- d. Expected end date of contract and expected last treatment (month/season)

II. Brief Description of Conditions
- a. Provide a free-hand sketch on construction plans or aerial image showing species, location, and as relevant, show or note extent of population as relevant to Strategy (i.e., population extends off ROW preventing eradication, small population and eradication deemed feasible within contract schedule, etc.).

III. Coordination with Roadway Contractor regarding other work
- a. Tree Work: Note coordination to be implemented with tree removal, clearing, and clearing and grubbing as applicable to the project.
- b. Wetland Mitigation - Include management proposed for wetland mitigation areas in the IPMS, if and as required.
- c. Planting: If there will be planting in areas proposed for treatment, propose treatment and schedule to avoid herbicide damage to plants.
- d. Mowing: If coordination is required with state mowers, note need in IPMS.

IV. Soil Management
- a. Provide specifics on how soil with invasive plant roots (in particular) or seeds will be handled (i.e., separate stockpiles, plant material will be buried on-site, re-used on-site, disposed off-site and if so, where?).
- b. Show stockpile locations on plan and include treatment schedule.
- c. Note measures that will be implemented to avoid spread through equipment, including how and where equipment will be cleaned.

V. Invasive Plant Treatment & Management
- a. Proposed chemical and methods of treatment for each species or area.
- b. Time of treatment based on target plant species.
- c. Submit product label including application methods and rates (entire MSDS information need not be submitted if available online).
- d. Proposed performance metrics or measure of treatment success if different from that specified under Item 102.3.
- e. Method for disposing invasive plant material. This includes material that may result in spread (i.e., seeds, roots) and material that has been treated and/or is not viable (foliage, dead wood, etc.). Methods may include grinding in place, stockpiling and treating, and incinerating offsite.

ITEM 102.33 (Continued)

f. Expected follow-up treatment for duration of contract.

VI. Monitoring Schedule if requested by MassDOT.

Note: The IPMS is critical for identifying pre-construction conditions as well as strategies for minimizing import or spread of invasive plants. Failure to provide an approved IPMS may jeopardize this item, in which case, the contractor will be responsible for management of invasive plants found on-site at no cost to the contract.

Photo Documentation

Digital photos of site conditions, typical species, and extent of infestation must be provided with the IPMS and with any follow-up monitoring or reporting. Photos of follow-up monitoring and reporting must be date and time stamped for acceptance.

METHODS

Initial Site Walk

Prior to any construction activities and soil disturbance, the Contractor shall walk the site with the Engineer and the MassDOT Landscape Architect to determine the IPMS. During the site walk the Contractor shall identify limits of work and, as necessary, mark locations of areas designated for treatment and individual plants targeted for treatment or removal. The Contractor shall be responsible for marking delineated areas and plants to be preserved, removed, or otherwise treated. Fencing or other materials needed for marking and delineating protected areas shall be incidental to this item.

IPMS Follow-up Amendment

The IPMS may be amended to address additional concerns or adjust to conditions if required by the MassDOT Landscape Architect. The amended IPMS shall be submitted to the Engineer and MassDOT Landscape Architect for approval at least fourteen (14) days prior to any proposed treatment.

Interim Site Monitoring Inspection Reports

If required by the MassDOT Landscape Architect and Engineer, Interim Site Monitoring and an accompanying report shall be conducted. Interim Reports must include time and date stamped photos showing treated locations and species.

Final Inspection

A final inspection and report documenting the status of the invasive control may be required for regulatory purposes or for instances where control will be continued by others. The report shall include photo documentation of pre-construction (existing) and post-treatment conditions, notations on a plan or aerial image of area treated, summary of treatment performed, and control achieved. Final reports submittal must include time and date stamped photos.

ITEM 102.33 (Continued)

METHOD OF MEASUREMENT

Item 102.33 will be measured for payment by the Hour. The basis for measurement shall be per the completion of tasks as approved under the Task Summary submittal and acceptance of submittals and photos described above.

BASIS OF PAYMENT

Item 102.33 will be paid at the contract unit price per Hour, which price shall include all labor, materials, equipment, tools, and all incidentals required to complete the work. Payment shall not include travel time to and from the Contractor's place of business.

ITEM 102.511 TREE PROTECTION – ARMORING AND PRUNING EACH

The work under this item shall conform to the relevant provisions of Subsections 771 of the Standard Specifications and the following:

Tree protection – armoring and pruning shall be used for instances where construction activity (the use of heavy equipment), comes within proximity to potentially damage tree trunk(s) or limbs.

The work shall include the furnishing and installing of temporary tree trunk protection, minor limb pruning, or removal of lower tree limbs to prevent injury to the tree from construction equipment and activities; as shown on the Drawings; and/or as required by the Engineer.

REFERENCES

If requested, the Contractor shall provide to the Engineer one copy of the latest edition of the American National Standards Institute (ANSI) A300 Standard Practices for Tree, Shrub, and Other Woody Plant Maintenance: Part 1-Pruning and Part 5-Construction Management Standard. Provision of reference shall be incidental to this item.

MATERIALS

Trunk armoring shall be such that it prevents damage to the trunk from construction equipment. Material used for trunk armoring or mounting shall be such that installation and removal shall not damage the trunk.

Acceptable trunk armoring materials shall include two by four (2x4) wood cladding, mounted with wire or metal strapping, or when duration of construction activities is less than three months, slotted corrugated plastic pipe, mounted with duct tape. Eight (8) once untreated burlap shall be used to wrap the tree trunk prior to installation of cladding.

Alternative armoring methods or materials may be acceptable if approved by the Engineer.

The height of tree trunk cladding shall be measured from the base of the tree (including root flare) to the bottom of the first branch, or to a height of eight (8) feet, or as may be required by the Engineer.

METHODS OF WORK

Prior to construction activities, the Engineer, Contractor, and the Arborist (if item is included in the contract), shall review trees noted on the Drawings to be protected. Final decision and selection of trees to be armored and/or pruned shall be per the Engineer.

ITEM 102.511 (Continued)

Care shall be taken to avoid damage to the bark during installation and removal of armoring. Trunk armoring shall be maintained such that it is effective for as long as required or replaced when materials are found to be damaged or ineffective, as determined by the Engineer. Replacement, if required, shall be incidental to the work. Armoring shall be removed immediately upon completion of work activities adjacent to the protected tree(s).

Pruning of limbs shall conform to the techniques and standards of the most recent ANSI A300 standards.

DAMAGES OR LOSS

If trees designated for protection under this item are damaged, including root damage from unapproved trespassing onto the root zone, the Contractor shall, at his own expense, secure the services of an Arborist, described in Item 102.55. The Arborist shall be approved by MassDOT.

If, based on the recommendation of the Arborist, the Engineer determines that damages can be remedied by corrective measures, such as repairing trunk or limb injury; soil compaction remediation; pruning; soil injection fertilization; and/or watering; the damage shall be repaired as soon as possible, within the appropriate season for such work and according to industry standards.

If, based on the recommendation of the Arborist, the Engineer determines that damages are irreparable, or that the damages are such that the tree is sufficiently compromised to pose a future safety hazard, the tree shall be removed. Tree removal shall include cleanup of all wood, grinding of the stump to a depth sufficient to plant a replacement tree or plant, removal of all chips from the stump site, and filling the resulting hole with topsoil. Such tree removal(s), grinding, debris removal, and topsoil filling, shall be at the Contractor's expense.

Tree removal from improper or inadequate tree protection shall result in the Engineer assessing the Contractor monetary damages consistent with industry standards for assessed value and/or replacement.

ITEM 102.511 (Continued)

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 102.511 will be measured and paid at the contract unit price per EACH tree to be armored and pruned. This will include full compensation for all labor, equipment, materials, and incidentals for the satisfactory completion of the work and the subsequent removal and satisfactory disposal of the protective materials upon completion of the contract or as required by the Engineer.

Payment for work under this item will be scheduled as follows:

- 40% of the value shall be paid upon installation of trunk armoring and completion of pruning work, if required.

- 60% of the value shall be paid at the end of construction operations that would potentially damage the tree and after protection materials have been removed and properly disposed of by the Contractor. In the event of repairable damages, payment shall be made after the completion of remediation measures.

No separate payment will be made for costs of remedial actions, including Arborist services, tree removal, but all costs in connection therewith shall be included in the Contract unit price bid.

Tree damages assessed, due to lack of or improper tree and plant protective measures being taken, shall be deducted from the contract price of the work.

ITEM 102.521 TREE AND PLANT PROTECTION FENCE FOOT

The work under this Item shall conform to the relevant provisions of Subsections 644 and 771 of the Standard Specifications and the following:

Work under this item shall consist of furnishing, installing, and maintaining tree and plant protection fence(s) in a **vertical** and taut position; removing and resetting fencing as may be required; and final removal of protection fence(s) at the completion of construction activities, or as otherwise required by the Engineer.

The purpose of the fencing is to signify a construction work-free zone and physical barrier, thereby preventing damage to tree roots, tree trunks, soil, and all other vegetation within this delineated Tree and Plant Protection Zone (TPPZ), as shown on the Drawings, as required by the Engineer, and as described herein.

Protection shall be for the duration of the construction activities unless otherwise required by the Engineer.

MATERIALS

Tree and plant protection fence(s) shall provide a minimum forty-eight (48) inch tall barrier, that remains vertical and taut. The Fence shall be orange plastic safety fence (recommended where high visibility is necessary), or wooden snow fencing, or other approved material. Posts and anchoring materials shall be incidental to the work.

Per requirements of the Engineer, additional posts, deeper post depths, and/or additional attachments shall be used if the fabric or fence sags, leans or otherwise is not providing visible or physical protection to the TPPZ.

REFERENCES

If requested, the Contractor shall provide to the Engineer one copy of the American National Standards Institute (ANSI) A300 Standard Practices for Tree, Shrub, and Other Woody Plant Maintenance Part 1, Pruning and Part 5, Construction Management Standard. Provision of reference shall be incidental to this item.

ESTABLISHMENT OF THE TPPZ

Fencing shall be used to delineate and establish the TPPZ, adjacent to construction areas, staging areas, stockpile areas, as shown on the Drawings, and/or as required by the Engineer.

Fencing shall be located as close to the work zone limit and as far from tree trunk(s) and plants as possible to maximize the area to be protected. Fence shall run parallel and adjacent to construction activity to create a barrier between the work zone and the root zone or designated limit of plants and soils to be protected.

ITEM 102.521 (Continued)

When construction activities surround (or have the potential to surround) trees or plants to be protected, a circular enclosure shall be used. In these instances, the TPPZ limit shall be the drip line of each tree or as close as possible to the drip line, and/or as shown on the Drawings. The drip line is defined as the outermost limit of tree canopy.

The Contractor shall not engage in any construction activity within the TPPZ without the approval of the Engineer. Activities may including operating, moving, or storing equipment, supplies, or materials; and locating temporary facilities, including trailers or portable toilets, Accessing or traversing the TPPZ shall not be permitted.

METHOD OF WORK

TPPZ fencing shall be installed prior to any construction work or staging activities. Fence(s) shall be repositioned where and as necessary for optimum tree and plant protection. Repositioning shall be incidental to this item. TPPZ fencing shall not be moved without prior approval by the Engineer.

The TPPZ shall be protected at all times from compaction of the soil; damage of any kind to trunks, bark, branches, leaves, and roots of all plants; and contamination of the soil with construction materials, debris, silt, fuels, oils, and any chemicals substance.

After construction activities are completed, or when required by the Engineer, fencing, stakes, and other anchoring materials, if any, shall be removed and disposed off-site by the Contractor.

REQUIRED WORK WITHIN THE TPPZ

In the event that grading, trenching, utility work, or storage is unavoidable within the TPPZ, the Engineer shall be notified. Measures may be required for tree protection and preservations, including air spading; the use of six (6) inch depth of wood chips or approved matting for root protection; pruning of branches; and/or trunk protection. These protection measures shall be paid under applicable contract items.

Landscaping work specified within the TPPZ shall be accomplished by hand tools. Where handwork is not feasible, with permission of the Engineer, work shall be conducted with the smallest mechanized equipment necessary.

TREE AND PLANT INJURY OR LOSS

If the TPPZ is encroached by construction activity without approval, at the discretion of the Engineer, the Contractor may be required to provide a more durable barrier (e.g., Jersey Barriers, chain link fence (if not already in use) to secure the area. Costs of furnishing and installing additional or more durable barrier(s) shall be borne by the Contractor.

In such cases of encroachment, soils shall be considered compacted and tree root injury will be assumed. Action shall be taken as specified below.

ITEM 102.521 (Continued)

In the event that trees designated for protection under this item are injured, including root injury from unapproved trespassing onto the root zone, the Contractor shall, at his own expense, secure the services of an Arborist, described under Item 102.55. The Arborist shall be approved by MassDOT.

In the event of spills, compaction or injury, the Contractor shall take corrective action immediately using methods approved by the Engineer, in coordination with the Arborist.

If, based on the recommendations of the Arborist, the Engineer determines that injuries can be remedied by corrective measures, such as repairing trunk or limb injury, soil compaction remediation, pruning, and/or watering; the injury shall be repaired as soon as possible, within the appropriate season for such work, and according to industry standards.

If, based on the recommendations of the Arborist, the Engineer determines that injuries are irreparable, or that the injuries are such that the tree is sufficiently compromised to pose a future safety hazard, the tree shall be removed. Tree removal shall include cleanup of all wood, grinding of the stump to a depth sufficient to plant a replacement tree or plant, removal of all chips from the stump site, and filling the resulting hole with topsoil. Such tree removal(s), grinding, debris removal, and filling, shall be at the Contractor's expense.

Tree removal from improper or inadequate protection of the TPPZ shall result in the Engineer assessing the Contractor monetary damages consistent with industry standards for assessed value and/or replacement.

Shrubs removals from improper or inadequate protection of the TPPZ shall be replaced with plants of similar species and equal size or the largest size plants reasonably available. The Engineer shall approve the size, quality, and quantity of the replacement plant(s). Each replacement shall include a minimum of one year of watering and establishment care, specified under Subsection 771.

ITEM 102.521 (Continued)

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Tree and Plant Protection Fence will be measured by the FOOT, complete in place, by the length along the top of the fence.

Tree and plant protection fence will be paid for under the contract unit price per FOOT, complete in place and shall include all materials, labor, and equipment required to furnish, install, anchor, maintain, and remove the fence upon completion, as described herein. Posts, temporary footings, anchoring and removal upon completion, shall be incidental to this item.

No separate payment will be made for costs of remedial actions, including addition of more durable barriers, Arborist services, tree or plant removal, shrub replacement and establishment, but all costs in connection therewith shall be included in the Contract unit price bid.

Tree damages assessed, due to lack of or improper tree and plant protective measures being taken, shall be deducted from the contract price of the work.

Payment for work under this item will be scheduled as follows:

- Forty (40) percent of the value payment will be made upon installation of fencing.

- Sixty (60) percent of the value payment will be made when fencing materials have been maintained to function as specified, for the intended duration, and removed and disposed off-site at the completion of protection measure requirement.

ITEM 120.1 UNCLASSIFIED EXCAVATION CUBIC YARD

The work under this item shall conform to the relevant provisions of Subsection 120 of the Standard Specifications and the following:

The work of this section includes excavation and disposal of all materials not specified for measurement and payment under other items of this contract.

Unclassified excavation shall include but not be limited to removal and disposal of substandard or damaged curb, curb inlets, edging, concrete, rock, cobblestones, guardrail, fence and all other materials not classified and paid for under other items.

Edges of excavations made in existing pavements shall be squared by saw cutting. Ragged, uneven edges shall not be acceptable. Pavement areas which have been broken or undermined shall be edged neatly with minimum disturbance to remaining pavement.

Foundations left in place under the roadway surface shall be removed to a depth of 3 feet; all other foundations left in place shall be removed to a depth of 12 inches below the finished grade.

The removal of trees and stumps less than 9” and general vegetation within the project limit shall be considered part of the general excavation in such areas.

Before starting any excavation, the Contractor shall field check and verify all utilities, vaults, septic systems, sprinkler systems, and other sub-surface features in the project area and make sure that the excavation will not disturb or damage such features. The Contractor will coordinate all construction activities with the owners of such features and obtain approval or permits, if necessary, prior to starting the excavation. Any damage done to sub-surface features during the construction process will be the responsibility of the Contractor and will be repaired by the Contractor at his own expense. If the owner so wishes, he will repair the damage himself and bill the Contractor for his expenses.

When working next to existing retaining walls or buildings, the Contractor shall exercise extreme caution not to disturb existing walls. Any handwork necessary shall be considered part of the work of this section. If existing structures are disturbed, they shall be reconstructed at the Contractor's expense to thoroughly match the existing structure in color, texture, material and workmanship.

Removal of castings, lowering and plating of structures shall also be considered part of the work of this section.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Measurement and payment for work under this item shall be at the contract price per cubic yard, which price shall include full compensation for all labor, materials, equipment, and incidentals necessary to complete the work to the satisfaction of the Engineer. Excess excavated material not required for re-use within the project, shall be measured and paid for disposal in accordance with the requirements of Item 181.11, 181.12, 181.13 and 181.14.

ITEM 141.1 TEST PIT FOR EXPLORATION CUBIC YARD

The work to be done under this Item shall conform to the relevant provisions of Subsection 140 supplemented by the following:

The Contractor shall exercise extreme caution when performing the work of this section, and specialized techniques such as vacuum excavation or handwork as directed by the Engineer and shall be considered part of the work of this section. Test pits shall be no greater than 5'x3'x5' deep unless otherwise directed by the Engineer.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Measurement and payment for work under this Item shall be at the Contract Unit Price bid per Cubic Yard, which price shall be full compensation for labor, materials, equipment, tools, saw-cutting, excavation, including any special techniques such as hand or vacuum methods, survey or other measurement, backfilling, compacting, coordinating with others and all incidentals necessary to satisfactorily complete the work. Test pits made without the prior approval of the Engineer shall not be compensated for. Payment for temporary HMA patch shall be paid under Item 472.

ITEM 180.01 ENVIRONMENTAL HEALTH AND SAFETY PROGRAM LUMP SUM

The work shall consist of ensuring the health and safety of the Contractor's employees and subcontracting personnel, the Engineer, their representatives, the environment, and public welfare from any on-site chemical contamination present in air, soil, water and sediment.

The Contractor shall prepare and implement a site-specific Environmental Health and Safety Plan (EHASP) which has been approved and stamped by a Certified Industrial Hygienist (CIH) and includes the preparer's name and work experience. The EHASP shall include appropriate components required by OSHA Standard 29 CFR 1910.120(b) and the Massachusetts Contingency plan (MCP) 310 CMR 40.0018 and must comply with all applicable state and federal laws, regulations, standards and guidelines, and provide a degree of protection and training appropriate for implementation on the project. The EHASP shall be a dynamic document with provision for change to reflect new information, new practices or procedures, changing site environmental conditions or other situations which may affect site workers and the public. The EHASP shall be developed and implemented independently from the standard construction HASP required to work on all MassDOT construction projects.

Health and safety procedures provided by the Contractor shall comply with all the appropriate regulations that address employee working conditions, including but not limited to standards established by OSHA and National Institute for Occupational Safety and Health (NIOSH). Equipment used for the purpose of health and safety shall be approved by and meet pertinent standards and specifications of the appropriate regulatory agencies.

A copy of the most up-to-date version of the EHASP shall be maintained on-site at all times by the Contractor. The on-site copy shall contain the signature of the Engineer and each on-site employee of the MassDOT, Contractor, and Subcontractors involved with on-site activities. The employee's signature on the EHASP shall be deemed prima facie evidence that the employee has read and understands the plan. Updated copies of signature sheets shall be submitted to the Engineer.

The EHASP shall specify a Contractor Site Safety and Health Officer responsible for implementation of the EHASP and to oversee all construction activities, including handling, storage, sampling and transport, which require contact with or exposure to potentially hazardous materials.

The level of protection required to ensure the health and safety of on-site personnel will be stipulated in the EHASP. The Site Safety and Health Officer shall implement the EHASP based on changing site and weather conditions, type of operation or activity, chemical compounds identified on-site, concentration of the chemicals, air monitoring data, physical state of the hazardous materials, potential duration of exposure to hazardous materials, dexterity required to perform work, decontamination procedures, necessary personnel and type of equipment to be utilized.

During implementation of the EHASP, a daily log shall be kept by the Site Safety and Health Officer and a copy shall be provided weekly to the Engineer. This log shall be used to record a description of the weather conditions, levels of personal protection being employed, screening data and any other information relevant to on-site environmental safety conditions. The Site Safety and Health Officer shall sign and date the daily log.

ITEM 180.01 (Continued)

Method of Measurement and Basis of Payment

Preparation and implementation of the Environmental Health and Safety Program, including the monitoring, protection and storage of all contaminated materials, as well as subsequent modifications to the EHASP, will be measured and paid for at the Lump Sum Bid Price.

Payment of 50% of the Environmental Health and Safety Program contract price will be made upon the initial acceptance of the EHASP by the Engineer. Payment of the remaining 50% of the Environmental Health and Safety Program contract price will be made upon completion of the work. The bid price shall include preparation and implementation of the EHASP as well as the cost for its enforcement by the Site Safety and Health Officer along with any necessary revisions and updates. The work of implementing the Environmental Health and Safety Program includes work involving, but not limited to, the monitoring, protection, and storage of all contaminated materials.

ITEM 180.02 PERSONAL PROTECTION LEVEL C UPGRADE HOUR

The work shall consist of providing appropriate personal protective equipment (PPE) for all personnel in an area either containing or suspected of containing a hazardous environment.

Contingencies for upgrading the level of protection for on-site workers will be identified in the EHASP and the Contractor shall have the capability to implement the personal protection upgrade in a timely manner. The protective equipment and its use shall be in compliance with the EHASP and all appropriate regulations and/or standards for employee working conditions.

Personal Protection Level C Upgrade will be measured and paid only upon upgrade to Level C and will be at the contract unit price, per hour, per worker, required in Level C personal protection. No payment will be made to the Contractor to provide Level D PPE.

ITEM 180.03 LICENSED SITE PROFESSIONAL SERVICES HOUR

Within limited areas of the project site, media (i.e. soils, sediments, surface water and/or groundwater) requiring evaluation and/or management under the Massachusetts Contingency Plan (MCP) may be encountered. A Licensed Site Professional (LSP) shall be required to provide the services necessary to comply with the requirements of the MCP. These services may include a site walk, field screening, sampling, analysis and characterization of potentially contaminated media, preparation and implementation of Immediate Response Action (IRA) Plans, Utility-Related Abatement Measure (URAM) and Release Abatement Measure (RAM) Plans, Imminent Hazard Evaluations, status reports, transmittal forms, release notification forms, risk assessments, completion statements, and related documents required pursuant to the MCP. LSP services shall also be necessary to temporarily move material generated on the project to an off-site storage location.

The name and qualifications of the LSP and all environmental technicians to be assigned to the project shall be submitted to the Engineer for approval at least four weeks prior to initial site activities. The LSP shall have a current, valid license issued by the Massachusetts Board of Registration of Hazardous Waste Site Cleanup Professionals. The LSP shall have significant experience in the oversight of MCP activities at active construction sites. Qualification packages for the LSP and each technician shall include a resume, all recent work assignments with responsibilities identified (previous 5 years), and applicable training and certifications. A list of all Notices of Noncompliance, Notice of Audit Findings and Enforcement Orders issued by the DEP shall be submitted for all work assignments listed for the LSP and environmental technicians.

The LSP shall evaluate soil and/or sediment with discoloration, odor, and presence of petroleum liquid or sheening on the groundwater surface, or any abnormal gas or materials in the ground which are known or suspected to be oil or hazardous materials. Excavated soil and sediment which is suspected of petroleum contamination shall be field screened using the jar headspace procedures according to established DEP Guidance. All field screening equipment must be pre-approved by the Engineer. The LSP shall ensure proper on site calibration of all field screening instrumentation.

The Engineer shall be contacted immediately when observations or any field screening results verify contamination requiring further analysis, and/or enhanced management of suspect soil and/or sediment. Any enhanced management of contaminated soil to ensure proper stockpiling and storage is incidental to the LSP Services item. The LSP shall adequately characterize subsurface conditions prior to backfill in areas where contaminated material has been excavated. The Engineer shall approve the locations of the testing sites prior to the sampling.

ITEM 180.03 (Continued)

Contaminated soil, sediment and/or groundwater shall be handled in accordance with all applicable state and federal statutes, regulations and policies. The LSP shall adequately characterize contaminated media for comparison to the requirements of the MCP. The Contractor and the LSP shall be aware of the reporting requirements for releases of oil and/or other hazardous material (OHM) as set forth in federal and state laws and regulations, and shall both be held responsible for performing the work in accordance with all applicable Federal and State laws and regulations. The LSP shall maintain written records in a clear and concise format which tracks the excavation, stockpiling, analysis and reuse/disposal of all suspect contaminated soils, sediments and groundwater. These records shall be up-to-date and available to the Engineer on a bi-weekly basis. The LSP shall review and summarize the laboratory data from any analyses performed on contaminated media. A report shall be delivered to the Engineer outlining the material sampling methods, laboratory analysis results and proposed course of action. The laboratory report together with Chain of Custody forms for all analytical results shall be submitted to the Engineer within 14 days after completion of such analyses.

The LSP and Contractor shall be held responsible for the submission of all MCP-related documents to the Engineer at least 14 days in advance of any timeframe specified in the MCP and for the timely submission of data and tracking information as noted within this Item. All documents prepared under this Item must be reviewed and signed by the approved LSP. The Contractor and LSP shall be responsible for all fines, penalties and enforcement requirements imposed by applicable regulatory agencies for failure to meet regulatory and contract timeframes. No compensation will be provided for such fines, penalties and enforcement actions.

The Contractor and the LSP shall be aware of the reporting requirements for releases of oil and/or other hazardous material (OHM) as set forth in federal and state laws and regulations, and shall both be held responsible for performing the work in accordance with all applicable Federal and State laws and regulations.

If the Contractor causes a release of OHM, the Contractor shall be responsible for assessing and remediating the release in accordance with all pertinent State and Federal regulations, including securing the services of a LSP, at his own expense.

The LSP shall coordinate all activities involving both MassDOT and the DEP through the Engineer. Any notification of release shall be approved by the Department before submittal to the DEP, except if an imminent hazard condition exists as defined in 309 CMR 4.03(4)(b).

Laboratory testing provides for analytical testing in support of LSP services related to maintaining MCP compliance, such as delineating the extent and type of contamination present. Sampling and testing for disposal purposes are not included.

ITEM 180.03 (Continued)

In order to maintain compliance with the MCP or other regulatory requirements, the LSP shall request approval from the Engineer to obtain samples from various locations and depths within the project area and to perform laboratory analyses on those samples. The samples shall be delivered to a DEP-certified laboratory using proper chain-of-custody documentation for analyses which, depending upon site conditions and suspected and/or identified contaminants of concern, may include, but are not limited to, metals, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polycyclic aromatic hydrocarbons (PAHs), extractable petroleum hydrocarbons (EPHs) and volatile petroleum hydrocarbons (VPHs). Subsequent testing, depending upon initial results, may be required for Toxicity Characteristic Leaching Procedure (TCLP) analyses (EPA Method 1311) for metals.

Method of Measurement and Basis of Payment

LSP Services for work under this item will be measured per person, per hour of service provided by LSP, Environmental Technicians and other approved personnel. Travel time shall not be included in the billable hours. LSP hours related to soil/sediment disposal (disposal characterization, landfill acceptance, disposal package preparation, etc.) shall be incidental to disposal items.

The quantity and type of laboratory tests must be approved by the Engineer beforehand. The contractor will be reimbursed upon satisfactory written evidence of payment. The contractor may be required to obtain cost estimates from three DEP certified laboratories for the Engineer to choose the service provider. Laboratory testing related to soil/sediment disposal (disposal characterization, landfill acceptance, disposal package preparation, etc.) shall be incidental to disposal items.

LSP Services will be paid at the Contractor bid price for each hour, or fraction thereof, spent to perform the work as described above. The bid price shall be a blended rate that includes the cost of the LSP, environmental technicians and other personnel, the performance of all work tasks and field screening, including required equipment, materials and instrumentation, and production of all documentation described above. All requests for payment must be accompanied by the following information: the names of the personnel associated with the work charged under LSP Services, dates and hours worked, work conducted, including, where appropriate, locations as identifie on the construction plans, and a copy of the field diary for the dates submitted.

Laboratory Testing will be reimbursed upon receipt of paid invoices for testing approved by the Engineer.

ITEM 181.11	**DISPOSAL OF UNREGULATED SOIL**	**TON**
ITEM 181.12	**DISPOSAL OF REGULATED SOIL IN-STATE FACILITY**	**TON**
ITEM 181.13	**DISPOSAL OF REGULATED SOIL OUT-OF-STATE FACILITY**	**TON**
ITEM 181.14	**DISPOSAL OF HAZARDOUS WASTE**	**TON**

The work under these Items shall include the transportation and disposal of contaminated material excavated, or excavated and stockpiled. It shall also include the cost of any additional laboratory analyses required by a particular disposal facility beyond the standard disposal test set.

Excavation of existing subsurface materials may include the excavation of contaminated soils. The Contractor shall be responsible for the proper coordination of characterization, transport and disposal, recycling or reuse of contaminated soils. Disposal, recycling or reuse will be referred to as "disposal" for the purposes of this specification. However, regardless of the use of the term herein, there will be no compensation under these items for reuse within the project limits. The Contractor will be responsible for coordinating the activities necessary for characterization, transport and disposal of contaminated soils. Such coordination will include the Engineer and his/her designee overseeing management of contaminated materials. Contaminated soils must be disposed of in a manner appropriate for the soil classification as described below and in accordance with the applicable laws of local, state and federal authorities. The Contractor shall be responsible for identifying disposal facility (ies) licensed to accept the class of contaminated soils to be managed and assure that the facility can accept the anticipated volume of soil contemplated by the project. The Contractor shall be responsible for hiring a Licensed Site Professional (LSP) and all ancillary professional services including laboratories as needed for this work. The Contractor will be responsible for obtaining all permits, approvals, manifests, waste profiles, Bills of Lading, etc. subject to the approval of the Engineer prior to the removal of the contaminated soil from the site. The Contractor and LSP shall prepare and submit to the Engineer for approval all documents required under the Massachusetts Contingency Plan (MCP) and related laws and environmental regulations to conduct characterization, transport, and disposal of contaminated materials.

CLASSES OF CONTAMINATED SOILS

The Contractor and its LSP shall determine if soil excavated or soil to be excavated is unregulated soil or contaminated soil as defined in this section. Such materials shall be given a designation for purposes of reuse or disposal based on the criteria of the MCP. Soils and sediments which are not suitable for reuse will be given a designation for purposes of off-site disposal based on the characterization data and disposal facility license requirements. The Classes of Contaminated Soils are defined as follows:

ITEMS 181.11 through 181.14 (Continued)

UNREGULATED SOIL consists of soil, fill and dredged material with measured levels of oil and hazardous material (OHM) contamination at concentrations below the applicable Reportable Concentrations (RCs) presented in the MCP. Unregulated soil consists of material which may be reused (or otherwise disposed) as fill within the Commonwealth of Massachusetts subject to the non-degradation criteria of the MCP (310 CMR 40.0032(3), in a restricted manner, such that they are sent to a location with equal or higher concentrations of similar contaminants. Disposal areas include licensed disposal facilities, approved industrial settings in areas which will be capped or covered with pavement or loamed and seeded, and for purposes of this project should be reused as fill within the project site construction corridor whenever possible. The material cannot be placed in residential and/or environmentally sensitive (e.g. wetlands) areas. Under no circumstances shall contaminated soils be placed in an uncontaminated or less contaminated area (including the area above the groundwater table if this area shows no sign of contamination).

The Contractor shall submit to MassDOT the proposed disposal location for unregulated soils for approval. If such a disposal location is not a licensed disposal facility, the Contractor shall submit to the Engineer analytical data to characterize the disposal area sufficiently to verify that the unregulated material generated within the MassDOT construction project limits is equal to or less than the contaminant levels at the disposal site and meets the non-degradation requirements of the MCP. In addition, the Contractor shall provide written confirmation from the owner of the proposed disposal location that they have been provided with the analytical data for both the materials to be disposed as well as the disposal site characterization and that s/he agrees to accept this material. A Material Shipping Record or Bill of Lading, as appropriate, shall be used to track the off-site disposal of unregulated soil and a copy, signed by the disposal facility or property owner, shall be provided to the Engineer in order to document legal disposal of the unregulated material.

The cost of on-site disposal of unregulated soil within the project area will be considered incidental to the item of work to which it pertains.

ITEMS 181.11 through 181.14 (Continued)

REGULATED SOIL consists of materials containing measurable levels of OHM that are equal to or exceed the applicable Reportable Concentrations for the site as defined by the MCP, 310 CMR 40.0000. Regulated soil which meets the MCP reuse criteria of the applicable soil/groundwater category for this project area may be reused on site provided that it meets the appropriate geotechnical criteria established by the Engineer. Regulated Soil may be reused (as daily or intermediate cover or pre-cap contouring material) or disposed (as buried waste) at lined landfills within the Commonwealth of Massachusetts or at an unlined landfill that is approved by the Massachusetts Department of Environmental Protection (DEP) for accepting such material, in accordance with DEP Policy #COMM-97-001, or at a similar out-of-state facility. It should be noted that soils which exceed the levels and criteria for disposal at in-state landfills, as outlined in COMM-97-001, may be shipped to an in-state landfill, but require approval from the DEP Division of Solid Waste Management and receiving facility. An additional management alternative for this material is recycling into asphalt. Regulated Soils may also be recycled at a DEP approved recycling facility possessing a Class A recycling permit subject to acceptance by the facility and compliance with DEP Policy #BWSC-94-400. Regulated Soil removed from the site for disposal or treatment must be removed via an LSP approved Bill of Lading, Manifest or applicable material tracking form. This type of facility shall be approved/permitted by the State in which it operates to accept the class of contaminated soil in accordance with all applicable local, state and federal regulations.

HAZARDOUS WASTE consists of materials which must be disposed of at a facility permitted and operated in full compliance with Federal Regulation 40 CFR 260-265, Massachusetts Regulation 310 CMR 30.000, Toxic Substances Control Act (TSCA) regulations, or the equivalent regulations of other states, and all other applicable local, state, and federal regulations. All excavated materials classified as hazardous waste shall be disposed of at an out-of-state permitted facility. This facility shall be a RCRA hazardous waste or TSCA facility, or RCRA hazardous waste incinerator. This type of facility shall be approved/permitted by the State in which it operates to accept hazardous waste in accordance with all applicable local, state and federal regulations and shall be permitted to accept all contamination which may be present in the soil excavate. The Contractor shall ensure that, when needed, the facility can accept TSCA waste materials i.e. polychlorinated biphenyls (PCBs). Hazardous waste must be removed from the site for disposal or treatment via an LSP approved Manifest.

MONITORING/SAMPLING/TESTING REQUIREMENTS

The Contractor shall be responsible for monitoring, sampling and testing during and following excavation of contaminated soils to determine the specific class of contaminated material. Monitoring, sampling and testing frequency and techniques should be performed in accordance with Item 180.03 – LSP Services. Additional sampling and analysis may be necessary to meet the requirements of the disposal facility license. The cost of such additional sampling and analysis shall be included in the bid cost for the applicable disposal items. The Contractor shall obtain sufficient information to demonstrate that the contaminated soil meets the disposal criteria set by the receiving facility that will accept the material.

ITEMS 181.11 through 181.14 (Continued)

No excavated material will be permanently placed on-site or removed for off-site disposal until the results of chemical analyses have been received and the materials have been properly classified. The Contractor shall submit to the Engineer results of field and laboratory chemical analyses tests within seven days after their completion, accompanied by the classification of the material determined by the Contractor, and the intended disposition of the material. The Contractor shall submit to the Engineer for review all plans and documents relevant to LSP services, including but not limited to, all documents that must be submitted to the DEP.

WASTE TRACKING:

Copies of the fully executed Weight Slips/Bills of Lading/ Manifests/Material Shipping Records or other material tracking form received by the Contractor from each disposal facility and for each load disposed of at that facility, shall be submitted to Engineer and the Contractor's LSP within three days of receipt by the Contractor. The Contractor is responsible for preparing and submitting such documents for review and signature by the LSP or other appropriate person with signatory authority, three days in advance of transporting soil off-site. The Contractor shall furnish a form attached to each manifest or other material tracking form for all material removed off-site, certifying that the material was delivered to the site approved for the class of material. If the proposed disposition of the material is for reuse within the project construction corridor, the Contractor shall cooperate with MassDOT to obtain a suitable representative sample(s) of the material to establish its structural characteristics in order to meet the applicable structural requirements as fill for the project.

All material transported off-site shall be loaded by the Contractor into properly licensed and permitted vehicles and transported directly to the selected disposal or recycling facility and be accompanied by the applicable shipping paper. At a minimum, truck bodies must be structurally sound with sealed tail gates, and trucks shall be lined and loads covered with a liner, which shall be placed to form a continuous waterproof tarpaulin to protect the load from wind and rain.

DECONTAMINATION OF EQUIPMENT

Tools and equipment which are to be taken from and reused off site shall be decontaminated in accordance with applicable local, state and federal regulations. This requirement shall include, but not be limited to, all tools, heavy machinery and excavating and hauling equipment used during excavation, stockpiling and handling of contaminated material. Decontamination of equipment is considered incidental to the applicable excavation item.

ITEMS 181.11 through 181.14 (Continued)

REGULATORY REQUIREMENTS

The Contractor shall be responsible for adhering to regulations, specifications and recognized standard practices related to contaminated material handling during excavation and disposal activities. MassDOT shall not be responsible at any time for the Contractor's violation of pertinent State or Federal regulations or endangerment of laborers and others. The Contractor shall comply with all rules, regulations, laws, permits and ordinances of all authorities having jurisdiction including, but not limited to, Massachusetts DEP, the U.S. Environmental Protection Agency (EPA), Federal Department of Transportation (DOT), Massachusetts Water Resources Authority (MWRA), the Commonwealth of Massachusetts and other applicable local, state and federal agencies governing the disposal of contaminated soils.

All labor, materials, equipment and services necessary to make the work comply with such regulations shall be provided by the Contractor without additional cost to MassDOT. Whenever there is a conflict or overlap within the regulations, the most stringent provisions shall apply. The Contractor shall reimburse MassDOT for all costs it incurs, including damages and/or fines, as a result of the Contractor's failure to adhere to the regulations, specifications, recognized standard practices, etc., that relate to contaminated material handling, transportation and disposal.

SUBMITTALS

I. Summary of Sampling Results, Classification of Material and Proposed Disposal Option.

The following information, presented in tabular format, must be submitted to the Engineer for review and approval prior to any reuse on-site or disposal off-site. This requirement is on-going throughout the project duration. At least two weeks prior to the start of any excavation activity, the Contractor shall submit a tracking template to be used to present the information as stipulated below. Excavation will not begin until the format is acceptable to MassDOT.

Characterization Reports will be submitted for all soil, sediment, debris and groundwater characterized through the sampling and analysis program. Each report will include a site plan which identifies the sampling locations represented in the Report. The Construction Plan sheets may be used as a baseplan to record this information.

The Sampling Results will be presented in tabular format. Each sample will be identified by appropriate identification matching the sample identification shown on the Chain of Custody Record. The sample must also be identified by location (e.g. grid number or stockpile number). For each sample, the following information must be listed: the classification (unregulated, regulated, etc.), proposed disposal option for the stockpile or unit of material represented, and, all analytical results.

ITEMS 181.11 through 181.14 (Continued)

Each Characterization Report will include the laboratory analytical report and Chain of Custody Record for the samples included in the Report.

II. Stockpiling, Transport, and Disposal.

At least two weeks prior to the start of any excavation activity, the Contractor shall submit, in writing, the following for review and shall not begin excavation activity until the entire submittal is acceptable to MassDOT.

Excavation and Stockpiling Protocol:
Provide a written description of the management protocols for performing excavation and stockpiling and/or direct loading for transport, referencing the locations and methods of excavating and stockpiling excavated material.

Disposal and Recycling Facilities:

1. Provide the name, address, applicable licenses and approved waste profile for disposal and/or recycling location(s) where contaminated soil will be disposed. Present information substantiating the suitability of proposed sites to receive classifications of materials intended to be disposed there, including the ability of the facility to accept anticipated volumes of material.

2. Provide a summary of the history of compliance actions for each disposal/recycling facility proposed to be used by the Contractor. The compliance history shall include a comprehensive list of any state or federal citations, notices of non-compliance, consent decrees or violations relative to the management of waste (including remediation waste) at the facility. Material should not be sent to facilities which are actively considered by the DEP, USEPA or other responsible agency to be in violation of federal, state or local hazardous waste or hazardous material regulations. MassDOT reserves the right to reject any facility on the basis of poor compliance history.

Transportation:
The name, address, applicable license and insurance certificates of the licensed hauler(s) and equipment and handling methods to be used in excavation, segregation, transport, disposal or recycling.

III. Material Tracking and Analytical Documentation for Reuse/Disposal.

The following documents are required for all excavation, reuse and disposal operations and shall be in the format described. At least two weeks prior to the start of any excavation or demolition activity, the Contractor shall submit the tracking templates required to present the information as stipulated below. Excavation or demolition will not begin until the format is acceptable to MassDOT.

ITEMS 181.11 through 181.14 (Continued)

All soils, sediments and demolition debris must be tracked from the point of excavation to stockpiling to onsite treatment/processing operations to off-site disposal or onsite reuse as applicable.

Demolition Debris:
Demolition debris must be tracked if the debris is stockpiled at a location other than the point of origin or if treatment or material processing is conducted. Identification of locations will be based on the station-offset of the location. The tracking table will identify date and point of generation, any field screening such as PID or dust monitoring, visual observations/comments, quantity, and stockpile ID/processing operation location. For each unit of material tracked, the table will also track reuse of the material on-site, providing reuse date, location of reuse as defined by start and end station, width of reuse location by offset, the fill elevation range, quantity, and finish grade for said location. For demolition debris which is not reused on site, the table will also track disposal of the material as defined by disposal date, quantity and disposal facility. The table must provide a reference to any analytical data generated for the material.

Soil/Sediment:
Soil excavation will be identified based on the station-offset of the excavation location limits. The tracking table will identify date and point of generation, any field screening such as PID or dust monitoring, visual observations, quantity, and stockpile number/location. For each unit of material tracked, the table will also track reuse of the material on-site and disposal of the material off-site using the same categories identified for demolition debris above.

Method Of Measurement And Basis Of Payment

Disposal of contaminated soil shall be measured for payment by the Ton of actual and verified weight of contaminated materials removed and disposed of. The quantities will be determined only by weight slips issued by and signed by the disposal facility. The most cost-effective, legal disposal method shall be used. The work of the LSP for disposal under all of these items shall be incidental to the work with no additional compensation.

ITEM 181.11 Measurement for Disposal of Unregulated Soil shall be under the Contract Unit Price by the weight, in tons, of contaminated materials removed from the site and transported to and disposed of at an approved location or licensed facility, and includes any and all costs for approvals, permits, fees and taxes, additional testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

ITEM 181.12 Measurement for Disposal of Regulated Soil – In-State Facility shall be under the Contract Unit Price by the weight in tons of contaminated materials removed from the site and transported to and disposed of at an approved in-state facility, and includes any and all costs for approvals, permits, fees and taxes, testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

ITEMS 181.11 through 181.14 (Continued)

ITEM 181.13 Measurement for Disposal of Regulated Soil - Out-of-State Facility shall be under the Contract Unit Price by the weight in tons of contaminated materials removed from the site and transported to and disposed of at an approved out-of-state facility, and includes any and all costs for approvals, permits, fees and taxes, testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

ITEM 181.14 Measurement for Disposal of Hazardous Waste shall be under the Contract Unit Price by the weight in tons of hazardous waste removed from the site and transported to and disposed of at the licensed hazardous waste facility, and includes any and all costs for approvals, permits, fees and taxes, testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

ITEM 182.1 INSPECTION AND TESTING FOR ASBESTOS LUMP SUM

The work shall include the inspecting and testing of all materials suspected of containing asbestos. When any demolition is required to enable the inspection and testing of the suspected material it will be considered incidental to this Item and the Contractor must perform all asbestos handling and testing in accordance with the regulations stated below.

Dust suppression in the form of light water sprays, foams, dust suppressants and calcium chloride will be implemented as required to control dusting during any disturbance of asbestos suspected material. Alternatively, intrusive activities may be reduced or curtailed under high wind or heavy rain conditions, which in the opinion of the Health and Safety Plan (HASP) may pose a safety hazard to the workers.

The Contractor shall employ the services of a Massachusetts licensed "Asbestos Inspector" to inspect the material to determine whether or not "ITEM 182.2 REMOVAL OF ASBESTOS" is required. Should the asbestos inspector determine laboratory testing is required, a state certified laboratory shall be used to perform all necessary tests.

REGULATIONS

U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA) including but not limited to:

29 CFR 1910 Section 1001 and 29 CFR 1926 Section 58 Occupational exposure to Asbestos, Tremolite, Anthophyllite and Actinolite, Final Rule
29 CFR 1910 Section 134 Respiration Protection
29 CFR 1926 Construction Industry
29 CFR 1910 Section 2 Access to Employee Exposure and Medical Records
29 CFR 1910 Section 1200 Hazard Communication
29 CFR 1910 Section 145 Specifications for Accident Prevention Signs and Tags

U.S. Environmental Protection Agency, (EPA) including but not limited to:

40 CFR 762, CPTS 62044, FRL 2843-9, Federal Register Vol. 50 no.134, July 12, 1985 p.28530 - 28540 Asbestos Abatement Projects Rule
40 CFR 61 Subpart A Regulation for Asbestos
40 CFR 61 Subpart M (Revised Subpart B) National Emission Standard for Asbestos

ITEM 182.1 (Continued)

U.S. Department of Transportation 49 CFR 172 and 173

Massachusetts Department of Labor Standards Regulations, (DLS) including but not limited to:

454 CMR 28.00 Removal, Containment and Encapsulation of Asbestos

Massachusetts Department of Environmental Protection (DEP) including but not limited to (supplementing subsection 7.01):

310 CMR 7.00, Section 7.09 Odor and Dust, Section 7.10 Noise, Section 7.15 Air Pollution Control Regulations
310 CMR 18.00 and 19.00 Solid Waste Regulations

Massachusetts Division of Industrial Safety 45 CMR 10.00

Local Requirements including but not limited to those of Health Departments, Fire Departments and Inspection Services Departments

Wherever there is a conflict or overlap of the above references, the most stringent provision shall apply.

BASIS OF PAYMENT

Item 182.1 will be paid for at the Contract unit price per Lump Sum, which price shall include all labor, materials, tools, equipment, and all incidental costs required to complete the work as described and as required by the Engineer.

No separate payment will be made for the protection of general public, private property, the proper inspecting and testing of the material, but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 182.2 REMOVAL OF ASBESTOS FOOT

The work shall include the removal and satisfactory disposal of existing asbestos, especially for asbestos found in existing sewer mains and service pipes that are to be removed. The Contractor's attention is directed to the fact that existing asbestos shall be inspected and tested prior to removal, to determine if special removal and disposal is required. The Contractor shall follow all the rules and regulations stated in "ITEM 182.1 INSPECTION AND TESTING FOR ASBESTOS". If asbestos is present, the Contractor shall follow all the rules and regulations stated in the section "REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIALS", under this item. The Contractor should notify and coordinate his/her efforts with the proper utility accordingly.

REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIALS

This section specifies the requirements for the handling and removal of asbestos containing material. The Contractor must perform all asbestos handling and removal work in accordance with these specifications and the following additional requirements.

U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA) including but not limited to:

29 CFR 1910 Section 1001 and 29 CFR 1926 Section 58 Occupational exposure to Asbestos, Tremolite, Anthophyllite and Actinolite, Final Rule
29 CFR 1910 Section 134 Respiration Protection
29 CFR 1926 Construction Industry
29 CFR 1910 Section 2 Access to Employee Exposure and Medical Records
29 CFR 1910 Section 1200 Hazard Communication
29 CFR 1910 Section 145 Specifications for Accident Prevention Signs and Tags

U.S. Environmental Protection Agency, (EPA) including but not limited to:

40 CFR 762, CPTS 62044, FRL 2843-9, Federal Register Vol. 50 no.134, July 12, 1985 p.28530 - 28540 Asbestos Abatement Projects Rule
40 CFR 61 Subpart A Regulation for Asbestos
40 CFR 61 Subpart M (Revised Subpart B) National Emission Standard for Asbestos

U.S. Department of Transportation 49 CFR 172 and 173

Massachusetts Department of Labor and Industries Regulations, (DLI) including but not limited to:

453 CMR 6.00 Removal, Containment and Encapsulation of Asbestos

Massachusetts Department of Environmental Protection (DEP) including but not limited to (supplementing subsection 7.01):

310 CMR 7.00, Section 7.09 Odor and Dust, Section 7.10 Noise, Section 7.15 Air Pollution Control Regulations
310 CMR 18.00 and 19.00 Solid Waste Regulations

ITEM 182.2 (Continued)

Massachusetts Division of Industrial Safety 45 CMR 10.00

Local Requirements including but not limited to those of Health Departments, Fire Departments and Inspection Services Departments

Wherever there is a conflict or overlap of the above references, the most stringent provision shall apply.

All asbestos material shall be removed and properly disposed of by a contractor or subcontractor with a current Massachusetts Abatement Contractors License issued by the Department of Labor and Industries. Work shall be supervised by a competent person as required by OSHA in 29 CFR 1926 to ensure regulatory compliance. This person must have completed a course at an EPA Training Center or equivalent course in asbestos abatement procedures, have had a minimum of four years on-the-job training and meet any additional requirements set forth in 29 CFR 1926 for a Competent Person. This person must also be certified by the Commonwealth as an Asbestos Abatement Supervisor and Asbestos Abatement Project Designer as required by 453 CMR 6.00.

Asbestos removal work shall be coordinated with all other work under the contract and shall be completed prior to performing any activities which could disturb the asbestos material or produce airborne asbestos fibers.

Dust suppression in the form of light water sprays, foams, dust suppressants and calcium chloride will be implemented as required to control dusting during trenching and excavation. Alternatively, intrusive activities may be reduced or curtailed under high wind or heavy rain conditions, which in the opinion of the Health and Safety Plan (HASP) may pose a safety hazard to the workers.

NOTIFICATION AND PERMITS
The Contractor shall prepare a formal pre-notification form at least ten (10) days prior to the start of asbestos removal work. This form must be submitted to the appropriate Regional Office of the Massachusetts Department of Environmental Protection and to the U.S. Environmental Protection Agency Region I Air and Hazardous Material Division. A copy of the submitted forms must be provided to the Engineer and kept at the work site.

Prior to starting any work, the Contractor shall also obtain any required asbestos removal permit(s) from the city/town. A copy of the permit(s) must be provided to the Engineer and posted at the work site.

The Contractor shall also obtain and pay all other applicable asbestos waste transportation and disposal permits, licenses and fees.

ITEM 182.2 (Continued)

STANDARD OPERATING PROCEDURES
The standard operating procedure shall ensure the following:

1. Proper site security including posting of warning signs and restricting access to prevent unauthorized entry into the work spaces.

2. Proper protective clothing and respiratory protection prior to entering the work spaces.

3. Safe work practices including provisions for communications; exclusion of eating, drinking, smoking, or use of procedures or equipment that would in any way reduce the effectiveness of respiratory protection or other engineering controls.

4. Proper exit practices from the work space though the showering and decontamination facilities.

5. Removing asbestos containing material in ways that minimize release of fibers.

6. Packing, labeling, loading, transporting and disposing of contaminated material in a way that minimizes or prevents exposure and contamination.

7. Emergency evacuation of personnel, for medical or safety (fire and smoke) so that exposure will be minimized.

8. Safety from accidents in the work space, especially from electrical shocks, slippery surfaces and entanglements in loose hoses and equipment.

9. Provisions for effective supervision and OSHA - specified personnel air monitoring for exposure during work.

REQUIRED SUBMITTALS
The Contractor shall submit to the Engineer the following listed items at least ten (10) calendar days prior to the start of asbestos work. No asbestos removal work activities shall commence until these items are reviewed by the Engineer, unless otherwise waived. Submittals shall be clearly labeled and in sufficient detail to enable the Engineer to form an opinion as to its conformity to the specifications.

1. Name, experience and DLI certification of proposed Supervisors and Foreman responsible for asbestos work.

2. Summary of workforce by disciplines and a notarized statement documenting that all proposed workers, by name, have received all required medical exams and have been properly trained and certified for asbestos removal work, respirator use and appropriate Massachusetts DLI, EPA and OSHA standards.

ITEM 182.2 (Continued)

3. Notarized statement that workers are physically fit and able to wear and use the type of respiratory protection proposed for the project. Notarized certification signed by an officer of the abatement contracting firm that exposure measurements, medical surveillance and worker training records are being kept in conformance with 29 CFR 1926.

4. Written plan of action and standard operating procedures (HASP) to include: location and layout of decontamination areas; sequencing of asbestos work; detailed schedule of work activities by date and interface with other project activities which affect work performance; methods used to assure safety and security; worker protection and exposure monitoring; contingency and emergency evacuation procedures; detailed description of methods to be employed to control pollution; waste handling procedures.

5. Written respiratory protection program specifying level of protection intended for each operation required by the project and details of daily inspection and maintenance elements.

6. Copies of the U.S. EPA, State and local asbestos removal pre-notification forms. If applicable, lists and copies of all permits, licenses, or manifests which will be applied for and used.

7. Name, location and applicable approval certificates for primary and secondary landfill for disposal of asbestos-containing or asbestos contaminated waste. Name, address and licenses number(s) of hauler permitted to transport waste. (Submit copies of completed manifests upon disposal).

The Contractor must provide copies of daily inspection and record logs upon request of the Engineer, at any time during project. This information will include but is not limited to work area entry data, respirator inspections and maintenance, HEPA-exhaust inspections and maintenance and other work applicable activities or reports of accidents or unusual events.

METHOD OF MEASUREMENT:

ITEM 182.2 will be measured by the FOOT for the complete removal and disposal of the sewer pipe or other material containing asbestos.

BASIS OF PAYMENT:

ITEM 182.2 will be paid for at the contract unit price per FOOT for ITEM 182.2 REMOVAL OF ASBESTOS, as specified above including all materials, tools, equipment and labor necessary to complete the work specified above

ITEM 201.	**CATCH BASIN**	**EACH**
ITEM 202.	**MANHOLE**	**EACH**
ITEM 202.15	**MANHOLE - 5 FOOT DIAMETER**	**EACH**
ITEM 202.16	**MANHOLE - 6 FOOT DIAMETER**	**EACH**
ITEM 204.11	**GUTTER INLET – SPECIAL**	**EACH**
ITEM 205.1	**LEACHING BASIN - 6 FOOT DIAMETER**	**EACH**

The work to be done under these Items shall conform to the relevant provisions of Subsection 200 of the Standard Specifications, and the following:

Item 201. shall be constructed as shown in MassDOT Standard Drawing 201.0.2 with a 4-foot sump (deep sump), unless otherwise noted on the plans, with the exception that catch basins with frame and covers shall have round openings as shown in MassDOT Standard Drawing 202.0.2.

Item 202.15 shall be constructed as shown in MassDOT Standard Drawing 202.0.2 with the exception that the inside diameter shall be five feet.

Item 202.16 shall be constructed as shown in MassDOT Standard Drawing 202.0.2 with the exception that the inside diameter shall be six feet.

Item 204.11 shall be constructed as shown on the detail provided in the construction drawings and in accordance with applicable Sub-sections of Subsection 201 of the Standard Specifications.

Item 205.1 shall be a precast concrete structure constructed as shown on the detail provided in the construction drawings and in accordance with applicable Sub-sections of Subsection 201 of the Standard Specifications.

Alternate flat top slabs shall be substituted for conical sections in areas of low cover. It shall be the responsibility of the Contractor to determine the appropriate type of top and alternate flat top slab thickness for each location. Alternate flat top slabs shall have a minimum 28-day compressive strength of 4000 psi, reinforced for AASHTO H-20 loading with ASTM A 615 Grade 60 steel. Shop drawings and design calculations shall be stamped by a Massachusetts Structural Engineer, where required. No additional payment will be made for alternate flat top slabs.

Alternate eccentric cone sections or alternate flat top slabs with offset openings shall be used in areas where drainage structures are in close proximity to existing underground utilities, as shown on the plans or as directed by the Engineer. Alternate eccentric cone sections or alternate flat top slabs with offset openings shall also be used where drainage manholes are proposed in travel or bike lanes and shall be oriented to locate covers outside wheel paths to the extent practical. No additional payment will be made for eccentric cones or alternate flat top slabs with offset openings.

ITEMS 201.,202.15, 202.16, 204.11, and 205.1 (Continued)

Frames shall be set using clay brick (3 courses allowed for) in a full mortar bed. Clay brick manufacturer shall be listed on MassDOT's Qualified Construction Materials List. Cement brick will not be allowed.

Concrete collars for new structures shall be High Early Strength cement concrete. The Contractor shall submit a mix design for High Early Strength concrete to the Engineer for approval. The dimensions of the concrete collars shall be as shown on MassDOT Construction Standard Drawing 223.0.1. Concrete collars shall be incidental to the item of work to which they pertain.

The concrete collars shall be placed up to a height that allows for the placement of a minimum of 3 inches of Hot Mix Asphalt above the collar.

Catch basins, manholes, and gutter inlets shall be placed on 6" crushed stone (M2.01.4) foundation as directed by the Engineer.

Leaching basins shall be provided with crushed stone (M2.01.4) used for the percolation bed below and around the structure and geotextile fabric for subsurface drainage (M9.50.0) shall be provided on all sides as shown on detail.

Connections to existing pipe shall be included in the cost of the catch basins or manholes. If existing pipe is to be abandoned, end of existing pipe shall be plugged as specified in Subssection 200.

Excavation support and excavation techniques such as vacuum excavation may be required for installation of structures due to the proximity of existing utilities. All work to install drainage structures complete in place shall be considered part of work of this section.

ITEMS 201.,202.15, 202.16, 204.11, and 205.1 (Continued)

METHOD OF MEASUREMENT

Item 201., Item 202., Item 202.15, Item 202.16, Item 204.11, and Item 205.1 will be measured for payment by the Each unit installed, complete in place.

BASIS OF PAYMENT

Item 201., Item 202., Item 202.15, Item 202.16, Item 204.11, and Item 205.1 will be paid for at the respective Contract unit prices per Each, which price shall be full compensation for labor, materials, equipment, tools, sawcut, excavation, and other incidentals necessary to satisfactorily complete the work.

If necessary to obtain a satisfactory foundation for the drainage structure, excavation shall be deeper than normally required for crushed stone bedding and will be measured for payment under Item 142, Class B Trench Excavation.

The crushed stone for percolation bed and foundation shall be paid for under Item 156.

Masonry plugs shall be paid for under Item 227.4.

Geotextile shall be paid for under item 698.2

ITEM 221.1 FRAME AND COVER - SECURED EACH

The work under this Item shall conform to the relevant provisions of Subsections 201, 220 and the following:

The work to be done under this Item consists of the furnishing and delivering Frame and Cover – Secured to the site as shown on the Plans, and as directed by the Engineer.

Frame and Cover - Secured assemblies shall consist of covers and frames that conform to the nominal size, weight, material and load-carrying requirements in MassDOT Construction Standard Details 221.0.1, 221.0.2 and 221.0.3, and are on the relevant MassDOT Qualified Construction Materials list. Some dimensions of secured manhole covers and frames may vary slightly from those shown on the standard details to account for necessary fastening components. The Contractor shall submit shop drawings of all drainage castings for approval prior to ordering.

Covers and frames shall be held securely together by bolting to threaded holes in the frame or to nuts or tumbler devices secured by the frame, by use of hooks attached to the cover or by any other means approved by MassDOT, to prevent being dislodged under traffic loading. Gaskets and other sealing devices will not be allowed.

Method of Measurement

Item 221.1 will be measured per EACH Frame and Cover – Secured furnished and delivered to the site.

Basis of Payment

Item 221.1 will be paid for at the contract unit price EACH Frame and Cover – Secured furnished and delivered.

ITEM 223.11 PRIVATE FRAME AND GRATE (OR COVER) REMOVED AND RELOCATED EACH

The work under this Item shall conform to the relevant provisions of Subsections 201, 220 and the following:

The work under this Item consists of the removal, temporary stacking, and relocation of existing private frame and grate (or cover) assemblies onto new drainage structures between STA 32+60 LT and STA 32+90 LT, as shown on the Plans and as directed by the Engineer.

Existing frames and grates (or covers) shall be exposed, care being taken that they are not damaged by excavating or other machinery, before being fully removed. Any frame and grate (or cover) damaged during this work due to the Contractor's negligence shall be replaced by the Contractor at their own expense. If necessary, frames and grates (or covers) shall be temporarily stacked before being relocated and placed in accordance with Subsection 201.63 of the Standard Specifications.

METHOD OF MEASUREMENT

Item 223.11 will be measured for payment by the EACH Frame and Grate (or Cover) removed and relocated.

BASIS OF PAYMENT

Item 223.11 will be paid for at the Contract unit price per EACH Frame and Grate (or Cover) removed and relocated, which price shall include all labor, materials, equipment, excavation, sawcutting, removal, temporary stacking, masonry, placing, concrete collars, backfilling, and any other incidentals required to complete the work.

Replacement of frame and grate (or cover) that has been determined to be unsuitable for reuse by the Engineer shall be paid for under the appropriate contract bid items.

ITEM 224.012 12 INCH HOOD EACH

Work under this item shall conform to the relevant provisions of Subsections 201, 220, and 227 of the Standard Specifications and the following:

The work under this item includes the furnishing and installation of non-metallic hoods to be installed in catch basins, where identified on the plans, to prevent oil and floating debris from being discharged from the stormwater management system. Devices shall be The Eliminator (Ground Water Resource (617)-773-1128); Snout (BMP Inc. (800)-504-8008); SKUNK (Upstream Technologies (651)-237-5123); or approved equal. The specified size of the hood is based on the outlet pipe size.

CONSTRUCTION

Hoods shall be installed in catch basins, where identified on the plans, and as directed by the Engineer. Hoods shall be securely attached to the outlet pipe or structure wall to form a watertight seal and shall be installed in full accordance with the recommendations of the manufacturer.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 224.012 will be measured and paid at the Contract unit price per each, complete in place, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

ITEM 238.10	**10 INCH DUCTILE IRON PIPE**	**FOOT**
ITEM 238.12	**12 INCH DUCTILE IRON PIPE**	**FOOT**
ITEM 238.16	**16 INCH DUCTILE IRON PIPE**	**FOOT**
ITEM 238.18	**18 INCH DUCTILE IRON PIPE**	**FOOT**
ITEM 238.24	**24 INCH DUCTILE IRON PIPE**	**FOOT**
ITEM 241.15	**15 INCH REINFORCED CONCRETE PIPE CLASS III**	**FOOT**
ITEM 241.18	**18 INCH REINFORCED CONCRETE PIPE CLASS III**	**FOOT**
ITEM 241.21	**21 INCH REINFORCED CONCRETE PIPE CLASS III**	**FOOT**
ITEM 241.30	**30 INCH REINFORCED CONCRETE PIPE CLASS III**	**FOOT**
ITEM 243.12	**12 INCH REINFORCED CONCRETE PIPE CLASS IV**	**FOOT**
ITEM 252.12	**12 INCH CORRUGATED PLASTIC PIPE**	**FOOT**

Work under these items shall conform to the relevant provisions of Subsection 230 of the Standard Specifications, and the following:

Where new drains tie into existing catch basins or manholes, connection including coring shall be considered part of the work of this section. Inverts shall be rebuilt or cut to match proposed conditions as part of the work under this section.

Excavation support and excavation techniques such as vacuum excavation may be required for installation of pipes due to the proximity of existing utilities and shall be considered incidental to the work of this section.

Existing pipe within the trench limits that requires removal to install new pipe shall be considered part of the work of this section. Existing pipe outside trench limits called for removal, shall be part of the work of item 271.1.

ITEM 271.1 DRAINAGE PIPE REMOVED AND DISCARDED FOOT

This work under this Item shall conform to the relevant provisions of Subsection 270 of the Standard Specifications and the following.

The work to be done under this item shall include all labor, materials and equipment necessary to remove and discard the existing pipes. The work shall consist of the removal of existing drain pipe (regardless of size) where noted on the plans, and as directed by the Engineer. Where existing pipe is located within the same trench as new pipe, the removal and discarding of the existing pipe shall be considered incidental to the installation of the new pipe. The work includes all excavation, shoring, and bracing. A trench shall be excavated and the pipe cut and removed. The remaining open pipe ends shall be plugged watertight. All materials excavated from the trench, when deemed suitable for reuse by the Engineer, shall be placed in 6 inch loose lift depths and compacted to not less than 95 percent of the maximum dry density of the material. If additional material is needed to backfill the trench it shall meet the requirements for Gravel Borrow. All unused and unsuitable material shall be disposed of off-site.

METHOD OF MEASUREMENT

Pipe removed and discarded, except for pipe located in the same trench as new pipe, will be measured in place by the foot of pipe removed and discarded off the project.

BASIS OF PAYMENT

Item 271.1 Drainage Pipe Removed and Discarded, will be paid at the contract unit price per Foot, which price shall be full compensation for all labor, materials, equipment, excavation, saw cutting, removal of pipes, disposal of unsuitable material, and incidentals required to complete the work.

If in situ material is unsatisfactory for backfill, as determined by the Engineer, payment will be made separately for backfill under Item 151. Gravel Borrow.

Masonry plug will be paid under Item 227.4

ITEM 303.06 6 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT FOOT

Work under this item shall conform to the relevant provisions of Subsection 301 of the Standard Specifications, Town of Mansfield standard specifications provided in Appendix A, and the following:

Where the proposed water pipe is installed in the same location as an existing water main. In these locations the work shall include the removal of existing pipe, tees and fittings where shown on the plans and where necessary to install the proposed water pipe. No separate payment shall be made for the removal of the existing pipe and fittings and all costs associated with the removal shall be considered incidental to the work under this item. All edges of excavation shall be sawcut.

ITEM 309. DUCTILE IRON FITTINGS FOR WATER PIPE POUND

Work under this item shall conform to the relevant provisions of Subsection 301 of the Standard Specifications, Town of Mansfield standard specifications provided in Appendix A, the Mansfield Fire Department standards and the following:

In some areas the proposed water pipe will be installed in the same location as an existing water main. In these locations the work shall include the removal of existing pipe, tees and fittings where shown on the plans and where necessary to install the proposed water pipe. No separate payment shall be made for the removal of the existing pipe and fittings and all costs associated with the removal shall be considered incidental to the work under this item.

Mechanical joint restraints such as megalugs or other clamps required at fittings and adjacent pipe segments shall be installed in accordance with the manufacturers requirements and shall be considered incidental to the work of this section.

ITEM 358. GATE BOX ADJUSTED EACH

Work under this item shall conform to the relevant provisions of Subsection 301 of the Standard Specifications and the following:

Under this item, the Contractor shall adjust to grade gate boxes where required by the work and as directed by the Engineer. Work shall include lowering gate boxes for full depth work, maintaining ties and raising gate boxes to intermediate and finish grades

ITEM 376.2 HYDRANT - REMOVED AND RESET EACH

Work under these items shall conform to the relevant provisions of Subsection 301 of the Standard Specifications, Town of Mansfield standard specifications, the Mansfield Fire Department standards and the following:

Any relocation of the fire hydrants shown on the plans shall be approved by the Town of Mansfield Water Division and the Mansfield Fire Department.

The work under Item 376.2 shall include shutdown of the existing valve including coordination with the Town of Mansfield Water Division, if necessary, and adjustment of height of existing hydrant as shown on the plans.

At the completion of installation, all hydrants shall be cleaned and disinfected per the Town of Mansfield Water Division standards and the Mansfield Fire Department standards. The cost of any testing, chlorination and disinfection shall be considered incidental to the work in this item.

All work shall be inspected by the Mansfield Fire Department. The Contractor shall coordinate inspections with the Mansfield Fire Department.

METHOD OF MEASUERMENT AND BASIS OF PAYMENENT

Measurement and payment will be at the contract unit bid price per each, which price shall be considered full compensation for all labor, equipment and materials including saw cutting, excavation, furnishing and installing new hydrant, crushed stone, testing, disinfection, removal of any conflicting pipe, backfill, compaction, coordination with the Town of Mansfield Water Division and the Mansfield Fire Department for water main shutdowns. Payment for pipe, fittings, valves and thrust blocks shall be measured and paid for under their respective contract items. Payment for Class B Trench Excavation, Class B Rock excavation shall be at the contract unit price for their respective contract items.

ITEM 381.01 SERVICE BOX (MUNICIPAL STANDARD) EACH
ITEM 384. CURB STOP EACH

The work under these items shall conform to the Standard Specifications of the Town of Mansfield and the following:

Services shall be laid with a minimum depth of cover of 5 feet below finished grade.

New curb stops shall be as per Town of Mansfield Water standards provided in Appendix A. The Contractor shall keep a record of the locations of all curb stops installed. A copy of this record shall be given daily to the Engineer and Town of Mansfield Water Department at the completion of the work. Existing service boxes that can be reused with new curb stops, shall be removed and reset to new location and be considered incidental to Item 384.

Service boxes found to be inoperable due to no fault of the Contractor shall be replaced with new and paid for under Item 381.01

Curb stops found to be inoperable due to no fault of the Contractor shall be replaced with new and paid for under Item 384.

METHOD OF MEASUERMENT AND BASIS OF PAYMENENT

Measurement and payment for these items shall be at the contract unit price per each and shall include all excavation regardless of depth, saw cutting, backfill, compaction, furnishing and installing curb stops and boxes, removing and resetting services boxes, copper tubing and any necessary adaptors, fittings, tests and disinfection, and all miscellaneous work required for a complete installation to the satisfaction of the Engineer.

ITEM 476.12 STAMPED AND COLORED CEMENT CONCRETE SQUARE YARD

This Item of work shall consist of furnishing and installation integrally colored and stamped portland cement concrete at the locations shown on the plans. Work shall conform to the relevant provisions of Subsection 476 of the Standard Specifications and the following:

SUBMITTALS

Refer to the "Color Modified Concrete Mix Design and Approval Process" section below for required submittals.

Color samples and Stamp patterns shall be supplied to the Engineer and approved by Engineer prior to use.

Provide a 5' x 5' sample panel of each type of stamped and colored concrete for approval by Engineer.

MATERIALS

All color hardeners, release agents, curing compound, surface penetrating sealers, and joint sealant materials shall be from a single source manufacturer. Color requirement and be used in accordance with the manufacturer's recommendations. The Stamped Patterns shall be as shown on the plans or as directed by the Engineer.

Type 1 - Color shall be brick red.

Color Agent:

- Coloring agent for integrally colored concrete shall meet the requirements of ASTM C 979, be approved by the Engineer and it shall be used in accordance with manufacturer's recommendations. It shall not contain calcium chloride.

- Amount of coloring agent to be used in the concrete mix shall be in accordance with the manufacturer's recommendation to attain a final hydrated concrete color that matches. Color for stamped and colored concrete sidewalk shall be "Quarry Red" Pantone 4715C.

Color Hardener:

- Shall meet ASTM C 979 for color stability.

- Color shall be "Dark Red" (A-27) Lithocrome.
- Shall be ready-to-use, dry-shake type color hardener and shall be streak-free intergrind of pigments, surface conditioning and dispersing agents, and Portland cement, blended with an approved graded aggregate as specified by the manufacturer. It shall not contain calcium chloride.

- Application rate shall be a minimum of 64 lbs. per 105 square feet or in accordance with manufacturer guidelines.

ITEM 476.12 (Continued)

Release Agent:

- Shall be a powdered, colored, bond-breaker formulated to break the bond between mat-type concrete texturing tools and the surface of the color-hardened concrete while imprinting variegated or mottled appearance.

- Shall meet ASTM C 979 for color stability.

- Shall be "Deep Charcoal" (A-21).

- Application rate shall be 4 lbs. per 105 square feet or in accordance with the manufactures guidelines.

- Shall be applied in accordance with the manufacturer's recommendations.

Type 2 - Color shall be a light to medium gray as outlined below.

Color Agent:

- Coloring agent for integrally colored concrete shall meet the requirements of ASTM C 979, be approved by the Engineer and it shall be used in accordance with manufacturer's recommendations. It shall not contain calcium chloride.

- Amount of coloring agent to be used in the concrete mix shall be in accordance with the manufacturer's recommendation to attain a final hydrated concrete color that matches. Color for stamped and colored concrete shall be "Stone Gray" Pantone 18-0615 TCX.

Color Hardener:

- Shall meet ASTM C 979 for color stability.

- Color shall be "Deep Charcoal" (A-21) Lithocrome.

- Shall be ready-to-use, dry-shake type color hardener and shall be streak-free intergrind of pigments, surface conditioning and dispersing agents, and Portland cement, blended with an approved graded aggregate as specified by the manufacturer. It shall not contain calcium chloride.

- Application rate shall be a minimum of 64 lbs. per 105 square feet or in accordance with manufacturer guidelines.

Release Agent:

- Shall be a powdered, colored, bond-breaker formulated to break the bond between mat-type concrete texturing tools and the surface of the color-hardened concrete while imprinting variegated or mottled appearance.

ITEM 476.12 (Continued)

- Shall meet ASTM C 979 for color stability.
- Shall be "Deep Charcoal" (A-21).
- Application rate shall be 4 lbs. per 105 square feet or in accordance with the manufactures guidelines.

Shall be applied in accordance with the manufacturer's recommendations

Surface Penetrating Sealer:

- Shall be specifically required by the color hardener manufacturer.
- All materials are subject to the approval of the Engineer. The surface penetrating sealant shall meet the following performance criteria, based on application of the solution in accordance with the manufacturer's recommended procedures and rates.
- Shall have the following Performance Specification:
  - A water miscible, penetrating salt and liquid water repellent treatment that will provide internal steel corrosion protection as follows:
  - Treatment shall not affect skid resistance or surface texture.
  - Treated concrete surfaces submitted to an ASTM C-642 moisture absorption test or two percent (2%) in fifty (50) days shall not absorb more than one percent (1%) moisture in forty-eight (48) hours.
  - Treated concrete surfaces subjected to a ninety (90) day chloride ion penetration test (AASHTO T-259, T-260) shall not permit the penetration of more than 3lbs of chlorides per cubic yard of concrete at the ½ inch to 6 inches depth and no more than 1 lbs. of chloride per cubic yard at 1 inch depth.
  - Surface preparation shall be in accordance with manufacturer's recommendations.
  - Treatment shall not affect the normal vapor permeability of the substrate.

Curing Compound:

- Shall be as recommended by the color manufacturer. It shall not affect the skid resistance of the surface.
- Combined curing compound and sealer systems are available from concrete color manufacturers. Usage shall be approved by the Engineer in accordance with manufacturer's recommendations.

Expansion Joint: Preformed joint filler, bituminous type, shall conform to the Standard Specifications, Section M.9.14.0. An Expansion Joint will be located at the midpoint in each of the two proposed areas to be provided with Concrete Pavement.

ITEM 476.12 (Continued)

Joint Sealant: Shall be high quality polyurethane based, having a 97 percent nonvolatile content and a combined weight of 3 lbs. per gallon.

Forms: Shall be set to required line and grade, as shown on the plans, rigidly braced and secured. Install sufficient quantity of forms to allow continuous progress of work and so that forms can remain in place at least 24 hours after concrete placement.

Imprinting Texturing Tools:
Shall be mat-type imprinting tool and to provide patterns as detailed on the plans. The manufacturer of such tools shall have provided adequate training to the Contractor. The Contractor shall submit documentation that he has been trained by the tool manufacturer.

Portland Cement Concrete:

- Shall be Air-Entrained in accordance with Section 701 of the MassDOT Standard Specifications and as modified herein.

- Proportioning of ingredients for the integrally colored and stamped concrete shall be as specified herein. All admixtures and coloring agents must be compatible in their use.

Reinforcement:
Shall be 4x4, w1.4 x w1.4 wire mesh and shall be in accordance with the Standard Specifications, Section 901 and section M8. 01.2; Contractor shall cut reinforcement mesh as needed to fit the locations shown.

Color Modified Concrete Mix Design and Approval Process:

- Proportioning and testing of the concrete components and mixture shall be accomplished by using the methods outlined in Section 901.

- The Contractor shall proportion the concrete mix including the coloring additives and finishing methods to obtain the desired color, texture, aggregate exposure, and meet the appropriate mixture classification requirements of Section.

- The following information shall be added in addition to the requirements listed in Section 901 to be included in the laboratory test data report:

    - Coloring agent
    - Color hardener
    - Release Agent
    - Curing Compound
    - Surface penetrating Sealer
    - Reinforcement

    Prior to performing the concrete field trial runs the Contractor shall submit to the Engineer the proposed mix design(s) and one concrete prototype for each concrete classification, color and texture, and aggregate exposure as specified in the project plans. The prototype shall be submitted to the Engineer sufficiently in advance to allow for review and approval of color, texture, and aggregate exposure of the concrete.

ITEM 476.12 (Continued)

Trial Run:
The Contractor shall conduct a trial run in accordance with the requirements listed in Section 901 prior to production, using the submitted mix design's component materials and proportions including the amount of admixtures, color additives, finishing and curing techniques which will be necessary to produce concrete of the specified plasticity, workability, air content, compressive strength, color, texture, surface pattern and any other specified concrete property.

During the field trial runs, the Contractor shall also manufacture and submit the required number of prototypes in accordance with the above listed requirements.

Field Sample:
During the trial run the Contractor shall make a field sample, no less than 5' x 5' in size, using the submitted mix. This sample shall not be part of the permanent pavement area. The field sample shall include 90 percent patterned area, as specified on the plans, impressed from full patterns and 10 percent patterned area using hand tools to match the full formed area.

The sample shall be approved by the Engineer after consultation with the City for color, texture, and pattern. Additional samples shall be required in the event that the first or subsequent samples are rejected.

When specified concrete parameters have been attained, including color and texture, the Engineer, in consultation with the City shall approve the proposed mix design, color, texture, and aggregate exposure for production.

EXECUTION:
Handling and Placement:
The Contractor shall be advised that the specified concrete may result in an accelerated initial concrete set. The Contractor shall take proper precautions to conduct all of the handling, testing, placement prior to concrete initial set and perform the required stamping and curing and sealing of concrete thereafter in accordance with manufacturer's recommendations.

During concrete operations in hot weather, the Contractor shall take measures with the approval of the Engineer to reduce hazards such as, flash set, rapid loss of water due to evaporation, high concrete temperatures, and the increased difficulty of concrete placement, and finishing. Any concrete admixture modifications proposed by the Contractor must be submitted in writing to the Engineer for approval.

Experienced Personnel:
The installation, coloring, finishing, patterning, and related activities are operations requiring a thorough knowledge of the properties of concrete, the characteristics of the coloring and patterning process, and experience with these methods and only skilled and experienced artisans shall be employed in this work item. Specifically, the placement crew's chief shall remain the same person from installation and approval of the sample(s) through the entire project.

ITEM 476.12 (Continued)

The Contractor shall provide conclusive proof that he is qualified to, and has previously produced such textured paving as specified, and can comply with the provisions specified herein and shown on the plans. Proof shall consist of at least three high quality installations similar to that specified herein. Evidence that the contractor is qualified shall be submitted within thirty (30) days after the Notice to Proceed is received, and it shall be the responsibility of the prime bidder to ensure that the subcontractor he intends to use for this work be pre-qualified in accordance with this paragraph.

Concrete Placement:
Finish grade of the Stamped and Colored Concrete shall match the adjacent road in both profile and cross section. Concrete depth shall be 4 inches.

No concrete under this Item shall be placed when weather conditions indicate precipitation can occur before completed surface patterning can be fully projected. The Contractor shall only place that amount of concrete, which can be completely finished and patterned in accordance with these specifications. Concrete, which becomes too stiff for the proposed pattering, shall be removed and disposed of by the Contractor and replaced in accordance with the plans, these specifications and/or as directed by the Engineer.

Concrete removed, disposed of and replaced shall be at the Contractor's expense. Concrete shall not be place until sub-base and forms have been checked for line and grade. The subbase shall be moistened to provide uniform dampened condition at time concrete is placed. Concrete around manholes or other structures shall not be placed until they are at required finish elevation and alignment.

Deposit and spread concrete in continuous operation between transverse joints, as far as possible. If interrupted for more than 1 hour, place a construction joint.

Joints:
Construct expansion joints true-to-line with face perpendicular to surface of concrete. Construct transverse expansion joints at right angles to the center line, unless otherwise indicated.

When joining existing structures, place transverse joints to align with previously placed joints, unless otherwise indicated.

Expansion Joints:
Shall be placed per locations indicted in the plans. If locations are not provided provide expansion joints at a distance no greater than 12’ O.C. each way. Provide 1/8” expansion joints where different stamped and colored concrete type is adjacent to each other.

The Contractor shall provide pre-molded joint filler for expansion joints abutting concrete curbs, catch basins, manholes, inlets, structures, walks, and other fixed objects, unless otherwise indicated. The joint filler shall be extended the full-width and depth of joint and not less than ¼ inch or more than 12 inch below finished surface. Place top of joint filler flush with finished concrete surface. Joint fillers shall be in one-piece lengths for full width being placed, wherever possible. Where more than one length is required, lace or clip filler sections together.

ITEM 476.12 (Continued)

The Contractor shall protect top edge of joint filler during concrete placement with a metal cap or other temporary material. This protection shall be removed after concrete has been placed on both sides of the joint.

Filler and Sealants are to be installed in accordance with manufacturer's recommendation.

Primary Concrete Finishing:
After strike-off and consolidating concrete, smooth surface by screeding and floating. The use of hand methods shall not be allowed unless mechanical floating is not possible. Adjust floating to compact surface and produce uniform texture.

After floating test surface for trueness with a 10 feet straightedge, distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide a continuous smooth finish. Finished surfaces should conform to tolerances required in Section 701 of the MassDOT Standard Specifications.

Special Concrete Finishing:
After completion of the primary floating, the finish the entire surface as follows:

- Color Hardener shall be applied evenly to the plastic surface by the dry-shake method using a minimum of 64 lbs and a maximum of 75 lbs per 12 square yard. It shall be applied in two or more shakes, floated after each and troweled only after the final floating.

- Fresh concrete shall be carefully and continuously monitored and tested during partial setting up so that proper consistency for patterning is achieved. Air temperature, humidity, wind conditions, and other factors affecting setting rate shall be considered in determining the start of patterning operations.

- Release agent shall be applied evenly to surface.

- While the concrete is still in the plastic stage of set, the imprinting tools shall be applied to create the surface pattern. The long axis of the running bond pattern shall be perpendicular to the adjacent travel lanes.

- Full patterns shall be used to the maximum extent possible. Care shall be taken to ensure continuity of the pattern and to maintain proper relationships to direction of travel, edges, cut route, curbs, and other opportunities.

- Where full patterns cannot be used, such as at corners, narrow areas, angles, ramps, or obstructions, hand detailing tools and methods shall be used to continue the intended pattern to the limit of the area. The Filler tools or hand methods shall match as closely as possible the pattern, color, and texture of the full pattern area.

- Carefully lift and remove the polyethylene sheet.

ITEM 476.12 (Continued)

- At all edges of globes, hooks of curbing, and principal obstructions, smooth and finish the patterned art concrete with a metal edging tool, having a 3 inch plate width and a ½ inch radius. A principal obstruction shall be, for example, a light or signal standard, catch basin, manhole, or planting area, but shall not be a water gate, fire hydrant, parking meter, sign post, or similar incidental opportunity.

  Once the concrete has attained a compressive strength of 3,000 psi and a minimum of twenty four (24) hours curing time, the surface of the concrete shall be carefully power washed to remove any debris without removing the release agent and thereafter sealed.

Repairs and Protection

Protect concrete from damage until acceptance of work and exclude traffic from pavement until the concrete has attained a compressive strength of 3,000 psi for at least 1 day after placement. The pavement shall be kept free of stain and other damage. Pavement shall be swept and washed free of stains, discolorations, dirt, and other foreign material just prior to final inspection. The Engineer shall determine when the concrete shall be opened to traffic.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

The work of this Item shall be measured and paid for at the Contract Unit Price bid per Square Yard, which payment shall constitute full compensation for excavation, fine grading and compaction, providing samples, furnishing and installing approved materials, and testing, including all labor, equipment tools, appurtenances, and incidentals necessary to satisfactorily complete this Item of work, in place and accepted.

ITEM 482.5 SAWCUTTIN ASPHALT PAVEMENT FOR BOX WIDENENING FOOT

The work under this item shall conform to the relevant provision of Subsection 480 of the Standard Specifications and the following:

Saw cutting at limits of work in roadways, milling, sidewalks and driveways shall be considered incidental to the item of work to which it pertains. All costs in connection therewith shall be included in the unit price bid for each respective item.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Measurement and payment for sawcutting asphalt pavement for box widening shall be at the contract unit price per foot and shall include all work required to complete sawcutting to the satisfaction of the Engineer.

ITEM 580. CURB REMOVED AND RESET FOOT

This work shall consist of removing, relocating and resetting existing curb in accordance with Section 580 and the following:

All curb to be removed and reset or stacked shall be at the direction of the Engineer. Any curb unsuitable for resetting or stacking shall be discarded under Item 120.1 Unclassified Excavation.

Excessively chipped or broken curbs will not be reused. The Engineer will determine which curbs shall be reused. Existing curbing to be reused shall be installed in continuous sections and shall not be intermingled with new curbing.

The work of this section will be measured and paid for at the Contract unit price per foot which will be full compensation for all saw cutting, excavation, backfill, cement concrete for curb support, curb setting and all, labor, tools, materials and equipment necessary for the completion of the work to the satisfaction of the Engineer. Any interim stacking or other extra handling or relocating of the curb shall be considered for the Contractor's convenience and not cause for additional compensation.

ITEM 590.3 CONCRETE BLOCK WALL REMOVED AND STACKED FOOT

The work under this Item shall conform to the relevant provisions of Subsection 690 of the Standard Specifications, and the following:

The work consists of removing and stacking an existing concrete block wall located at #254 Chauncy Street.

The Contractor shall carefully dismantle the existing wall and stack the stones on site at #254 Chauncy Street or dispose or the existing wall as directed in the field by the Engineer. Any existing potted plants shall be removed and stacked on site. Existing ground shall be carefully excavated to remove any stone blocks buried below finished grade level. Areas of excavation shall be backfilled and compacted with gravel borrow to existing grade.

Existing wall block, plantings or sprinkler systems damaged by the work of the Contractor shall be replaced by the Contractor to match existing conditions without additional compensation.

The work of this section includes all labor, materials, tools and equipment necessary to remove and stack the existing wall to the satisfaction of the Engineer. Any interim stacking, re-handling, transportation of materials to and from the site shall be considered part of the work of this section.

Measurement and payment under this Item shall be at the Contract Unit Price bid per foot for Item 590.3, which price shall include, dismantling and stacking the existing wall, backfill with gravel borrow and all labor, tools, materials and equipment required complete the work to the satisfaction of the Engineer. Gravel fill shall be measured and paid for as part of item 151. Excavation shall be measured as a part of item 141.

ITEM 697.1 SILT SACK EACH

Work under this item shall conform to the relevant provisions of Subsections 227 and 670 of the Standard Specifications and the following:

The work under this item includes the furnishing, installation, maintenance and removal of a reusable fabric sack to be installed in drainage structures for the protection of wetlands and other resource areas and the prevention of silt and sediment from the construction site from entering the storm water collection system. Devices shall be ACF Environmental (800)-448-3636; Reed & Graham, Inc. Geosynthetics (888)-381-0800; The BMP Store (800)-644-9223; or approved equal.

Silt sacks shall be installed in retained existing and proposed catch basins and drop inlets within the project limits and as required by the Resident Engineer.

The silt sack shall be as manufactured to fit the opening of the drainage structure under regular flow conditions and shall be mounted under the grate. The insert shall be secured from the surface such that the grate can be removed without the insert discharging into the structure. The filter material shall be installed and maintained in accordance with the manufacturer's written literature and as directed by the Engineer.

Silt sacks shall remain in place until the placement of the pavement overlay or top course and the graded areas have become permanently stabilized by vegetative growth. All materials used for the filter fabric will become the property of the Contractor and shall be removed from the site.

The Contractor shall inspect the condition of silt sacks after each rainstorm and during major rain events. Silt sacks shall be cleaned periodically to remove and disposed of accumulated debris as required. Silt sacks, which become damaged during construction operations, shall be repaired or replaced immediately at no additional cost to the Department.

When emptying the silt sack, the contractor shall take all due care to prevent sediment from entering the structure. Any silt or other debris found in the drainage system at the end of construction shall be removed at the Contractors expense. The silt and sediment from the silt sack shall be legally disposed of offsite. Under no condition shall silt and sediment from the insert be deposited on site and used in construction.

All curb openings shall be blocked to prevent stormwater from bypassing the device.

All debris accumulated in silt sacks shall be handled and disposed of as specified in Section 227 of the Standard Specifications

Silt sacks will be measured and paid at the contract unit price per each, complete in place, which price shall include all labor, materials, equipment and incidental costs required to complete the work. No separate payment will be made for removal and disposal of the sediment from the insert, but all costs in connection therewith shall be included in the contract unit price bid.

ITEM 698.2 GEOTEXTILE FABRIC FOR SUBSURFACE DRAINAGE SQUARE YARD

All work shall be done in conformance with the applicable sections of the Standard Specifications.

Geotextile for Subsurface Drainage shall conform to the requirements of AASHTO M 288, shall be listed on MassDOT's Qualified Construction Materials List, and shall be approved by the Engineer. Geotextile for Subsurface Drainage shall be used to wrap crushed stone surrounding leaching basins. If geotextile requires anchor pins, they shall be included under this item.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Geotextile for Subsurface Drainage will be measured and paid for at the contract unit price bid per square yard, which price shall include all labor, materials, equipment, and incidental costs required to complete the work. Overlaps between sheets detailed on the plans are considered incidental to the unit price per square yard and shall not be measured separately for payment. Geotextile which becomes damaged during construction operations, shall be repaired or replaced immediately at no additional cost to the Department.

ITEM 698.4 GEOTEXTILE FABRIC FOR PERMANENT EROSION CONTROL SQUARE YARD

All work shall be done in conformance with the applicable sections of the Standard Specifications.

Geotextile for Permanent Erosion Control shall conform to the requirements of AASHTO M 288, shall be listed on MassDOT's Qualified Construction Materials List, and shall be approved by the Engineer. Geotextile for Permanent Erosion Control shall be used under stone for pipe ends. If geotextile requires anchor pins, they shall be included under this item.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Geotextile for Permanent Erosion Control will be measured and paid for at the contract unit price bid per square yard, which price shall include all labor, materials, equipment, and incidental costs required to complete the work. Overlaps between sheets detailed on the plans are considered incidental to the unit price per square yard and shall not be measured separately for payment. Geotextile which becomes damaged during construction operations, shall be repaired or replaced immediately at no additional cost to the Department.

ITEM 714. MONUMENT REMOVED AND RESET EACH

Work under this Item shall be done in accordance with relevant provisions of the Standard Specifications Subsection 700, supplemented as follows:

The work will consist of removing and resetting the monument located in the northwest corner of the intersection of Chauncy Street and Copeland Drive as shown on the plans. The work will include all labor, equipment and materials necessary to remove and reset the monument, including construction of a new foundation, if required, and removal of the existing foundation for up to 3 feet below proposed grade.

METHOD OF MEASUREMENT

Item 714. will be measured for payment by the Each mounment removed and reset, complete in place.

BASIS OF PAYMENT

Item 714. will be paid for at the Contract unit price per Each, which price shall include removal and resetting of monument, construction of new foundation if required, removal of existing foundation, all labor, materials, tools, equipment, and all incidental costs required to complete the work.

ITEM 730.1 WELCOME TO MANSFIELD SIGN EACH

The work under this item shall conform to the relevant provisions of Subsections 120, 501, 685, 820, and 901 of the Standard Specifications and the following:

The Contractor shall notify the owner before starting any work. The work shall include all labor, tools, materials and equipment to furnish and install the Welcome to Mansfield Signs per the details and at the locations shown in the plans or as directed by the Engineer. The work shall include but not be limited to site preparation, excavation, backfill, gravel borrow, constructing a reinforced concrete support wall with stone veneer and granite caps, manufacturing and installing the sign, and installing new flood lighting complete in place with conduit, handholes and connection to power source and electric meter.

SUBMITTALS

Contractor shall submit drawings, for the approval of the Engineer, showing dimensions and materials for the wall including foundation, reinforcing, veneer, and granite top.

Contractor shall furnish samples, for the approval of the Engineer, of stone veneer and granite top.

Contractor shall submit shop drawing, for the approval of the Engineer, for the sign showing full dimensions, method of mounting, lettering style and heights, Town seal, color, etc.

Contractor shall submit product data, for the approval of the Engineer, describing flood light dimensions and layout, mounting, accessories, materials, color finish, handling, warranty and installation procedures.

MATERIALS

Wall and foundation shall be reinforced cement concrete.

Veneer stone shall be

Granite top shall be similar to Woodbury Gray with rock face edges and a thermal top.

Sign shall be PVC sign mounted to green aluminum sign cabinet. Lettering and town seal / logo shall be vinyl.

Lighting shall be single array LED flood light, 31 watt, 3,170 lumen, 3,000K color temperature, with dimming capability. Housing shall be extruded aluminum with Die-Cast aluminum face plate and external glare shield. Finish shall be thermoset polyester powdercoat, textured black finish. Flood light shall be ETL listed for exterior, wet, locations. Mounting shall be heavy-duty aluminum ground stake with coupler.

ITEM 730.1 (Continued)

METHOD OF CONSTRUCTION

The Contractor shall construct the sign wall per the drawings and approved shop drawings. The Contractor shall install the sign per the sign manufacturer's recommendations. The Contractor shall wire and install flood light units, junction box, hand holes, conduits, and wiring, etc. per the drawings and the manufacturer's recommendations.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 730.1 will be paid for at the Contract unit price per Each, which price shall include all labor, tools, materials, equipment and incidental costs required to complete the work including excavation and backfill, gravel or crushed stone base, reinforcing, cement concrete, installing 2-inch electrical conduit, Type NM Plastic (UL), flood lights with junction box and hand hole, service connections, and electrical meter complete in place and to the satisfaction of the Engineer.

The service connection for lighting shall be provided from adjacent utility pole or traffic controller. The cost of service connection and energizing the lighting shall be incidental to this item.

ITEM 740. ENGINEER'S FIELD OFFICE AND EQUIPMENT (TYPE A) MONTH

The work under this Item shall conform to the relevant provisions of Subsection 740 of the Standard Specifications and the following:

A computer system and printer system meeting minimum requirements set forth below including installation, maintenance, power, paper, disks, and other supplies shall be provided at the Resident Engineer's Office:

All equipment shall be UL approved and Energy Star compliant.

The Computer System shall meet the following minimum criteria or better:

Processor:	Intel, 3.5 GHz
System Memory (RAM):	12 GB
Hard Drive:	500 GB
Optical Drive:	DVD-RW/DVD+RW/CD-RW/CD+RW
Graphics Card:	8 GB
Network Adapter:	10/100 Mbit/s
USB Ports:	6 USB 3.0 ports
Keyboard:	Generic
Mouse:	Optical mouse with scroll, MS-Mouse compliant
Video/Audio	the computer system shall be capable of allow video calling and recording:
Video camera	shall be High Definition 1080p widescreen capable video calling and recording with built in microphone. The microphone system shall capture natural audio while filtering out background noise.
Audio	shall be stereo multimedia speaker system delivering premium sound.
OS:	Latest Windows Professional with all security updates
Web Browser:	Latest Internet Explorer with all security updates
Applications:	Latest MS Office Professional with all security updates Latest Adobe Acrobat Professional with all security updates Latest Autodesk AutoCAD LT Antivirus software with all current security updates maintained through the life of the contract.
Monitors:	Two 27" LED with Full HD resolution. Max. resolution 1920 x 1080
Flash drives:	2 (two) - 128GB USB 3.0
Internet access:	High Speed (min. 24 mbps) internet access with wireless router.

ITEM 740. (Continued)

The Multifunction Printer System shall meet the following minimum criteria or better:

Color laser printer, fax, scanner, email and copier all in one with the following minimum capabilities:

- Estimated volume 8,000 pages per month
- LCD touch panel display
- 50 page reversing automatic document feeder (RADF)
- Reduction/enlargement capability
- Ability to copy and print 11" x 17" paper size
- email and network pc connectivity
- Microsoft and Apple compatibility
- ability to overwrite latent images on hard drive
- 600 x 600 dpi capability
- 30 pages per minute print speed (color),
- 4 Paper Trays Standard (not including the bypass tray)
- Automatic duplexing
- Finisher with staple functions
- Standard Ethernet. Print Controller
- Scan documents to PDF, PC and USB
- ability to print with authenticated access protection

The Contractor shall supply a maintenance contract for next day service, and all supplies (toner, staples, paper) necessary to meet estimated monthly usage.

The Engineer's Field Office and the equipment included herein including the computer system, and printer shall remain the property of the Contractor at the completion of the project. Disks, flash drives, and card readers with cards shall become the property of the Department.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Compensation for this work will be made at the contract unit price per month which price includes full compensation for all services and equipment, and incidentals necessary to provide equipment, maintenance, insurance as specified and as directed by the Engineer.

ITEM 756. NPDES STORMWATER POLLUTION PREVENTION PLAN LUMP SUM

This Item addresses the preparation and implementation of a Storm Water Pollution Prevention Plan required by the National Pollutant Discharge Elimination System (NPDES) and applicable Construction General Permit (CGP) issued by the U.S. Environmental Protection Agency (EPA).

Pursuant to the Federal Clean Water Act, construction activities which disturb one acre or more are required to apply to the EPA for coverage under the NPDES General Permit for Storm Water Discharges from Construction Activities. The Contractor shall be fully responsible for compliance with the most recently issued CGP and any subsequent revisions. Should a fine or damages be assessed against it, or MassDOT, as a result of a local, state, or federal enforcement action due to non-compliance with the CGP, the Contractor shall take full responsibility.

The NPDES CGP requires the submission of a Notice of Intent (NOI) to the EPA prior to the start of construction (defined as any activity which disturbs land, including clearing and grubbing). There is a fourteen (14) day review period commencing from the date on which EPA enters the Notice into their database. Based on the review of the NOI, EPA may require additional information, including but not limited to, the submission of the Storm Water Pollution Prevention Plan (SWPPP) for review. Work may not commence on the project until final authorization has been granted by EPA. Any additional time required by EPA for review of submittals will not constitute a basis for claim of delay.

In addition, if the project discharges to an Outstanding Resource Water, vernal pool, or is within a coastal ACEC as identified by the Massachusetts Department of Environmental Protection (DEP), a separate notification to DEP is required. DEP may also require submission of the Storm Water Pollution Prevention Plan for review and approval. Filing fees associated with the notification to DEP and, if required, the SWPPP filing to DEP shall be paid by the Contractor.

The CGP also requires the preparation and implementation of a SWPPP in accordance with the afore-mentioned statutes and regulations. The Plan will include the CGP conditions and detailed descriptions of controls of erosion and sedimentation to be implemented during construction. The contractor shall prepare the SWPPP and update it as necessary. The Contractor shall submit the Plan to the Engineer for approval at least four (4) weeks prior to any site activities. It is the responsibility of the Contractor to comply with the CGP conditions and the conditions of any state Wetlands Protection Act Order, Water Quality Certification, Corps of Engineers Section 404 Permit and other environmental permits applicable to the project and to include in the SWPPP the methods and means necessary to comply with applicable conditions of said permits.

It is the responsibility of the Contractor to complete the SWPPP in accordance with the EPA CGP, provide all information required, and obtain any and all certifications as required by the CGP. Any amendments to the SWPPP required by site conditions, schedule changes, revised work, regulations, construction methodologies, and the like are the responsibility of the Contractor. Amendments will require the approval of the Engineer prior to implementation.

ITEM 756. (Continued)

In addition to the CGP requirements for inspections, MassDOT requires inspection of all erosion controls and site conditions on a weekly basis. Inspections are also required at portions of sites that discharge to sediment or nutrient impaired or high quality waters per the CGP when each incidence of rainfall exceeding 0.25 inches in twenty-four hours or after snowmelt discharge from a storm event that produces 3.25 inches or more of snow within twenty-four hours occurs. The CGP requires that inspections be performed by a qualified individual as outlined in the CGP. MassDOT requires proof of completion of a 4 hour minimum sedimentation and erosion control training class current to the latest CGP. This individual can be, but not limited to, someone that is either a certified inspector, certified professional, or certified storm water inspector. The documentation shall be included as an appendix in the SWPPP. The inspector's qualifications shall be submitted to the Engineer for approval prior to beginning any work. This individual shall be on-site during construction to perform these inspections. In addition, if the Engineer determines at any time that the inspector's performance is inadequate, the Contractor shall provide an alternate inspector. Written weekly inspection forms, storm event inspection forms, and Monthly Summary Reports must be completed and provided to the Engineer. Monthly Summary Reports must include a summary of construction activities undertaken during the reporting period, general site conditions, erosion control maintenance and corrective actions taken, the anticipated schedule of construction activities for the next reporting period, any SWPPP amendments, and representative photographs.

The Contractor is responsible for preparation of the Plan, all SWPPP certifications, inspections, reports and any and all corrective actions necessary to comply with the provisions of the CGP. The Standard Specifications require adequate erosion control for the duration of the Contract. All control measures must be properly selected, installed, and maintained in accordance with manufacturer specifications and good engineering practices. If periodic inspections or other information indicates a control has been used inappropriately or is no longer adequate, it is the responsibility of the Contractor to replace or modify the control for site conditions at no additional cost to the Department. Contractor must maintain all control measures and other protective measures in effective operating conditions and shall consider replacement of erosion controls for each construction season.

The work under this item shall also include the preparation, submission and implementation of a Flood Contingency Plan. The plan shall address the potential need for the temporary relocation of construction and auxiliary equipment situated within the 1% annual chance of flooding zone to designated upland locations above the Base Flood Elevation during flood events. The Flood Contingency Plan shall address any additional MassDEP-required information requirements, as applicable. The Flood Contingency Plan shall be submitted to the Engineer for review and approval at the same time as the SWPPP.

This Item addresses acceptable completion of the SWPPP, any revisions/amendments required during construction, preparation of monthly reports and Flood Contingency Plan. In addition, any erosion controls beyond those specified in bid items which are selected by the Contractor to facilitate and/or address the Contractor's schedule, methods and prosecution of the work shall be considered incidental to this item.

ITEM 756. (Continued)

The CGP provides specific requirements for temporary and final stabilization. This shall be incorporated into the project schedule. The permit defines specific deadline requirements for Initial Stabilization ("immediately", i.e., no later than the end of the next work day following the day when earth-disturbing activities have temporarily or permanently ceased) and for Complete Stabilization Activities (no later than 14 calendar days after the initiation of stabilization). Stabilization criteria for vegetative and non-vegetative measures are provided in the CGP.

The CGP requires the submission of a Notice of Termination (NOT) from all operators when final stabilization has been achieved, as well as removal and proper disposal of all construction materials, waste and waste handling devices, removal of all equipment and construction vehicles, removal of all temporary stormwater controls, etc. Approval of final stabilization by the Engineer and confirmation of submission of the NOT will be required prior to submission of the Resident Engineer's Final Estimate. The permittee shall use EPA's website to prepare and submit the NOT.

BASIS OF PAYMENT

Item 756 will be paid for at the Contract unit price Lump Sum, which price shall include all labor, materials, equipment, SWPPP & Flood Contingency Plan preparation, revisions/addenda during construction, monthly reports, filing fees, and all incidental costs required to complete the work.

Payment of 50% of the Lump Sum price of this item will be made upon acceptance of the NPDES Stormwater Pollution Prevention Plan & Flood Contingency Plan.

Payment of 40% of the Lump Sum price of this item will be paid in equal monthly installments distributed across the time remaining in the accepted baseline schedule until substantial completion.

The remaining 10% of the Lump Sum price of this Item will be paid following accepted submission of a Notice of Termination (NOT) when final stabilization has been achieved.

ITEM 758.1 LOAMY SAND BORROW CUBIC YARD

The purpose of this section is to provide a relatively low organic, free draining material in the proposed water quality swale.

At least 30 days prior to ordering, the Contractor shall submit a one-gallon sample of the loamy sand borrow and soil test results to the Engineer. Soil testing of the loamy sand shall include a Routine Soil Analysis that includes pH, Buffer pH, Extractable Nutrients, Extractable Aluminum and Lead etc. Additional soil testing shall include Soil Organic Matter and Soil Texture (USDA Textural Classification) which includes particle size analysis and grain size distribution.

No material shall be ordered until submitted soil samples and soil testing results have been approved by the Engineer. Delivered materials shall match approved materials.

Loamy Sand Borrow

Loamy sand borrow (from off-site) shall be a "Loamy Sand Borrow" determined by mechanical analysis and based on the USDA Classification System. It shall be of uniform composition without mixture of subsoil. It shall be free of stones, lumps, plants and their roots, debris, or other deleterious material.

All borrow used in the work of this Item shall be tested and approved for use by the Engineer prior to being spread. The Contractor shall provide the laboratory with representative soil samples for testing and shall have the test reports sent directly to the Engineer.

Loamy Sand shall be 85-90% sand on the upper limit or 70-85% sand on the lower limit (25% or more very coarse, coarse, and medium sand plus less than 50% of any other single grade of sand. The percentage of silt plus 1.5 times the percentage of clay will never be less than 15 on the upper limit and the percentage of silt plus 2 times the percentage of clay will not exceed 30 on the lower limit.

Organic matter shall be 3-8% and pH shall be between 6.5 and 7.8. Loamy sand shall have the following grain size distribution:

Size	**Percent Passing**
3/4"	100
3/8"	95-100
No. 4	95-100
No. 10	80-90
No. 40	30-35
No. 60	15-18
No. 140	8-15

ITEM 758.1 (Continued)

The top four (4) inches of loamy sand borrow shall then be prepared by scarifying and raking. All large stiff clumps, brush, litter, stones over one (1) inch in diameter, etc. shall be removed. The loamy sand borrow shall be raked and all depressions shall be refilled and re-graded until a uniform finish is achieved.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Measurement and payment under this Item will be the Contract Unit Price bid per Cubic Yard. This price shall be full compensation for preparing surfaces; furnishing, placing, raking, shaping and compacting loamy sand borrow.

ITEM 765.553 WETLAND SEED – RIPARIAN MIX SQUARE YARD

The work under this item shall conform to the relevant provisions of Subsection 765 of the Standard Specifications and the following:

The work shall consist of planting and establishing a stand of grass in the areas shown on the plans or as required by the Engineer. For the purposes of these specifications, the term "grass" shall apply to all the forbs, grasses, sedges, and rushes included in the materials.

All seeding shall be done by a company having a minimum of five years of experience with native grass establishment. Prior to beginning work, the seeding Contractor shall furnish proof of qualifications to the Engineer for approval. Proof of qualifications includes, if requested, providing documentation (photos and contacts) to demonstrate knowledge and expertise with native seeding and proof of having completed successful native seeding projects.

Seeding shall be done within 48 hours of placement of loam and final grading. Mulch for seed shall be Compost Topdressing or hydromulch as specified below and shall be incidental to this item.

SEEDING SEASON

Seeding seasons shall be April 1 through May 15 and October 1 through December 1 for dormant seeding. ***Seeding that occurs outside of these periods, shall be increased by 50%.***

MATERIALS

Seed

Samples and Submittals

1) Certificate of Materials. 60 days prior to ordering, the Contractor shall submit to the Engineer the manufacturer or supplier's notarized Certificate of Materials. This document shall not be used as proof of purchase, proof of material delivered, or proof of material seeded, but simply to verify supplier availability of seed listed on the date certified. The species listed shall match those specified on the plans or herein, however, cultivars may vary due to availability. Substantial substitutions or changes in the mix from that specified on the plans or herein shall be approved by MassDOT Landscape Design Section.

2) Seed Tag Certification. All seed lots have a seed analysis tag as required by State and Federal law. The contractor shall submit seed tags for each bag of seed used on the project site or ensure that each tag is photo documented by the Engineer. Number of tags shall match number of bags sent by the supplier to meet rate of Pure Live Seed specified on the plans. Tag must include: kind and variety of seed; lot number; origin of seed; net weight; % purity; germination; dormant seed; germination test date; inert matter; weed, noxious and other crop seed; and name and address of company responsible for the analysis. Seeding may be considered unacceptable for payment if no tags are submitted.

ITEM 765.553 (Continued)

3) Certificate of Compliance. Prior to payment, contractor shall submit a bill of lading or a signed, dated and notarized Certificate of Compliance from the Supplier that serves as proof of purchase. This document shall include kind and variety of seed, lot number, net weight shipped, date of sale, invoice number under which seed was purchased, and name and address of Supplier or Manufacturer. All information must be included on the notarized form, including lot number and net weight shipped for specified job. This information shall match Seed Tag Certification and quantity of seed applied on the job. Seeding may be considered unacceptable for payment if information is incomplete.

4) Seed Sample. Contractor may be asked, prior to seeding, to submit a seed sample for testing.

Quantities specified are Pure Live Seed (PLS). Greater quantities of ordered seed may be required to achieve actual specified seeding rates. Pure Live Seed is defined as the fraction of pure seed species within the mix that, by standard seed testing practices, will germinate. This is determined by multiplying the percent of seed purity by the percent of seed germination.

Seed mix shall be a custom blend as shown on the plans or shall be as specified below. Seed cultivars shall be those that are as regional to New England or the local ecotype as possible.

Any species substitutions shall be with a species having similar characteristics and native to New England. Substantial changes in the mix shall be approved by MassDOT Landscape Design Section.

Seed Mix and Rates

Item 765.553 Wetland Seed – Riparian Mix

	Botanical Name	Common Name	% PLS By Weight
Grass			
	Sorghastrum nutans NY Eco	Indiangrass NY Ecotype	14.00%
	Schizachyrium scoparium	Little Blue Stem	14.00%
	Elymus riparius	Riverbank Wild Rye	10.00%
	Elymus virginicus	Virginia Wild Rye	10.00%
	Panicum clandestinum 'Tioga'	Deer Tongue 'Tioga'	9.00%
	Andropogon gerardii NY Eco	Big Bluestem NY Eco	8.00%
	Carex vulpinoidea	Fox Sedge	7.00%
	Panicum virgatum	Switchgrass	3.00%
	Juncus effusus	Soft Rush	2.00%
	Agrostis perennans	Upland Bentgrass	2.00%
	Scirpus atrovirens	Green Bulrush	1.00%
			80.00%

ITEM 765.553 (Continued)

Herb/Forb		
Chamaecrista fasciculata	Partridge Pea	3.00%
Verbena hastata	Blue Vervain	3.00%
Asclepias incarnata	Swamp Milkweed	3.00%
Heliopsis helianthoides	Ox-Eye Sunflower	2.00%
Eupatorium perfoliatum	Boneset	2.00%
Aster umbellatus	Flat Topped White Aster	1.00%
Aster prenanthoides	Zig Zag Aster	1.00%
Aster puniceus	Aster – Swamp	1.00%
Aster novae-angliae	New England Aster	1.00%
Eupatorium maculatum	Joe-pye Weed	1.00%
Monarda fistulosa	Wild Bergamot	1.00%
Vernonia noveboracensis	New York Ironweed	1.00%
		20.00%
		100.00%

Seeding Rate:
Species ecotype shall be as native to New England region as possible. Apply this mix at 20 lbs PLS/acre.

Fertilizer

No fertilizers shall be applied.

Water

Water, including hose and all other watering equipment required for the work, shall be furnished by the Contractor to the site at no additional cost. Water shall be suitable for irrigation and free from ingredients harmful to plant life. All plants injured or work damaged due to the lack of water or the use of too much water shall be the Contractor's responsibility to correct.

Mulch

Mulch for seeding and topdressing shall be incidental to this item. Mulch shall be:

- Compost Topdressing meeting the material and submittal requirements of Item 751.72, Compost Topdressing and as specified below under Seeding and Mulching.
  OR
- Hydromulch per the manufacturer's recommendation. Mulch for hydroseeding shall be wood fiber only.

ITEM 765.553 (Continued)

Photo Documentation

Contractor shall submit photo documentation to the Engineer and Landscape Design Section. Each photo shall be date stamped. Photos shall be submitted after the following stages of construction:

- Soil preparation
- Seed and hydromulch/compost topdressing
- Germination
- Grass establishment after one full growing season (growing season is June-September)

CONSTRUCTION

Surface Preparation

Soil preparation and seeding shall occur only when the bed is in a friable condition, not muddy or hard. Bare soils shall be raked to remove large stiff clods, lumps, brush, roots, stumps, litter and other foreign matter. Ruts and depressions shall be filled with additional loam or compost and the soil shall be re-graded to a smooth and even finish corresponding to the required grades.

When seeding over existing or compacted soil, surface will be prepared by raking or tracking to a depth of 2 inches prior to seeding and prior to Compost Topdressing (when applicable).

Surface preparation shall be compensated for under Item 751. Loam Borrow.

Surface preparation shall be approved by the Engineer prior to seeding.

Seeding over Various Substrates

Loam: Seeding shall occur within 48 hours of site preparation to prevent loss of topsoil. Seeding shall be hydroseeding or broadcast as specified below.

Compost Topdressing: Compost Topdressing shall be applied as specified under that item. Seed should be broadcast at the same time as compost application to ensure a thin cover of compost over seed. ***When seeding is done after application of Compost Topsoil the rate shall be increased by 50% and area shall be hydromulched.***

Compost Mulch over Modified Rock: Compost Mulch shall be applied as specified under that item and shall be such that only the voids in the rock are filled so that seed has an organic substrate for germination. Seed shall be broadcast after compost application. No hydromulch is required.

ITEM 765.553 (Continued)

Seeding Methods

No seeding or surface preparation work shall be done if soils are muddy or dry and compacted.

Broadcast Seeding: Seed shall be broadcast spread using a cyclone or whirlwind seeder or hand broadcast. Small or light-seeded species such as bluestem may be mixed with approved filler (e.g., sawdust, rice, kitty litter, or clean damp sand) to achieve an even distribution. Broadcast seeding shall be undertaken in two separate passes at ninety degrees to each other. One-half the seeding rate shall be applied in each direction.

To ensure seed to soil contact with broadcasting of seed, seed shall be tracked or rolled with a weighted roller.

All broadcast seeding shall be followed by hydromulching unless seeding is done as part of Compost Topdressing and as specified above.

Hydroseeding shall include hydromulch.

Hydromulching shall be per the Standard Specifications and per the manufacturer's directions.

After seeding and mulching, water seeded areas to moisten soil to a depth of at least 2 inches.

Seed and Grass Care

During Germination: Contractor shall care for seeded areas as determined necessary by the Engineer and the MassDOT Landscape Architect. Care may include irrigation and weed control as necessary for germination.

During Establishment: Following germination of seeded species, the contractor shall maintain the stand of grasses to ensure healthy growth. Work shall include mowing or weed whacking for weed control, irrigation if necessary, and monitoring for invasive plants.

Watering shall provide uniform coverage without eroding soil or grassed surfaces. Treatment of invasive plants shall be per the direction of MassDOT Landscape Architect.

The Contractor shall provide all labor, equipment, materials, and water required for establishment. Contractor shall water all seeded areas as necessary to a depth of 2 inches or greater.

Over-seeding

If there are areas of bare ground greater than 2-3 feet in diameter, these areas shall be over-seeded with the specified mix. Over-seeding application rates and methods shall be the same as those listed above. After seeding, areas shall be mulched with straw mulch or ¼ - ½ inch Compost Topsoil and watered with a fine mist to moisten soil to a depth of at least 2 inches.

ITEM 765.553 (Continued)

Areas that are invaded by weeds shall be mowed as low as possible and over-seeded as directed. Soil that is compacted shall be raked or roughened prior to over-seeding. Following over-seeding, soil shall be lightly tamped to ensure seed to soil contact.

Over-seeding and mulch for over-seeding shall be incidental to this item.

ESTABLISHMENT

Native upland grasses and forbs will not look like turf grass. Many of the native grasses are bunch type grasses and will not form a uniform growth or have a sod-type appearance. However, seeded area shall show general uniform growth of the seeded species throughout the area. Areas with significant gaps of bare soil, generally greater than 2-3 feet in diameter, will require over-seeding.

A well-established stand of grasses at the end of one full growing season (June-September), as determined by the Engineer and the MassDOT Landscape Architect, will be required for acceptance. At least 80-90 percent of the grass established shall be the seeded species and any invasive or aggressive weeds (mugwort, ragweed, or knapweed) shall have been cut or otherwise managed.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 765.553 will be measured for payment by the square yard after one full growing season (June-September) has elapsed between seed application and inspection and upon approval of establishment by the Engineer and the MassDOT Landscape Architect.

Item 765.553 will be paid for at the Contract unit price per Square Yard upon receipt of required submittals as specified above and upon approval of established stand of grass as specified above.

This price shall include seeding, rolling to ensure seed-to-soil contact, care during germination and establishment, irrigation, mulching, over-seeding, labor, materials, equipment, photo documentation, and all incidental costs required to complete the work. Site preparation, including raking, tilling, removal of debris and stones, and other work to the prepare site for seeding shall be compensated for under Item 751, Loam Borrow.

ITEM 767.121 SEDIMENT CONTROL BARRIER FOOT

The work under this item shall conform to the relevant provisions of Subsections 670, 751 and 767 of the Standard Specifications and shall include the furnishing and placement of a sediment control barrier. Sediment control barrier shall be installed prior to disturbing upslope soil.

The purpose of the sediment control barrier is to slow runoff velocity and filter suspended sediments from storm water flow. Sediment barrier may be used to contain stockpile sediments, to break slope length, and to slow or prevent upgradient water or water off road surfaces from flowing into a work zone. Contractor shall be responsible for ensuring that barriers fulfill the intent of adequately controlling siltation and runoff.

Twelve-inch diameter (after installation) compost filter tubes with biodegradable natural fabric (i.e., cotton, jute, burlap) are intended to be the primary sedimentation control barrier. Photo-biodegradable fabric shall not be used.

For small areas of disturbance with minimal slope and slope length, the Engineer may approve the following sediment control methods:

- 9-inch compost filter tubes
- Straw bales which shall be trenched

No straw wattles may be used. Additional compost filter tubes (adding depth or height) shall be used at specific locations of concentrated flow such as at gully points, steep slopes, or identified failure points in the sediment capture line.

When required by permits, additional sediment barrier shall be stored on-site for emergency use and replacement for the duration of the contract.

Where shown on the plans or when required by permits, sedimentation fence shall be used in addition to compost filter tubes and straw bales and shall be compensated under that item.

Sediment control barriers shall be installed in the approximate location as shown on the plans and as required so that no excavated or disturbed soil can enter mitigation areas or adjacent wetlands or waterways. If necessary to accommodate field conditions and to maximize effectiveness, barrier locations may be shifted with approval from the Engineer. Barriers shall be in place prior to excavation work. No work shall take place outside the barriers.

MATERIALS AND CONSTRUCTION

Prior to initial placement of barriers, the Contractor and the Engineer shall review locations specified on the plans and adjust placement to ensure that the placement will provide maximum effectiveness.

Barriers shall be staked, trenched, and/or wedged as specified herein and according to the Manufacturer’s instructions. Barriers shall be securely in contact with existing soil such that there is no flow beneath the barrier.

ITEM 767.121 (Continued)

Compost Filter Tube

Compost material inside the filter tube shall meet M1.06.0, except for the following: no peat, manure or bio-solids shall be used; no kiln-dried wood or construction debris shall be allowed; material shall pass through a 2-inch sieve; and the C:N ratio shall be disregarded.

Outer tube fabric shall be made of 100% biodegradable materials (i.e., cotton, hemp or jute) and shall have a knitted mesh with openings that allow for sufficient water flow and effective sediment capture.

Tubes shall be tamped, but not trenched, to ensure good contact with soil. When reinforcement is necessary, tubes shall be stacked as shown on the detail plans.

Straw Bales

Straw bales shall be used if shown on the plans or when specified by Orders of Condition or other permit requirements.

Bales should be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another. All bales should be either wire-bound or string-tied. Straw bales should be installed so that bindings are oriented around the sides (rather than along the tops and bottoms) of the bales in order to prevent deterioration of the bindings.

The barrier should be entrenched and backfilled. A trench should be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. The trench must be deep enough to remove all grass and other material which might allow underflow. After the bales are staked and chinked (filled by wedging), the excavated soil should be backfilled against the barrier. Backfill soil should conform to the ground level on the downhill side and should be built up to 4 inches against the uphill side of the barrier.

Each bale should be securely anchored by at least 2 stakes or re-bars driven through the bale. The first stake in each bale should be driven toward the previously laid bale to force the bales together. Stakes or re-bars should be driven deep enough into the ground to securely anchor the bales. For safety reasons, stakes should not extend above the bales but should be driven in flush with the top of the bale.

The gaps between the bales should be chinked (filled by wedging) with straw to prevent water from escaping between the bales. Loose straw scattered over the area immediately uphill from a straw bale barrier tends to increase barrier efficiency. Wedging must be done carefully in order not to separate the bales.

When used in a swale, the barrier should be extended to such a length that the bottoms of the end bales are higher in elevation than the top of the lowest middle bale to assure that sediment-laden runoff will flow either through or over the barrier but not around it.

ITEM 767.121 (Continued)

Sedimentation Fence

Materials and Installation shall be per Section 670.40 and 670.60 of the Standard Specifications and the following:

Sedimentation fence shall only be used if shown on the plans or when specified by Orders of Condition or other permit requirements.

When used with compost filter tubes, the tube shall be placed on a minimum of 8 inches of folded fabric on the upslope side of the fence. Fabric does not need to be trenched.

When used with straw bales, an 8-inch deep and 4-inch wide trench or V-trench shall be dug on the upslope side of the fence line. One foot of fabric shall be placed in the bottom of the trench followed by backfilling with compacted earth or gravel. Stakes shall be on the down slope side of the trench and shall be spaced such that the fence remains vertical and effective.

Width of fabric shall be sufficient to provide a 36-inch high barrier after fabric is folded or trenched. Sagging fabric will require additional staking or other anchoring.

MAINTENANCE

Maintenance of the sediment control barrier shall be per Section 670.60 of the Standard Specifications or per the Stormwater Pollution Prevention Plan (SWPPP), whichever is more restrictive.

The contractor shall inspect the sediment barrier in accordance with relevant permits. At a minimum, barriers shall be inspected at least once every 7 calendar days and after a rain event resulting in 0.25 inches or more of rainfall. Contractor shall be responsible for ensuring that an effective barrier is in place and working effectively for all phases of the Contract.

Barriers that decompose such that they no longer provide the function required shall be repaired or replaced as directed. If the resulting berm of compost within the fabric tube is sufficiently intact (despite fabric decay) and continues to provide effective water and sediment control, barrier does not necessarily require replacement.

DISMANTLING & REMOVING

Barriers shall be dismantled and/or removed, as required, when construction work is complete and upslope areas have been permanently stabilized and after receiving permission to do so from the Engineer.

Regardless of site context, nonbiodegradable material and components of the sediment barriers, including photo-biodegradable fabric, plastic netting, nylon twine, and sedimentation fence, shall be removed and disposed off-site by the Contractor.

ITEM 767.121 (Continued)

For naturalized areas, biodegradable, natural fabric and material may be left in place to decompose on-site. In urban, residential, or other locations where aesthetics is a concern, the following shall apply:

- Compost filter tube fabric shall be cut and removed, and compost shall be raked to blend evenly (as would be done with a soil amendment or mulch). No more than a 2-inch depth shall be left on soil substrate.
- Straw bales shall be removed and disposed off-site by the Contractor. Areas of trenching shall be raked smooth and disturbed soils stabilized with a seed mix matching adjacent seeding or existing grasses (i.e., lawn or native grass mix).
- Sedimentation fence, stakes, and other debris shall be removed and disposed off-site. Site shall be restored to a neat and clean condition.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 767.121 will be measured and paid for at the contract unit price per foot of sediment control barrier which price shall include all labor, equipment, materials, maintenance, dismantling, removal, restoration of soil, and all incidental costs required to complete the work.

Additional barrier, such as double or triple stacking of compost filter tubes, will be paid for per foot of tube installed.

Barriers that have been driven over or otherwise damage by construction activities shall be repaired or replaced as directed by the Engineer at the Contractors expense.

ITEM 767.122 SEDIMENT BARRIER-COIR LOG FOOT

The work under this item shall conform to the relevant provisions of Subsections 101, 120, 170, and 751 of the Standard Specifications and the following:

Sediment Barrier - Coir Log shall be used in wet locations where the barrier will not require removal; when barrier is placed immediately adjacent to existing wetlands; as a check dam in swales; in locations as shown on the Drawings; and/or in locations required by the Engineer.

Permits, Codes and Regulations: The Contractor shall comply with all rules, regulations, laws and ordinances of the City/Town and State, and all other authorities having jurisdiction over the Project site. All labor, materials, equipment, and services necessary to make the work comply with such requirements shall be provided by the Contractor without additional cost to the Department.

MATERIALS

Coir Log: Coir Log shall be biodegradable coir fiber cylindrical bundles. Inner core shall be 100 percent unsorted, well-cleaned, coir fiber uniformly distributed along the length of the log. The stuffed density of the coir fiber shall be a minimum of 9 pounds per cubic foot.

Outer netting shall be constructed from a minimum 3-ply high strength coir bristle twine. The netting shall have 2-inch by 2-inch rhombic openings with hand-knotted junctions. The average breaking strength of the coir twine shall be a minimum of 80 pounds. Production tolerance for all the above parameters shall not exceed plus or minus 10 percent.

Coir log diameter shall be sized as shown on the drawings. Typical lengths are supplied in 10 foot or 20-foot increments. Coir logs or coir netting may not be cut to decrease length and shall maintain the physical properties as supplied by the Manufacturer.

Notched Wood Stakes: Stakes shall be oak or southern pine with dimensions as shown on the Drawings. Stakes shall be free from knots and other defects which would cause splitting and shall have a downward-angled notch as shown in the drawing.

Coconut Fiber Cord: Coconut fiber cord shall be two-ply braided cord with a breaking strength of 80 pounds, minimum 0.25-inch diameter.

Delivery, Storage and Handling: Protect materials from deterioration during delivery and while stored at site.

CONSTRUCTION METHODS

General: Prior to initial placement of the coir log sediment barrier, the Contractor and the Engineer shall review locations specified on the plans and adjust placement, if required, to ensure that the coir log positioning and configuration will provide maximum sediment capture. Coir log sediment barrier(s) shall be in place prior to excavation work and no work shall take place outside the coir log barrier(s).

ITEM 767.122 (Continued)

Installation: Coir logs shall be staked and secured as shown on the Drawings, as specified herein, and/or as recommended by the Manufacturer. The Contractor shall remove all underlying vegetation or debris to ensure that each coir log is securely in contact with soil, such that there is no flow beneath the log.

When used as a check dam barrier in a swale, the coir log shall be centered in the low point of the swale, perpendicular to the flow, with ends extending upslope. The log check dam barrier shall extend such that the log top elevation at the center of the swale is lower than the lowest elevation at the end log, to ensure that sediment-laden runoff will flow either through or over the coir log but not around it. The coir log check dam barrier shall have length such that no seams occur in the swale.

Notched wood stakes shall be driven parallel on both sides of the coir log at a typical spacing of 5 feet on center, unless site conditions warrant a closer spacing distance to ensure logs are firmly secured to the underlying soil. Stakes shall not extend more than 1 foot beyond the top of the log. Coir twine shall lash the logs to notched stakes in a cross-lashing fashion between stakes, throughout the length of the log barrier.

When utilizing multiple logs for sediment control, each coir log shall be laced together end-to-end (creating a seam) with coir twine to create a continuous length. End-to-end lacing may be completed before or after placement, to facilitate handling.

Maintenance: Maintenance of the coir log sediment barrier shall be per the Stormwater Pollution Prevention Plan (SWPPP).

The contractor shall inspect the sediment barrier in accordance with relevant permits. At a minimum, barriers shall be inspected at least once every 7 calendar days and after a rain event resulting in 0.25 inches or more of rainfall. The Contractor shall be responsible for ensuring that an effective barrier is in place and working effectively for all phases of the Contract. Under no condition shall sediment be allowed to accumulate more than 4 inches above the original ground line.

If a breach or other failure of the barrier occurs, the barrier shall be immediately restored. Repair shall include replacement of entire defective segments or for short breaches, revetment with additional coir logs, set directly adjacent to the downslope side of the breech. Revetment coir logs must overlap breech by a minimum of 2 feet on each side. The Engineer must approve breech repair means and methods as well as outcome.

If the coir log sediment barrier is damaged by equipment or undergoes a significant washout or other major failure, the Contractor shall replace the component in its entirety, at the discretion and approval of the Engineer. Any delay in maintaining the barrier shall be cause to immediately suspend the work as provided for in Subsection 8.09: Delay and Suspension of Work.

Disposition/Removal: For naturalized areas, coir logs and wooden stakes may be left in place to decompose on-site. For areas where, in the determination of the Engineer, aesthetics are a concern, logs, errant coir fiber material, and stakes may require removal.

ITEM 767.122 (Continued)

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 767.122 Coir Log will be measured for payment by the FOOT, complete in place and will be paid for at the Contract unit price per FOOT, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

No separate payment will be made for coir log(s) follow-up maintenance and repairs, or disposal (if required), but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 767.9 JUTE MESH SQUARE YARD

The work under this item shall conform to the relevant provisions of Subsection 700 of the Standard Specifications and the following.

The work under this item shall consist of furnishing and installing jute mesh fabric to prevent soil erosion. Jute mesh shall be placed over all areas of exposed soil in locations shown on the plans or as required by the Engineer.

MATERIALS

Jute netting or similar material shall be new, unused, undyed, and unbleached 100% biodegradable yarn (no polypropylene) and of uniform plain weave. The materials should weigh approximately 1.0 (+/- 5%) pounds per linear yard (assuming a 4-foot width).

Shall meet the following minimum requirements:

Open Area:	70-75%
Mesh Size:	approximately 1/2 inch with an open area of 60-65%.
Roll Weight:	approximately 1.0 (+/- 5%) pounds per linear yard
Warp Ends:	78 per linear yard
Weft Ends:	41 per linear yard
Recommended flow:	6 fps (1.8 m/s)
Functional Longevity:	6-9 months

Anchoring devices shall be 11-gauge steel staples 6-inch minimum length. In loose soils the length of the staples shall be 9-inches.

For areas that will be routinely mowed anchoring devices shall consist of minimum 8” wooden stakes. Longer stakes shall be used where loose soils or other conditions obligate, as required by the Engineer.

CONSTRUCTION METHODS

Area shall be seeded prior to installation of jute netting.

Installation shall be such as to ensure continuous contact with soil without folds or wrinkles. Jute netting shall be laid such that upslope fabric is placed over lower slope fabric by a minimum of 3 feet. Adjoining rolls shall be overlapped a minimum 6 inches. The netting shall extend beyond at least 1 foot beyond the edge of the seeded area.

The Contractor shall bury the ends of the jute netting 6-8 inches in anchor trenches at top and bottom of slopes.

Jute netting shall be anchored in place with vertically driven metal staples. The staples shall be driven in until their tops are flush with the soil. Staples shall be placed at 12-inch intervals along the top of a slope and in staggered courses along the face of the slope to achieve a minimum of 3 staples per square yard, or at manufacturer’s recommendations for the given site conditions.

ITEM 767.9 (Continued)

Contractor shall reseed all trenched and otherwise disturbed areas with specified seed mix. The Contractor shall maintain the jute netting and make satisfactory repairs of any areas damaged until acceptance of seed establishment.

METHOD OF MEASUREMENT

Jute Mesh will be measured by the number of Square Yards complete in place, including anchoring, as measured across the surface of grade and does not include buried or overlapped portions. The quantity measured for payment shall not exceed that shown on the plans or as directed by the Engineer.

Mesh that becomes loose or that is not otherwise functioning to stabilize soil shall be repaired and new or additional jute matting installed as required at the Contractor's expense. Soil erosion shall be repaired, and area shall be raked and reseeded with the original specified mix as required by the Engineer at the Contractors expense.

BASIS OF PAYMENT

Item 767.9 will be paid for at the contract unit price per Square Yard, which price shall include all labor, materials, equipment, trenching, placing, and stapling of jute fabric, reseeding of trenched and disturbed areas, and all incidental costs required to complete the work.

772.038	ARBORVITAE 7-8 FEET	EACH
772.337	CEDAR - RED 7-8 FEET	EACH
776.557	MAPLE – RED – RED SUNSET 2-2.5 INCH CALIPER	EACH
777.263	OAK – SWAMP WHITE 2-2.5 INCH CALIPER	EACH
777.675	SWEETGUM – 'SLENDER SILHOUETTE' 2-2.5 INCH CALIPER	EACH
778.521	DOGWOOD – APPALACIAN SNOW 2-2.5 INCH CALIPER	EACH
781.257	HAWTHORN – WASHINGTON 2-2.5 INCH CALIPER	EACH
783.044	SERVICEBERRY - AUTUMN BRILLIANCE 7-8 FEET	EACH
783.467	TUPELO – 2-2.5 INCH CALIPER	EACH
785.734	INKBERRY – COMPACT 2-3 FEET / #3	EACH
786.111	JUNIPER – GREY OWL 18-24 INCH / #2	EACH
786.672	MOUNTAIN LAUREL 2-3 FEET	EACH
793.446	ROSE – RADYROD KNOCKOUT 18-24 INCH	EACH
793.447	ROSE – DOUBLE KNOCKOUT 18-24 INCH	EACH
793.448	ROSE – SUNNY KNOCKOUT 18-24 INCH	EACH
793.729	SPIREA - 2-3 FEET / #3	EACH
794.331	SUMAC SHRUB – FRAGRANT-GRO-LOW 2-3 FEET / #2	EACH
794.737	SUMMERSWEET SHRUB – 3-4 FEET / #3	EACH
795.153	WINTERBERRY – MALE 24-30 INCH / #3	EACH
795.157	WINTERBERRY – FEMALE 24-30 INCH / #3	EACH
796.001	YARROW - COMMON 1 GAL.	EACH
796.002	CONEFLOWER – 'LITTLE GIANT' 1 GAL.	EACH
796.003	BONSET 1 GAL.	EACH
796.004	ASTER – LARGE LEAF WOOD 1 GAL.	EACH
796.005	DAYLILY – STELLA DE ORO 1 GAL.	EACH
796.006	BLACK-EYED SUSAN – 'LITTLE GOLDSTAR' 1 GAL.	EACH
796.201	LITTLE BLUESTEM – 'CAROUSEL' 1 GAL.	EACH

The work under these items shall conform to the applicable requirements of Subsection 771, PLANTING TREES, SHRUBS AND GROUNDCOVER, of the Standard Specifications, and the following:

GENERAL

Plant locations shown on the plans are schematic. Prior to ordering plants, the Landscape Architect shall be contacted to review plant locations.

Final plant locations shall be approved by the Landscape Architect prior to planting. Plants not shown on the plans shall be field located by the Landscape Architect.

WATERING

Watering during the one-year warranty period shall be with equipment that meets the following requirements:

Irrigation shall be sufficient to provide one inch of water per week during the growing season. The volume of water shall be equivalent to approximately 625 gallons of water per 1000 square feet of planted area. Water for both trees and shrubs in plantings beds shall be applied to root balls and to surrounding soil such that all soil in the planting bed is moistened.

ITEMS 772.038 through 796.201 (Continued)

Watering

Watering shall be per the Supplement Standard Specification dated June 15, 2012:

All plants shall be watered during planting and all plants shall be watered at least twice each week during weeks where the average daily temperature exceeds 55 degrees (F) and when precipitation is less than 1 inch, as determined by local National Weather Service data. Watering shall be sufficient to provide moist soil to a depth of 6 inches, as determined by the Engineer. If soil is sufficiently moist, as determined by the Engineer, the required watering may be reduced.

Trees will require a minimum of 10 gallons of water each, and shrubs a minimum of 5 gallons per plant per watering.

Trees or shrubs planted after October 15 shall be thoroughly watered at the time of planting, after which subsequent watering will not be required until following season. The Contractor shall maintain a watering log for all plants installed on the project, indicating dates of watering and weather events. Log shall be submitted for final payment.

Log shall be per the form provided by MassDOT and shall be submitted to the Engineer, with a copy forwarded to the Town.

Weeding

All planting beds shall be kept free of weeds and neatly maintained throughout the one-year warranty period.

ITEM 802.44 4 IN TELEPHONE CATV CONDUIT – TYPE NM (4 BANK) FOOT

The work under these Items shall conform to the relevant provisions of Subsection 800 and the following:

The trench shall be excavated to the width and depth shown on the plans. All construction of duct banks including trench, excavation, and backfill shall conform to Verizon and Comcast details and specifications. All work shall be performed by a Verizon and Comcast approved Contractor. A representative from Verizon and Comcast shall be present for all Telephone and Cable conduit installed.

For all conduits encased in concrete, use plastic spacers to maintain conduit spacing. Spacers shall meet Verizon and Comcast specifications for design and spacing.

All trench excavation activities shall comply with all appropriate OSHA standards.

Duct bank shall have 6-inch orange warning tape installed above the concrete encasement as shown on the plans.

Conduits shall be blown clean using compressed air. Run mandrel thru each conduit to confirm viable pathway.

Woven polyester mule tape with minimum strength of 2500 lb. tensile strength to be installed within each conduit.

PVC conduits shall be Schedule 40.

Concrete encasement shall be 2,500 psi, 3/8 inch, 520 cement concrete.

METHOD OF MEASUREMENT

Measurement for this Item shall be per the FOOT of conduit installed, approved, and maintained in place.

BASIS OF PAYMENT

Payment shall be at the contract unit price per FOOT; which price shall be considered full compensation for all labor equipment and materials necessary to complete the work specified above, including, but not limited to, excavation, backfill, conduit, warning tape, spacers, concrete encasement.

ITEM 804.3 — 3 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC - (UL) — FOOT

ITEM 804.32 — 3 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC - (UL)- DOUBLE — FOOT

Work under this Item shall conform to the relevant provisions of Subsection 801 of the Standard Specifications and the following:

The work shall include the furnishing and installation of 3-inch non-metallic conduit for traffic signal systems in accordance with the Plans and as directed by the Engineer. The conduit material shall be Schedule 80 polyvinyl chloride (PVC) plastic conduit. Two conduits sharing the same trench shall be measured and paid for as part of Item 804.32.

Conduit in Grass or in Planted Areas

Where new conduits are installed in grass and planted areas, no separate payment shall be made for the excavation, sand bedding, gravel backfill, including necessary compaction, or incidental materials, but all costs in connection therewith shall be included in the contract unit price for the work of this section.

Conduit under Sidewalk, Median or Driveways

Where conduit is installed in a sidewalk, paved median or asphalt driveway areas, no separate payment shall be made for the saw-cutting, excavation, sand bedding, gravel backfill, including necessary compaction, or incidental materials, but all costs in connection therewith shall be included in the contract unit price for the work of this section. Payment for cement concrete or asphalt pavement shall be paid under the respective item.

Conduit Crossing under Milling and Overlay

Conduit crossing mill and overlay construction shall be installed prior to any roadway construction. The existing pavements shall be sawcut through their full depth and the pavement removed. After conduit installation, the trench shall be backfilled with controlled low strength material, as shown on the construction details.

No separate payment shall be made for the saw-cutting of pavement, excavation, sand bedding, controlled low strength material, or incidental materials, but all costs in connection therewith shall be included in the contract unit price for the work of this section.

Conduit Crossing Full Depth Roadways

Conduit crossing full depth roadway construction shall be installed prior to any roadway construction. The existing pavements shall be sawcut through their full depth and the pavement removed. After conduit installation, the trench shall be backfilled with controlled low strength material as shown on the construction details.

ITEMS 804.3 and 804.32 (Continued)

Where conduit crosses roadways, no separate payment shall be made for the saw-cutting of pavement, excavation, sand bedding, controlled low strength material, or incidental materials, but all costs in connection therewith shall be included in the contract unit price for the work of this section.

METHOD OF MEASUREMENT

Items 804.3 and 804.32 will be measured for payment by the Foot of respective 3 inch Electrical Conduit Type NM furnished and installed, complete in place.

BASIS OF PAYMENT

Payment under Items 804.3 and 804.32 shall be at the respective Contract Unit Price bid per Foot for furnishing and installing conduit, which price shall be full compensation for all necessary or incidental work, including saw-cutting, excavation, pull wires, warning strip, sand bedding, gravel borrow backfill, controlled low strength material, and compaction complete in place.

Temporary pavement for surface restoration to match existing surface, where required and authorized in advance by the Engineer shall be paid under Item 472, Temporary Asphalt Paving.

ITEM 811.23 ELECTRIC HANDHOLE - SD2.023 EACH
ITEM 811.31 PULL BOX 12 X 12 INCHES - SD2.031 EACH

Work under these Items shall conform to the relevant provisions of Subsection 801 of the Standard Specifications and the following:

The work shall include furnishing and installing pull boxes and electric handholes for traffic signal in accordance with the plans and as directed by the Engineer.

All pull boxes shall be a pre-cast concrete with cast iron covers. The top of all pull boxes shall be set flush with the finish grade. The pull boxes and electrical handholes shall be left free and clear of any foreign matter.

The bottom elevation of any pull box or electric handhole shall not be greater than 30-inches below the top finish grade elevation of the cast iron cover.

All pull boxes and electric handholes shall have conduit with “bell” ends and 45-degree sweeps.

METHOD OF MEASUREMENT

The items listed above will be measured for payment per each, complete in place.

BASIS OF PAYMENT

Handholes and pull boxes shall be paid for at the Contract Unit Price bid per Each, which price shall be full compensation for all labor, materials, equipment and incidental costs required to complete the handhole and pull box installation. No separate payments will be made for excavation, saw cutting, gravel borrow backfill, leveling the frame and cover, compaction and temporary restoration of surface features.

ITEM 813.792 INTERCONNECT CABLE SYSTEM - COPPER WIRE LUMP SUM

Work under this item consists of furnishing and installing all materials, equipment, appurtenances, and making electrical connections for reconnecting the interconnect at Location 4 - Route 140 (Commercial Street) and Route 106 (Chauncy Street), as shown on the plans and in accordance with the applicable provisions of Section 800 Specifications.

The proposed interconnect cable shall run through the proposed conduit and handholes, as shown on the plans.

The interconnect cable system shall include provision of copper wire for communication. The copper wire shall be located in 3-inch electrical conduit as shown on the plans.

New copper wire interconnect cable shall be provided as shown on the plans. The copper wire interconnect cable shall conform to the requirements of I.M.S.A. Specification 19-2, Shielded Cable, 30 pair #22 AWG. Each conductor of the copper wire shall be terminated within the traffic signal control cabinet on properly labeled terminals.

Ethernet Managed Switch (EMS)
The Contractor shall furnish and install one Ethernet Managed Switch (EMS) in each of the traffic control cabinets.

General

This specification sets forth the minimum requirements for an environmentally hardened Ethernet Managed Switch (EMS) that provides connection to all Ethernet equipment as shown on the plans.

System Hardware

The module shall support transmission utilizing Category 5 cable or better and multimode or single-mode fiber through the use of SFP modules. The module shall support the Ethernet data IEEE 802.3 protocol using Auto-negotiating and Auto-MDI/MDI-X features. The module shall feature eight 10/100TX RJ-45 ports and three 100/1000FX SFP ports. The module shall require no in-field electrical or optical adjustments or in-line attenuators to ease installation. The module shall provide power, link speed, and fiber port status indicating LED's for monitoring proper system operation. The module shall have redundant power supply connections to minimize single point failure. The module shall provide a serial connection for local management of the device as well as a web-based configuration and management interface hosted on the device. The module shall have a lifetime warranty to reduce system life cycle cost in an event of a module failure. The EMS shall be installed in the cabinet as shown on the plans and or as directed by the Engineer.

ITEM 813.792 (Continued)

The EMS shall support the following IEEE Networking Standards:

1. IEEE 802.3 10Base-T Ethernet
2. IEEE 802.3u 100Base-TX Fast Ethernet
3. IEEE 802.3ab 1000Base-TX
4. IEEE 802.3z Gigabit Ethernet Fiber
5. IEEE 802.3x Flow Control and Back-pressure
6. IEEE 802.1p class of service
7. IEEE 802.1Q VLAN and GVRP
8. IEEE 802.1D-2004 Rapid Spanning Tree Protocol (RSTP)
9. IEEE802.3ad LACP
10. IEEE802.1X Port based Network Access Control

The EMS shall provide the following switch performance:

1. Switch Technology: Store and Forward Technology with 32Gbps Switch Fabric.
2. System Throughput: 14,880pps for 10M Ethernet; 148,800pps for 100M Fast Ethernet; 1,488,100 for Gigabit Ethernet
3. Transfer Packet Size: 64 bytes to 1522 bytes (with VLAN Tag)
4. MAC Address: 8K MAC
5. Packet Buffer: 1Mbits
6. Relay Alarm: Dry Relay output with 1A@24V ability

Fast Ethernet Data Transceiver (Ethernet Over Copper Converter)

The Contractor shall furnish and install the ethernet data transceiver in the traffic signal cabinet:

The Fast Ethernet Data Transceiver (FEDT) shall transmit bi-directional 10 or 100 Mbps data over unshielded twisted pair (UTP) cable. The FEDT shall support two-pair or four-pair UTP wire operation.

The device shall support transmission distances of up to 5,000 feet at 10 Mbps, or 2,000 feet at 100 Mbps. LED indicators shall confirm operating status of the device. The device shall be packaged in a rugged aluminum housing and be designed for mounting in a roadside traffic signal cabinet. The module shall be environmentally hardened to the requirements of NEMA TS-2. The module shall support the Ethernet data interface and be IEEE 802.3 compliant. The unit shall be set to auto-negotiate data rates and be capable of supporting half-duplex or full-duplex transmission. The module shall require no in-field adjustments or in-line attenuators to ease installation. The module shall provide power and link status indicating LED's for monitoring proper system operation. The modules shall provide automatic re-settable solid-state current limiters and independent voltage regulators on each module to reduce the chance of a single point failure of the system. The module shall be UL and ULC listed and CE marked. The circuit board shall be UL 94 flame rated and meet all PCI standards. The housing shall be of all metal construction. All LED indicators and both electrical and mechanical connections shall be identified with silk-screened labels. The module shall have a Lifetime warranty to reduce system life cycle cost in an event of a module failure.

ITEM 813.792 (Continued)

The FEDT shall be interoperable with any standard Ethernet switch, router, or hub.

The FEDT supplied shall meet the following minimum requirements:

- Interfaces: 10/100Base-T RJ45 Connector
- Power: 9-36 VDC, 24 VAC, 1.5W
- Operating Temp: -40 to +75 degrees Celsius
- Relativity Humidity: up to 95% non-cond
- Maximum Dimensions: 3.50 x 2.75 x 1.25 in

The EAD shall be equipped with an AC Adaptor and 8 feet of cable.

The Contractor shall make all necessary electrical connections to the proposed traffic signal controller as shown on the plans.

The lump sum contract price for Item 813.792 shall constitute full compensation for all work necessary or incidental to the installation of a complete copper wire interconnect cable system, including furnishing and installing copper wire cable, Ethernet Managed Switches, Ethernet Data Transceivers, and making all electrical connections and restoring facilities destroyed or damaged during construction.

Conduit for the interconnect cable system shall be paid for under Items 804.3. Pull boxes and handholes used for the interconnection system shall be paid for under Item 811.31 and 811.23, respectively.

ITEM 816.1 TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 4 LUMP SUM

ITEM 816.2 TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 4A LUMP SUM

The work to be performed under this item shall consists of furnishing and installing Traffic Signal Control Devices in accordance with the applicable portions of Section 800 of the Standard Specifications, the latest Manual on Uniform Traffic Control Devices (MUTCD), the MassDOT amendments to the MUTCD, applicable sections of the National Electrical Manufacturers Association (NEMA) Standard No. TS 2-2016, Traffic Controller Assemblies with NTCIP Requirements, the Advanced Transportation Controller (ATC) Standard (Version 5.2b) and supplemented by the following:

The work consists of furnishing and installing traffic control signal equipment complete and ready for operation, as shown on the plans for the following intersections:

- Location 4 - Route 140 (Commercial Street) and Route 106 (Chauncy Street)
- Location 4A - Route 106 (Chauncy Street) and Copeland Drive

The work shall include furnishing and installing all, or part, of the following items: traffic signal controller, cabinet and concrete foundation with concrete pad; signal posts and concrete foundations; mast arm assemblies with anchor bolts and concrete foundations; emergency vehicle preemption components; vehicle signal heads; red, amber, and green LED signals, non-louvered backplates with 3" yellow retroreflective borders; pedestrian signal heads; accessible pedestrian pushbutton assemblies; software; all cable and wiring; ground rods, equipment grounding and bonding; single point video detection system, radar detection system, saw cuts, electrical connections, service connections; removing and stacking existing signal equipment, and all other equipment, materials and incidental costs necessary to provide a complete, fully operational traffic control signal system as specific herein and as shown on the plans.

Mansfield Municipal Electric will furnish connection and power at the location shown on the Contract Drawings. Mansfield Municipal Electric will connect and disconnect power as required. No work shall be done in manholes or on power poles without a representative of Mansfield Municipal Electric being present. The Contractor will be responsible for coordinating the Mansfield Municipal Electric work.

It shall also be the Contractor's responsibility to pay all charges to Mansfield Municipal Electric for performing this work. No direct reimbursement will be made under this payment to the Contractor for payments made to Mansfield Municipal Electric, it being understood that full compensation for any payment made by the Contractor to the utility company will be included in the contract unit prices bid. The Contractor shall also be responsible for securing and paying for all electrical permits as required from the Town of Mansfield. The cost of these electrical permits shall be incidental to the Item.

A list of required major traffic signal system items is included on the plans. All equipment installed shall be listed on MassDOT's "Qualified Traffic Control Equipment List".

ITEMS 816.1 and 816.2 (Continued)

The Contractor shall deliver to the Engineer a certificate of compliance with the manufacturer for all materials purchased from the manufacturer.

The Contractor shall request written approval from the Owner or its Designated Agent before the placement of any concrete for foundations of mast arms, signal posts and cabinets.

The top of the concrete base for the control cabinet shall be 18 inches above grade. The top of all other foundations not in sidewalk or paved areas shall be a minimum of 2 inches above grade. The top of mast arm foundations in sidewalk areas shall be located flush with finish grade.

Shop Drawings

Within 30 days following execution of the Contract, the Contractor shall submit shop drawings for signal supports, a list of equipment, and manufacturer's equipment specifications to the Engineer in accordance with the relevant provisions of Section 815.20 of the Massachusetts Standard Specifications.

No traffic signal work shall commence by the Contractor until approval of the shop drawings and manufacturer's data has been received in writing from the Engineer. Approval of these drawings will be general in character and shall not relieve the Contractor from the responsibility of, or the necessity of, furnishing materials and workmanship conforming to the plans, standard specifications, and these special provisions.

The Contractor shall deliver to the Engineer a certificate of compliance from the manufacturer for all materials purchased from the manufacturer/distributor. All materials shall be new, and certain components, specifically the controller unit and cabinet, shall be received fully assembled and tested to ensure that the components work to the full capabilities identified in the standards specified above.

Flashing Operation

Changes from automatic flashing to stop-and-go operation and from stop-and-go to automatic flashing operation shall occur as set forth in Sections 4D.28 through 4D.31 of the MUTCD.

Traffic Signal Controller and Cabinet

The controller, malfunction management unit, bus interface units, and all other ancillary traffic signal control components included in the traffic control cabinet shall conform to NEMA Standard No. TS 2-2016 “Traffic Controller Assemblies with NTCIP Requirements - Version 03.07”, the Advanced Traffic Controller (ATC) Standard - latest published version.

ITEMS 816.1 and 816.2 (Continued)

Traffic Controller Assemblies

The controller shall be an Advanced Traffic Controller (ATC) as required in the list of major traffic signal items included in the plans. The controllers shall be compatible with the traffic controllers currently within the signal coordination along Route 140 as noted on the plans.

Controller cabinet foundations shall not obstruct a sidewalk or crosswalk so that passage by physically challenged persons is impaired. Anchor bolts shall be internal to the cabinet.

Controllers shall conform to Section 3, Controller Units of NEMA No. TS 2, Traffic Controller Assemblies. Controllers shall utilize an input/output interface conforming to Section 3.3.1 of the NEMA TS 2 Standard for all input/output functions with the back panel terminals and facilities, the malfunction management unit, detector rack assemblies, and auxiliary devices.

The cabinet shall also be wired with a normally closed switch connected to a user defined input to the controller for remote monitoring of the control cabinets' door open status.

The following requirements are applicable to each signalized location and are designed for effective use of a laptop computer in conjunction with traffic signal controllers. These requirements are also designed to permit all engineers, electricians and technicians (including those who are disabled but ambulatory) to work in the cabinet in a safe, effective and comfortable manner. To this extent, the following meets applicable ADA requirements.

1. Adjust the control cabinet height by use of a cabinet extender, adjust the placement of cabinet shelves, adjust the height of the cabinet foundation or provide any combination of these three items so that the top of the LCD or other visual display window of both the local controller and the master controller is no more than 48" above finished grade in front of the cabinet. The top of the cabinet door opening shall be at least 5'8" above finished grade. Any technical provision, plan detail, standard specification or standard drawing to the contrary shall not apply to the extent that it may conflict with this viewing height requirement.

2. Furnish and install one slide-out/slide-in shelf or swing-out/swing-in shelf appropriate for the size and load of a laptop computer. This moveable shelf shall support the bottom of the laptop computer at a height between 3'-4" and 3'-8" above finished grade in front of the cabinet.

3. Furnish and install a paved pad in front of the control cabinet. This pad shall be of cement concrete, built in accordance with the sidewalk specification applicable to this project, approximately level, approximately 1" above the surrounding unpaved surface, or at even grade with the adjacent surface if paved. This pad shall abut the front of the cabinet, project at least 1' to each side of the cabinet and at least 3' in front. No pad is required if the front of the cabinet immediately abuts an existing or proposed paved sidewalk or other paved surface.

4. Both the firmware and software version in each timer unit shall be the same throughout the project, and shall be the latest version available on the market. In addition, the contractor shall promptly furnish to the owner and install all upgraded versions of both firmware and software through the last day of the inspection period, guarantee period or warranty period, whichever date is later.

ITEMS 816.1 and 816.2 (Continued)

5. The contractor shall furnish one cable with each new timer unit to connect a controller timing mechanism to a laptop computer. This cable shall have a termination at one end to match the controller. It shall have a termination on the other end to match the type of serial port found on laptop computers, usually DB9. This cable shall be wired to provide serial RS232C communication between the controller and the computer.

6. Payment for the work described above shall be deemed to be incidental to and included in the prices bid for various items of traffic signal work, and no additional payment shall be made for the work described above.

Controller

The traffic controller shall be capable of being operated in the full-actuated mode, in the free mode, and as semi-actuated in the coordinated mode. The controllers shall be keyboard entry, menu-driven unit mounted in eight-phase cabinets. The traffic controller unit supplied shall conform to NEMA Standard No. TS 2-2016 "Traffic Controller Assemblies with NTCIP Requirements - Version 03.07", the Advanced Traffic Controller (ATC) Standard - latest published version.

The Keyboard Entry Controller Unit must be type-tested and approved by the Department.

The controller shall have hard-wire interconnect capability and internal time base coordination logic. The coordination control shall have the capabilities to operate as described under Section 815.41 of the Standard Specifications.

The controller shall have a data transfer/printer port for data transfer to another controller, printer, or laptop PC computer. A port shall be provided for uploading or downloading controller operating parameters from a laptop PC computer.

The controller shall have a security code function.

The controller unit shall have internal fire preemption control capabilities.

The phase or phases selected for "call to non actuated" (C.N.A.) modes shall be determined as needed by keyboard entries.

The Contractor's attention is directed to Table 2, Required Signal Light Switching Assemblies, Section 815.41 of the Standard Specifications. The Contractor shall furnish the appropriate type and number of load switches and place unutilized load switches in the control cabinet for future use. Load relays shall be easily replaced using a screwdriver. Component relays requiring soldering are not acceptable.

ITEMS 816.1 and 816.2 (Continued)

In addition to the convenience outlet as described under Subsection 815.41, a lamp with an on/off switch shall be installed in the controller cabinet.

ATC Cabinet (ATCC)

The cabinets shall be a NEMA "P" size (44" W x 26" D x 67" H). The cabinet size and functional requirements shall conform to the NEMA TS2 -2016 Standard, Section 7. The cabinets shall conform to requirements defined in the Advanced Transportation Controller Cabinet (ATCC) 5301 v02 Standard. The cabinet size and functional requirements shall conform to the NEMA TS2 -2016 Standard, Section 7. The cabinets shall have a natural brushed aluminum finish.

The traffic signal control equipment shall be enclosed within a dust and moisture-proof aluminum housing with an auxiliary door in door feature. The door hinge pins shall be made of stainless steel. All cabinets shall be configured to eliminate arc flash. All electrical equipment shall be dead front, no open terminals, busbars, breakers, or exposed terminal strips. All cabinet switches and circuit breakers shall be permanently labeled as to function. The cabinets shall be designed, constructed, and installed with all necessary provisions to comply with the latest NFPA 70E requirements. All electrically live parts over 50 volts shall be covered with Lexan or a suitable physical barrier to eliminate the possibility of arc flash.

The lock for the police door switch compartments shall unlock with a skeleton style (#1) key. The lock for the main door(s) of the cabinet shall unlock with a Corbin #2 key. Two sets of two keys (main door/police door) shall be furnished with each of the cabinets.

The cabinets shall be supplied with a permanent label mounted on the upper portion of the inside front main door which shall contain the name of the cabinet manufacturer, controller manufacturer, model/part number and year/month of assembly.

The cabinets shall be supplied with a GFCI duplex outlet, as well as a multi-outlet strip. All AC+ line cords shall contain a flexible label with permanently lettering affixed to the plug end of the cord depicting the device/ assembly that it is connected to, i.e., ATC, FMU, video detection etc.

The cabinets shall be provided with two removable lifting eyes for placing the cabinet on its foundation. Each eye opening shall have a minimum diameter of 0.75 inches. Each lifting eye shall be able to support a weight limit of 1,000 pounds.

The quantity, size and location of the equipment shall correspond to the contract drawings for the ATC Cabinets. All equipment shall be installed with the correct number of mounting screws/mounting support devices. All internal cabinet wiring shall be routed such that there is no conflict for access to cabinet devices or interference with door mechanisms. The AC - buss used for terminating field signal cable shall be installed in a readily accessible location on the interior side wall in the rear of the cabinets in close proximity to the field output terminals (phoenix connectors).

ITEMS 816.1 and 816.2 (Continued)

The cabinets shall be equipped by the with an internal cable management system. The cable management system shall be comprised of nonconductive channels designed to facilitate wire and cable routing within an electrical enclosure.

All AC line cords used to power used to power various in cabinet devices shall be permanently labelled as to which device it is connected to. This label shall be installed in close proximity to the plug end of the line cord.

All shelving used on the Power and Auxiliary side of the cabinet shall be designed with sufficient strength to fully support a 375 lb weight, the weight of two 12V lead acid batteries, per shelf, without sag or flex in the middle section of the shelf.

Cabinet Configuration – The cabinets shall be supplied with two side-by-side, 19" rack cages which shall extend from the bottom to the top of the cabinets.

The cabinet front left side shall provide for user interface to the in-cabinet equipment including the front panel of the controller, the cabinet status displays and detection system control interfaces. The cabinet rear shall provide access for termination of field cables and shall only be accessed for installation and for cabinet troubleshooting. The left-side rack of the cabinet relative to facing the cabinet from the front, to be referred to as the "Control" side, shall house the control devices such as the Controller, Cabinet Monitor Unit (CMU) and Auxiliary Display Unit (ADU), switch packs and the power distribution panel. As such, this rack shall be referred to as the "Control" side of the cabinet. The right-side rack of the cabinet relative to facing the cabinet from the front, to be referred to as the "Power and Auxiliary" side, shall house the spare card cage assembly, battery back-up devices (if required), communications elements and future ancillary devices.

Cabinet Doors - The NEMA P cabinets shall be supplied with four main doors: two on the front face and two on the back face. Each door shall open independently with an independent center post latching for each of the four doors. The front "control side" door shall be defined as the "primary" door; the remaining three (3) main doors shall be defined as "secondary" doors.

The cabinet main doors shall be provided with a stop to limit door opening to both 90° and 180° ±10°. The door stop bars shall be a captive type mechanism that serves to keep the bars in contact with the cabinet at both stop bar ends and provided with a catch that can be operated when the doors reach these 2 positions and shall hold the doors open securely until released. The cabinets shall be supplied with a three-point draw roller latching system consisting of the following latching points:

PART 1 - Center of the cabinet (lock)
PART 2 - Top of the cabinet – controlled by door handle
PART 3 - Bottom of the cabinet – controlled by door handle

The latching points on the top and bottom of the cabinet doors shall remain in the locked position until the door locks are disengaged. The locking mechanisms shall be equipped with nylon rollers to secure the top and bottom of the doors. The door locking mechanism shall be constructed such that it closes freely without obstruction with any internal cabinet device, shelf, rack system or internal metal support element.

ITEMS 816.1 and 816.2 (Continued)

The cabinets shall be supplied with a ¾" diameter shank, stainless steel latching handle for each door. The latching handle shall have a provision for padlocking the door in a closed position. The cabinets shall have a pliable seal composed of caulking compound or mastic installed between the cabinet bases and the concrete foundations and in between the riser base and the cabinet to prevent dust and dirt from entering the cabinets.

Extension Bases – The cabinets shall be supplied with a 6" high riser aluminum base that elevates the cabinet above the cabinet foundation. The color and finish of the base shall match the color and finish of the main cabinet is supports.

Internal Cabinet Lighting – The cabinets shall be supplied with white LED light panels which shall automatically illuminate via a door open switch whenever any one of the four main cabinet doors are opened.

The LED panels shall produce a minimum of 1,000 lumens on the Control side of the cabinets and 1,000 lumens on the Power/Auxiliary side of the cabinet and be protected by a clear shatterproof shield. The cabinet shall contain four light panels: two at the top of each rack assembly and two at the underside of the bottom shelf of each rack assembly. There shall be two switches on each of the four main doors. LED light panel mounting brackets shall be installed such that they do not interfere with the unused rack mounting holes which could potentially conflict with the installation of future rack mounted devices. The second door switch shall be used to monitor when the door has been opened. The front control side door monitoring switch shall be connected to one of the door status inputs of the controller. The door monitoring switches for the remaining doors shall be connected to the second door status input to the controller. The door status inputs shall log a report event that one of the doors was opened.

Cabinet Fans – The cabinets shall be provided with thermostatically controlled ventilating fans and throwaway glass fiber air filters. The electric fans shall have ball or roller bearings and shall have a capacity of 100 ft^3 per minute. The fans shall be rated for continuous duty with a minimum service life of 3 years. The fan blades shall be supplied with a safety screen to prevent accident contact with the blades. The ventilating system shall be designed to prevent the entrance of rain, snow, dust, and insects. The fans and vents shall be arranged in such a manner that the air intake is at the cabinet bottoms and the exhaust is at the cabinet tops. The air intake shall be rain tight and covered with a removable glass fiber air filter. The removable air filter shall be firmly held in place with aluminum louvered backing plate such that cracks, and openings are eliminated to ensure that all air is filtered. The cabinets shall contain two fans. The thermostat panel shall be mounted to the top, rear of the cabinet's 19" equipment rack and oriented to be clearly visible allowing user adjustable temperature settings from a minimum of 70°F to 140°F and capable of activating the fans within plus or minus five degrees of the set temperature; the thermostat shall be initially set to 100°F. Any exposed terminals shall be covered to protect a technician's hand. There shall be two intake vents provided with the cabinet, one in each front door.

ITEMS 816.1 and 816.2 (Continued)

Cabinet Switches/Manual Control – The cabinets shall be supplied with a single police door panel located in the middle area of the front door on the Power and Auxiliary side. The switches shall be mounted in the police panel and labelled as to function. The three switches shall be supplied as follows:

a. Signal On/Off
b. Signal/Flash
c. Manual/Auto with cord

The manual control cord shall be a coiled type, sealed weatherproof covered hand switch extending to six feet when fully stretched. The cord shall be fastened to the cabinet via a compression type connector to provide strain relief for the cord's electrical connections. The police door panel shall be of sufficient size so as to store the manual control cord when panel door is closed. The police signal control button (interval advance) shall not be functional unless the manual / auto switch is in the manual position thus preventing a user to advance the signal displays without an active "manual control enable" controller input being active.

The cabinets shall be supplied with a technician's panel switches integrated into the lower output file rack assembly. This panel shall be supplied with the following switches:

a. Flash/Auto (Allows the controller to cycle while flashing)
b. Signals On/Off (Allows the controller to cycle with signal displays being dark)
c. Stop Time Normal/On (Provides the ability to manually activate a controller stop time input)

Cabinet Power - The main cabinet circuit breaker shall be rated at 30 amps. Circuit breakers shall be approved and listed by the UL. All circuit breakers shall be quick-make, quick-break on either automatic or manual operation. Contacts shall be silver alloy enclosed in an arc quenching chamber. Overload tripping of breakers shall not be influenced by an ambient temperature range of from 0 to +158°F. The electrical current rating shall be stenciled on the support panel adjacent to each fuse and circuit breaker installed within the cabinet.

Pull-Out Drawers – The cabinets shall contain a pull-out drawer, 19" wide with sufficient strength to hold a laptop computer. The cabinets detail included in the contract drawings show the location of the pull-out drawer.

Spare Lateral Rack (SLR) – The cabinets shall be supplied with a Spare Lateral Rack (SLR) (empty cage) assembly. This rack assembly shall not be wired to any cabinet device, but rather used to store spare rack mounted cabinet devices such as switch packs, Serial Interface Units (SIUs), CMUs and phase selectors. This spare rack assembly shall be located at the top of the Power and Auxiliary rack. The rear of the assembly shall contain unterminated edge connectors which shall serve to hold the spare plug-in devices in place during storage.

ITEMS 816.1 and 816.2 (Continued)

Electric Meter Trim - The cabinets shall be supplied and installed with an electric service meter socket trim and electrical service disconnect switch mounted on the exterior of the cabinets. The meter and disconnect switch shall be installed centered on the side of the cabinets without doors such that it is not less than 48 inches nor more than 60 inches above final grade. The Contractor shall coordinate with the local electric utility company to determine the appropriate type of electric service meter socket trim and electrical conductors to be used. The line side cable shall be routed external to the cabinet from the ground to a 50 amp disconnect switch, then continuing to the bottom of the electric service meter socket trim, all through rigid steel conduit furnished and installed by the Contractor. The load side cable shall be routed through the cabinets and terminated on the line side of the main cabinet circuit breaker. The cable shall be routed through the interior of the cabinet such that it does not block or enter into available rack space preventing that space from being used either by equipment supplied as part of the project, or future equipment that would be installed in the rack system.

The cable shall be routed between the edge of the rack system and the cabinet side wall, along the bottom of the cabinet and below the bottom opening of the doors. Care shall be taken by the Contractor when installing the electric service meter socket trim and electrical service disconnect switch so that there is no damage inflicted on installed devices or the rack system during the installation. All metal shavings produced during the drilling of the access hole for the electric service shall be removed from the cabinet interiors by the Contractor. The Contractor shall install appropriate bushings to all cabinet penetrations. All wiring shall comply with all applicable local electrical codes as well as the National Electric Code.

Back of Door Documentation – The cabinets shall be supplied with a laminated door sticker. This sticker shall be permanently affixed to the inside front control side of the cabinet door. At a minimum, the sticker shall contain the following information:

a. Vehicle and pedestrian detection information including all detector channel assignments, phases assigned, approaches and cabinet termination points.
b. Per approach preemption information including channel, approach/direction and termination points.
c. Field termination chart showing per approach/per phase numbering of all signal circuits.
d. Signal phasing and signal plan with intersection geometry and signal head designations.
e. Any logic statements and text describing signal operation created by the internal logic programming.
f. Time of day and coordination program resident in the controller.

The back of the main front doors shall contain a resealable, heavy-duty opaque plastic envelope with two grommets that provide mounting to two integrated hooks installed on the back side of the front cabinet doors. The heavy-duty plastic envelope will be used to store cabinet wiring diagrams and operations manuals that cannot be accommodated in the pull-out draw storage tray.

Input and Output Channels – The cabinets shall be supplied with 32 output channels and 48 input channels. The input channel rack assemblies shall consist of two (2) 24 channel units.

ITEMS 816.1 and 816.2 (Continued)

Detector Test Switch Panels – The cabinets shall be supplied with a detector test switch panel. There shall be a total of 48 switches to allow for the manual placement of detector calls into the controller. Each switch shall be clearly labelled as to input channel. Each switch position shall correspond to the same controller input; switch one is for controller input channel one, switch two is for controller input channel 2, etc. The detector switch panel shall be comprised of switches that are wired directly to the corresponding input channels on the rack assemblies. Each switch shall be supplied with a red LED indicator to be illuminated whenever a channel input is active via the three-position detector switch. The use of an SIU internal to the detector test switch panel to provide this capability is not allowed. The switches shall be three position type and function as follows:

a. Up Position = Provides a constant call
b. Center Position = Normal operation (Phase receives call from detectors)
c. Down Position = Provides a momentary call

Standard ATC Cabinet Devices - A Cabinet Monitor Unit (CMU) and Auxiliary Display Unit (ADU) shall be supplied and installed in each of the cabinets. The CMU and ADU shall conform to requirements defined in the Advanced Transportation Controller Cabinet (ATCC) 5301 v02 standard. The CMU/ADU units supplied and installed as part of this project shall support 32 channels. All configuration programming shall be resident in a non-volatile Datakey device. Each CMU shall be supplied with a Datakey programmer and associated software. The Datakey programming software shall include a set-up wizard which shall assist the user with the initial set up of the device. The Contractor shall program the Datakey with data entries appropriate for each intersection. All programing resident on the Datakey shall be included in the hardcopy.

A cabinet power supply shall be supplied and installed in the cabinet. The cabinet power supply shall comply with ATCC 5301 v02.

All SDLC cables used to interconnect devices within the cabinet shall be supplied with factory installed protective wire covers to protect the connector side of the cables. The use of Contractor supplied/installed cable protector covers shall not be allowed.

Cabinet Documentation (Hard copy. Flash Drive)

Under these Items the Contractor shall supply a full set of cabinet wiring diagrams. The wiring diagrams shall depict all of the as-built cabinet wiring routing and terminations. Each in-cabinet device (switches, relays, connectors, surge protection devices, etc.) shall be labeled on the wiring diagram as to the function the device serves.

Three copies of the database programming for all in cabinet devices shall be provided with the cabinet. The database programming sheets shall reflect as-built programming resident in each unit at the time of acceptance. A printout of the databases contained in the controller, CMU, Preemption, Video Detection, or any other equipment shall be provided to the Engineer. The databases shall be provided in both hard copy printouts and on a “thumb drive.”

ITEMS 816.1 and 816.2 (Continued)

Operating and maintenance manuals for all in-cabinet devices shall be provided in ~~both~~ electronic format.

Surge Suppression

Electrical filtering/surge protection shall be supplied and installed in each cabinet in accordance with ATCC 5301 v02 requirements and the manufacturer's recommendations. At a minimum, surge suppression shall be provided for incoming electric utility power conductors, all signal control circuits, vehicle detection, pedestrian detection, communications, and preemption system terminations. The use of a single fuse for surge suppression shall not be allowed.

The cabinets shall be electrically bonded and grounded to comply with Section 643, the National Electrical Code (NEC) and the National Electrical Safety Code (NESC), latest versions of each document.

Each in-cabinet current interrupting device (controller unit, flasher, and all other devices) shall be equipped with a suitable radio interference suppressor installed at the input power point. Interference suppressors shall be designed to minimize interference in both broadcast and aircraft frequencies. Suppressors shall be designed for 125 percent of the total connected load and shall meet standards of the UL and the EIA.

Spare Traffic Signal Equipment

The Contractor shall furnish and provide the following spare equipment in each of the proposed ATC cabinets:

- A full complement of switch packs. The switch packs shall comply with ATCC 5301 v02.
- A full complement of Serial Interface Units (SIU). The SIUs shall comply with ATCC 5301 v02, plus 2 additional SIU.
- A full complement of flashers. The flashers shall comply with ATCC 5301 v02.
- A full complement of flash transfer relays. The flash transfer relays shall comply with ATCC 5301 v02.
- One (1) additional CMU USB data key programmer tool with software.

All spare equipment required to be supplied with the cabinets shall be stored in the SLR and any additional spare equipment shall be placed on the Power and Auxiliary side shelves. No spare equipment shall be placed on the interior cabinet foundations.

ITEMS 816.1 and 816.2 (Continued)

Load Switches

Load switches shall comply with Subsection 6.2 of the NEMA TS 2 Standard. All load switches shall utilize optically isolated encapsulated modular solid-state relays. Discrete components on circuit boards are not acceptable.

Load switch indicator lights shall be LED-type and wired on the input side of the device.

Note: The controller cabinet assembly shall be initially supplied with a full complement of load switches to accommodate each available position of the backpanel.

Video Detection System

The Contractor shall provide a Video Detection System to detect vehicles. The system shall also provide full motion video output showing zones highlighted during detection for fine-tuning. All hardware and software within the traffic signal cabinet shall be NEMA TS-2 compliant.

The Video Detection System shall utilize a single 360-degree camera with the ability to view and detect vehicles and bicycles on every approach within the detection zone shown on the Plans. The major components of the Video Detection System are further described as follows:

Prior to installation of the Video Detection System a detailed site survey shall be conducted by a factory trained and certified representative. The site survey shall ensure that the design of the camera, camera location, camera optics, and video/data interconnect is appropriate for the application.

The supplier of the Video Detection System shall supervise the installation and testing of the Video Detection System and computer software. A factory certified representative from the supplier shall be on site during installation.

The Video Detection System shall provide one National Television Standards Committee (NTSC) color composite video output.

The Video Detection System shall provide a minimum of 20 detection zones. The system shall provide flexible, user configurable detection zone placement at any orientation within the field of view of the Video Detection System Camera. It shall be possible to overlap detection zones. It shall be possible to configure the Video Detection System to provide detection signals to the traffic signal controller which are comprised of Boolean combinations of detection zones.

The Video Detection System shall provide failsafe operation whereby it places continuous vehicle calls to the traffic signal controller on all detection zones in the event it senses unacceptable video from the Video Detection System Camera.

The Video Detection System shall include a configuring device and/or a Windows based computer software that provides for configuring the Video Detection System, viewing real time video, and updating the flash memory of the Video Detection System with updated application software.

ITEMS 816.1 and 816.2 (Continued)

The Video Detection System shall provide count and presence detection performance with at least 96% accuracy under normal (day and night) conditions.

The Video Detection System shall utilize FLASH memory to store the resident application software.

The Video Detection System shall be comprised of a Video Detection System Camera, Video Detection System Cable, and Video Detection System Hardware.

Video Detection System Camera

The Video Detection System Camera shall operate without degradation over a temperature range of -34 to 60 degrees Celsius at a relative humidity of 10% to 90% condensing.
The Video Detection System Cameras shall be housed in a water resistant, dust proof NEMA-4 housing. The housing shall include a rear connector for connection of the Video Detection System Cable. The housing shall be field rotatable to allow for proper alignment between the camera and the traveled road surface.

The Video Detection System Cameras shall have a heater to prevent the formation of ice and condensation in cold weather and allow the camera to operate correctly while exposed to precipitation and direct sunlight.

The Video Detection System Cameras shall have a sunshield to protect the lens from direct sunlight and direct precipitation exposure.

The Video Detection System Cameras shall provide useable video and resolvable features in the video image when those features have luminance levels as low as 0.1 lux at night, and as high as 10,000 lux during the day. The Video Detection System Camera shall contain an automatic gain control (AGC) to provide a satisfactory image over the full range of light levels.

Video Detection System Cable

The Video Detection System Cable shall interconnect the Video Detection System Camera with the Video Detection System Hardware in the traffic signal control cabinet.

The Video Detection System Cable shall meet the design requirements of the Video Detection System Camera manufacturer and shall be designed and manufactured specifically for the Video Detection System Camera supplied.

The Video Detection System Cable shall be capable of withstanding the rigors of outdoor environments, including all combinations of precipitation, heat and cold from -34 to 74 degrees Celsius, and direct exposure to sunlight without exhibiting any signs of deterioration over time.
The Video Detection System Cable shall be installed with a suitable drip loop to prevent the entrance of water into the housing.

ITEMS 816.1 and 816.2 (Continued)

Video Detection System Hardware

The Video Detection System Hardware shall operate without degradation over a temperature range of -34 to 74 degrees Celsius at a relative humidity of 10% to 90% condensing.

The Video Detection System Hardware shall include interface device(s) which shall be installed in the traffic control cabinet.

The interface device(s) shall be used to terminate the traffic controller cabinet end of the Video Detection System Cable.

The interface device(s) shall contain transient suppression devices for all signals transported on the Video Detection System Cable, including but not limited to video, data, and power.

The surge protector shall be electrically connected to the cabinet ground rod.

Surge protectors should have peak surge current protection of at least 10K amperes with a response time of less than 5 nanoseconds. The protector complies when a lab report from an independent test laboratory stating the product passes this specification is submitted with the shop drawings.

Units should be pre-approved or unconditionally guaranteed for at least 10 years and certified to comply with the product's published specifications by an independent laboratory.

The interface device(s) shall contain a switch or shut-off mechanism that shall allow the user to turn off AC service to all components of the Video Detection System. The interface device(s) shall contain a connector for interfacing to a configuring device and/or a Windows based computer in the field for the purpose of configuring the Video Detection System, viewing real time video, and for updating the flash memory of the Video Detection System with updated application software.

The Video Detection System Hardware shall include all necessary cables for interconnection to the traffic signal controller, AC power service, a modem for transport of NTSC video to the traffic operations center, and a configuring device and/or a Windows based computer in the field.

Radar Detection System

The minimum requirements for a system that detects vehicles on a roadway using only a radar sensor are as follows:

System Hardware
The radar detection system (RDS) shall consist of up to four radar sensors, up to two radar detection processors (RDP) capable of processing up to two radar sensors each, one Central Control Unit (CCU), (either a 19" rack or shelf-mount form factor), input/output extension modules, surge suppressors, a monitor and a pointing device, or any combination thereof.

ITEMS 816.1 and 816.2 (Continued)

The radar sensor shall also include a video camera for surveillance purposes only. This video camera shall not provide any detection capabilities.

The RDS will be deployed at locations where site conditions and roadway geometry vary. The RDS system may also be deployed at locations where existing cabinets or equipment exist. Existing site configurations will dictate the availability of cabinet space and RDS usage.

System Software
The system shall include software that discriminately detects the presence of individual vehicles in single or multiple lanes using only the radar data. Detection zones shall be defined using an embedded software application or external laptop or remote PC. A monitor and a pointing device can be used to place the zones on a video image. A minimum of 32 detection zones per sensor view shall be available.

The RDS shall be made in the U.S.A. in compliance with FTA "Buy America" regulations.

Radar Detection Processor (RDP) System Interfaces
The RDP shall be a single-rack detector card width, and provide provision for up to two sensors per RDP. It may be possible for the RDPs to be embedded in the shelf-mount CCU to provide a single cabinet interface. The following interfaces shall be provided on each radar detection processor:

Sensor Input
Each RDP will be supplied with radar and video data from the radar sensor. The interface connector shall be an RJ-45 type and shall be located on the back of the CCU unit.

Video Lock LED
A LED indicator shall be provided to indicate the presence of the video signal. The LED shall illuminate upon valid video synchronization and turn off when the presence of a valid video signal is removed.

Contact Closure Output
Open collector (contact closure) outputs shall be provided. Four (4) open collector outputs shall be provided for the RDP rack-mount configuration. Additionally, the RDS shall allow the use of extension modules to provide up to 32 open collector contact closures per radar sensor input. Each open collector output shall be capable of sinking 30mA at 24VDC. Open collector outputs will be used for vehicle detection indicators as well as discrete outputs for alarm conditions. The RDP outputs shall be compatible with industry standard detector racks assignments.

Logic Inputs
Logic inputs such as delay/extend or delay inhibit shall be supported through the appropriate detector rack connector pin or front panel connector in the case of the I/O module. For RDPs and extension modules, 4 inputs shall be supported via detector rack interface. The I/O module shall accommodate eight (8) inputs through a 15-pin "D" connector.

ITEMS 816.1 and 816.2 (Continued)

Detection LEDs
Detection status LEDs shall be provided on the front panel of each RDP. The LEDs shall illuminate when a contact closure output occurs. Rack-mounted radar processors shall have a minimum of four (4) LEDs. Rack-mounted extension modules shall have two (2), four (4) or eight (8) LEDs (depending upon extension module type) to indicate detection.

Test Switches
The front panel of the RDP shall have detector test switches to allow the user to manually place vehicle calls on each RDP output channel. The test switch shall be able to place a momentary call.

Both the RDP and EM shall be specifically designed to mount in a standard detector rack, using the edge connector to obtain power, provide contact closure outputs and accept logic inputs (e.g. delay/extend). No adapters shall be required to mount the RDP or EM in a standard detector rack and no rack rewiring shall not be required.

RDP printed circuit boards (PCBs) shall be conformally coated in accordance with Caltrans and NEMA specifications.

On-board Memory
The RDP shall utilize non-volatile memory technology to store on-board firmware and operational data.

Firmware Upgrade
The RDP and CCU shall enable the loading of modified or enhanced firmware through either the Ethernet or front-panel USB port (using a USB thumb drive) and without removing or modifying the RDP or CCU hardware.

RDP and EM Power
The RDP and EM shall be powered by 12 or 24 volts DC. RDP and EM modules shall automatically compensate for either 12 or 24 VDC operation. RDP power consumption shall not exceed 7.5 watts. The EM power consumption shall not exceed 3 watts.

Operating Temperature
The RDS shall operate satisfactorily in a temperature range from -30° F to +165° F (-34° C to +74° C) and a humidity range from 0%RH to 95%RH, non-condensing as set forth in NEMA specifications.

A 9-inch video monitor shall be provided for radar detection diagnostic purposes.

RDS Central Control Unit (CCU)
The RDS CCU sensor shall be supplied by the RDS manufacturer.

Hardware
The CCU shall be supplied in shelf mount format; TS2 version. The CCU shall be able to stand up on available shelf-space within the cabinet. All connections shall be made from the front of the CCU, and no external RDPs will be required.

ITEMS 816.1 and 816.2 (Continued)

CCU Power
The shelf-mount format CCU shall be powered from a 48V DC power supply. CCU power consumption shall not exceed 150 Watts.

Operating Temperature
The RDS shall operate satisfactorily in a temperature range from -30° F to +165° F (-34° C to +74° C) and a humidity range from 0%RH to 95%RH, non-condensing as set forth in NEMA specifications.

On-board Memory
The CCU shall utilize non-volatile memory technology to store on-board firmware and operational data.

Surge Suppression
The CCU shall incorporate surge suppression for each radar sensor input. The CCU shall be appropriately grounded to the cabinet ground rod using 14 AWG (2.5mm2) minimum.

Power Surge Suppression
The CCU shall incorporate power surge suppression both on the input power and on the power supplied to the sensor heads. The CCU shall be appropriately grounded to the cabinet ground rod using 14 AWG (2.5mm2) minimum

Power Management
The CCU shall incorporate power management for the various parts of the RDS such that if fault conditions are detected the power supply will safely shut down the power to that peripheral.

Interfaces

Extension Modules
Extension modules (EM) shall be available to eliminate the need of rewiring the detector rack, by enabling the user to plug an extension module into the appropriate slot in the detector rack to provide additional open collector outputs. The EM shall be available in both 2- and 4-channel configurations. EM configurations shall be programmable from the CCU. A separate I/O module shall also be available having 32 outputs through a 37-pin “D” connector on the front panel and 8 inputs through a 15-pin “D” connector using an external wire harness for expanded flexibility

The CCU shall provide four ports for connection to radar sensors. The connector shall be an RJ-45 type.

The CCU shall provide four ports for connection to RDPs. The connector shall be an RJ-45 type. These connectors will not be required for the Shelf-Mount TS2 version CCU.

ITEMS 816.1 and 816.2 (Continued)

The CCU shall provide 2 USB 'A' ports on the front panel of the rack mount CCU unit. These ports can be utilized for various functions. For example, keyboard and mouse functions during system configuration, USB storage devices can be utilized for bin data and video collection. The USB ports shall not require special mouse software drivers. The USB ports shall be used as part of system setup and configuration

The CCU shall provide an output to a monitor. The port shall be HDMI.

Communications

An Ethernet communications port shall be provided on the front panel. The Ethernet port shall be compliant with IEEE 802.3 and shall use a RJ-45 type connector mounted on the front panel of the CCU. The Ethernet communications interface shall allow the user to remotely configure the system and/or to extract calculated vehicle/roadway information. The interface protocol shall be documented or interface software shall be provided. Each RDS shall have the capability to be addressable. The RDP shall support data rates of up to 100Mbps.

The CCU shall provide an SDLC connection to the Traffic Controller. The connector shall be a 'D-15' type, in compliance with NEMA TS-2 specifications.

The CCU shall provide an indicator when the SDLC port is active.

The CCU shall provide an indicator when the unit has power.

The CCU shall provide an indicator when the unit is on line.

The CCU shall provide a Wi-Fi connection. The connection shall be over a standard 2.4GHz connection. The Wi-Fi connection shall be enabled and disabled by a switch on the CCU. The CCU shall provide an indicator when the Wi-Fi connection is active.

The CCU shall provide system status via an on-board Organic Light Emitting Diode display. The display shall indicate various system parameters, such as sensor health and RDP health, and firmware version. The display with be enabled and disabled with a switch on the CCU.

RDS Radar Sensor Assembly

The RDS radar sensor assembly shall be supplied by the RDS manufacturer. The RDS radar sensor assembly shall consist of both a radar sensor and a surveillance camera

The RDS radar sensor assembly shall utilize a single outdoor rated shielded CAT5E or CAT6 cable for power, data and video. Cable termination at the sensor shall not require crimping or special tools. The cable termination shall only require a standard wire stripper and a screw driver.

An optional RJ45 direct connector shall be made available if a user chooses to connect the sensor cable with RJ45 connections at the sensor.

ITEMS 816.1 and 816.2 (Continued)

Radar Sensor (to provide Stop Bar Presence Detection Only)
The radar sensor shall operate in the 24 GHz frequency band.

The radar sensor shall utilize forward-fire, Frequency Modulated Carrier Wave (FMCW) mono-pulse technology.

The radar detection range shall be up to 325 feet (99 meters) from the sensor head.

The radar sensor shall be able to track up to 64 independent objects simultaneously.

Object speed detection shall be within a range of 0 to 150 miles per hour +/- 1.0 miles per hour (240 km per hour ± 1.5 km per hour).

The radar sensor shall be able to detect vehicles in 1 to 6 traffic lanes.

The radar sensor shall be housed in a weather-tight sealed enclosure conforming to IP-67 specifications. The housing shall allow the radar to be adjusted to allow proper alignment between the sensor and the traveled road surface.

When mounted outdoors in the enclosure, the radar shall operate in a temperature range from -30 °F to +165 °F (-34 °C to +74 °C) and a humidity range from 0% RH to 100% RH.

The radar sensor shall utilize a FOV of ±22°.

Radar Sensor (to provide both Stop Bar Presence and Advanced Detection)
The radar sensor shall operate in the 24 GHz frequency band.

The radar sensor shall utilize forward-fire, Frequency Modulated Carrier Wave (FMCW) mono-pulse technology.

The radar detection range shall be up to 600 feet (183 meters) from the sensor head.

The radar sensor shall be able to track up to 64 independent objects simultaneously.

Object speed detection shall be within a range of 0 to 150 miles per hour +/- 1.0 miles per hour (240 km per hour ± 1.5 km per hour).

The radar sensor shall be able to detect vehicles in 1 to 6 traffic lanes.

The radar sensor shall be housed in a weather-tight sealed enclosure conforming to IP-67 specifications. The housing shall allow the radar to be adjusted to allow proper alignment between the sensor and the traveled road surface.

When mounted outdoors in the enclosure, the radar shall operate in a temperature range from -30 °F to +165 °F (-34 °C to +74 °C) and a humidity range from 0% RH to 100% RH

ITEMS 816.1 and 816.2 (Continued)

Surveillance Camera

The camera shall produce a useable video image of the features of vehicles under all roadway lighting conditions, regardless of time of day. The minimum range of scene luminance over which the camera shall produce a useable video image shall be the minimum range from nighttime to daytime, but not less than the range 0.003 lux to 10,000 lux.

The camera imager luminance signal to noise ratio (S/N) shall be more than 50 dB with the automatic gain control (AGC) disabled.

The camera imager shall employ wide dynamic range (WDR) technology to compensate for wide dynamic outdoor lighting conditions. The dynamic range shall be greater than 100 dB.

The camera shall be digital signal processor (DSP) based and shall use a CCD sensing element and shall output color video with resolution of not less than 540 TV lines. The color CCD imager shall have a minimum effective area of 811(h) x 508(v) pixels.

The camera shall include an electronic shutter control based upon average scene luminance and shall be equipped with an auto-iris lens that operates in tandem with the electronic shutter. The electronic shutter shall operate between the range of 1/60th to 1/90,000th second.

The camera shall utilize automatic white balance.

The camera shall include a fixed focal length lens with fixed focus.

General Sensor Requirements

The radar sensor and camera imager shall be housed in a weather-tight sealed enclosure. The housing shall allow the sensor head to be rotated to allow proper alignment between the sensor head and the traveled road surface.

The radar sensor enclosure shall be equipped with a sunshield.

The radar sensor enclosure shall be designed so that the pan, tilt and rotation of the assembly can be accomplished independently without affecting the other settings.

The radar sensor assembly shall be powered by 48VDC. Power consumption shall be 8 watts typical.

The maximum distance between the sensor assembly and the CCU shall be 1000’ (305 meters).

Recommended sensor placement height shall be between 21 feet and 33 feet (or 6 to 10 meters) above the roadway, and over the traveled way on which vehicles are to be detected. For optimum detection the sensor should be centered above the traveled roadway. The radar sensor shall be oriented to view approaching vehicles at a distance not to exceed 325 feet (99 meters). Sensor placement and field of view (FOV) shall be unobstructed and as noted in the installation documentation provided by the supplier.

ITEMS 816.1 and 816.2 (Continued)

Cable terminations at the sensor for data, video and power shall not require crimping tools.

A weather-proof protective cover shall be provided shall be provided to protect all terminations at the sensor. No special tooling shall be required to remove or install the protective cap.

RDS Software

General System Functions

Detection zones shall be programmed via an embedded application displayed on a video monitor and a keyboard and a pointing device connected to the CCU. The menu shall facilitate placement of detection zones and setting of zone parameters or to configure system parameters. A separate computer shall not be required for programming detection zones or to view system operation. All programming function shall occur on live video images; no snapshots or still images are allowed.

The RDS software shall store up to five completely independent detection zone patterns in non-volatile memory. The RDS can switch to any one of the five different detection patterns within 1 second of user request via menu selection with the pointing device. Each configuration shall be uniquely labeled and able to be edited by the user for identification. The currently active configuration indicator shall be displayed on the monitor.

The RDS shall detect vehicles in real time as they travel across each detection zone.

The RDS shall accept new detection patterns from an external, or remote, computer through the Ethernet port when the external computer uses the correct communications protocol for downloading detection patterns. A Windows™-based software designed for local or remote connection and providing video capture, real-time detection indication and detection zone modification capability shall be provided with the system.

The RDS shall have the capability to automatically switch to any one of the stored configurations based on the time of day which shall be programmable by the user.

The RDS shall send its detection patterns to an external computer through the Ethernet port when requested when the external computer uses the appropriate communications protocol for uploading detection patterns.

The RDS shall default to a safe condition, such as a constant call on each active detection channel, in the event of unacceptable interference or loss of the radar signal.

The RDS shall default to a safe condition, such as a constant call on each active detection channel, in the event of environmental conditions impeding the radar sensor performance.

Up to 32 detection zones per sensor input shall be supported and each detection zone must be user-sizeable to suit the site and the desired vehicle detection region.

ITEMS 816.1 and 816.2 (Continued)

The RDS shall provide up to 32 open collector output channels per sensor input using one or more extension modules.

A single detection zone shall be able to replace multiple inductive loops and the detection zones shall be OR'ed as the default or may instead be AND'ed together to indicate vehicle presence on a single approach of traffic movement.

When a vehicle is detected within a detection zone, a visual indication of the detection shall activate on the radar overlay display to confirm the detection of the vehicle for the zone.

Detection shall be at least 98% accurate in good weather conditions, with slight degradation possible under adverse weather conditions (e.g. rain, snow, or fog) which reduce visibility. Detection accuracy is dependent upon site geometry, sensor placement, and detection zone location, and these accuracy levels do not include allowances for occlusion due to sensor location.

The RDS shall provide dynamic zone reconfiguration (DZR). DZR sustains normal operation of existing detection zones when one zone is being added or modified during the setup process. The new zone configuration shall not go into effect until the configuration is saved by the operator.

Detection zone setup shall not require site specific information such as latitude and longitude to be entered into the system.

The RDS shall process the radar signals from each sensor at 75mS intervals. Multiple processors shall process all radar signals simultaneously.

The RDS shall process the video input from each camera at 30 frames per second. Multiple processors shall process all video inputs simultaneously.

Detection zone outputs shall be individually configurable to allow the selection of presence, pulse, extend, and delay outputs. Timing parameters of pulse, extend, and delay outputs shall be user definable between 0.1 to 25.0 seconds.

Up to eight (8) detection zones per sensor view shall have the capability to count the number of vehicles detected. The count value shall be internally stored for later retrieval through the Ethernet port. The zone shall also have the capability to calculate and store average speed and lane occupancy at user-selectable bin intervals of 10 seconds, 20 seconds, 1 minute, 5 minutes, 15 minutes, 30 minutes and 60 minutes.

In addition to the count type zone, the RDS shall be able to calculate average speed and lane occupancy for all of the zones independently. These values shall be stored in non-volatile memory for later retrieval.

The RDS shall employ color overlays on the video output.

ITEMS 816.1 and 816.2 (Continued)

The RDS shall have the ability to show controller phase status (green, yellow, or red) for up to 8 phases. These indications shall also be color coded.

The user shall have the ability to enable or disable the display of the phase information on the radar output.

The RDS shall have the capability to change the characteristics of a detection zone based on external inputs such as signal phase. Each detection zone shall be able to switch from one zone type (i.e. presence, extension, pulse, etc.) to another zone type based on the signal state. For example, a zone may be a "count" zone when the phase is green but change to a "presence" zone type when the phase is not green. Another application would be zone type of "extension" when the signal phase is green and then "delay" when red.

The RDS shall have the capability to control the output of each zone based on a minimum or maximum speed. The minimum speed can be set from 0 mph (0 kph) to 249 mph (400 kph). The maximum speed can be set between 1 mph (1 kph) to 250 mph (402 kph).

The RDS software shall aid the user in drawing additional detection zones by automatically drawing and placing zones at appropriate locations with only a single click of the mouse. The additional zone shall utilize geometric extrapolation of the parent zone when creating the child zone. The process shall also automatically accommodate lane marking angles and zone overlaps.

When the user wishes to modify the location of a zone, the RDS software shall allow the user move a single zone, multiple zones or all zones simultaneously.

When the user wishes to modify the geometric shape of the zone, the RDS software shall allow the user to change the shape by moving the zone corner or zone sides.

The RDS shall display the actual pitch angle as reported by the radar sensor.

The RDS shall display the actual roll angle as reported by the radar sensor.

On screen zone identifiers shall be modifiable by the user. The user shall be allowed to select channel output assignments, zone type, input status, zone labels or zone numbers to be the identifier.

User Interfaces

The user interface shall provide capabilities to enable multiple rack-mounted radar detection processors to be locally and remotely accessed from a single point via an Ethernet connection.

The device shall allow the operator to view four videos simultaneously or any one video by controls embedded in the RDS. The on-screen display for the video stream shall provide the user with information on real-time detection per zone and signal phasing information in a user-friendly format. If the end-user is utilizing Siemens M50 or M60 controllers, additional functionality shall be provided to be compatible with the Siemens phase data I/O.

ITEMS 816.1 and 816.2 (Continued)

Local user access to detection programming shall be limited to the detection processor unit that is currently being displayed on the monitor.

All local programming and setup parameters for the detection processor shall be user accessible through the interface unit without requiring the user to swap user interface cables between video detection processors.

Remote access to the device shall be through the built-in Ethernet port via access software running on a Microsoft Windows based personal computer.

A Windows OS remote access firmware shall also be available for remote setup and diagnostics of the interface unit.

The RDS shall support streaming video technology using H.264 standards to allow the user to monitor video detection imagery over the Ethernet interface. Motion JPEG streaming video shall not be allowed.

The interface unit shall allow four independent streams, two from each video processor, to be transported via Ethernet to four independent streaming video players simultaneously in D1 resolution.

The interface unit shall support the streaming and display of four concurrent streams in D1 resolution.

The interface shall allow the user to change the unit's Ethernet network settings of IP address, subnet mask and default gateway.

The RDS shall allow the user to upload new application firmware through the use of the interface, remotely or on-site.

In addition to the primary RDS setup and control software, a separate Windows OS based software shall be provided that will allow users to remotely view video streams from any RDS configured and setup from their network. This software will allow users to view live video streams in a 2x2 or 3x3 configuration, and allow users to group any number of individual RDS units in the field into unique groups.

An iOS based application will be provided to remotely view video streams from the RDS. This application shall allow the user to choose between any number of pre-configured intersection locations. The live video from any cameras at that location will be viewable on an iOS product, including the vehicle and bicycle detections occurring in real-time.

An Android based application will be provided to remotely view video streams from the RDS. This application shall allow the user to choose between any number of pre-configured intersection locations. The live video from any cameras at that location will be viewable on an Android product, including the vehicle and bicycle detections occurring in real-time.

ITEMS 816.1 and 816.2 (Continued)

SDLC Functionality

This section sets forth the minimum requirements for a full-function BIU and integrated video detection communication. The RDS shall provide outputs to the controller of vehicle calls from video processors that reside within the detector rack.

Functional Capabilities

The RDS shall have the capability of monitoring phase information and passing that information and other system data such as "time" from the controller to radar detection processor modules. The RDP shall also accept data from radar processor modules and relay the information to the controller. The unit shall provide a maximum of 64 detector outputs to the controller via the SDLC interface.

Requirements

The module shall be in compliance with the following industry specifications:

Transportation Electrical Equipment Specifications (TEES), August 16, 2002 (or latest edition), California Department of Transportation

NEMA Standard Publication TS 1-1989 (or latest edition), Traffic Control Systems, National Electrical Manufacturers Association

NEMA Standard Publication TS 2-2003, Traffic Controller Assemblies With NTCIP Requirements, Version 02.06 (or latest edition), National Electrical Manufacturers Association

Data Interfaces

The RDS shall have three data interfaces:

The interface to the controller shall be accomplished by the use of the TS-2 SDLC port and protocol in accordance with the TS-2 specifications. The module shall be able to be configured to respond to BIU addresses 8, 9, 10 and 11 or a combination thereof.

The interface to communicate with card rack video detection processors shall be manufacturer specific.

The interface to provide real-time streaming data through the embedded Ethernet port for 3rd party integration of detection data.

SDLC Communication Indicators

One LED indicator shall be provided for the TS-2 SDLC interface. The indicator shall be used to inform the user of any communication activity on the SDLC port.

Installation

The cable to be used between the sensor assembly and the CCU in the traffic cabinet shall be Cat-5e, shielded, direct burial. This cable shall be suitable for installation in conduit or overhead with appropriate span wire. Shielded RJ-45 connectors shall be used where applicable. The Cat-5e cable, RJ-45 connector, stripping and crimping tool shall be approved by the supplier of the RDS, and the manufacturer's instructions must be followed to ensure proper connection.

ITEMS 816.1 and 816.2 (Continued)

The radar sensor assembly shall be installed by factory-certified installers as recommended by the supplier and documented in installation materials provided by the supplier. Proof of factory certification shall be provided.

Warranty
The supplier shall provide a limited three-year warranty on the radar detection system.

During the warranty period, technical support shall be available from the supplier via telephone within 4 hours of the time a call is made by a user, and this support shall be available from factory-certified personnel or factory-certified installers.

Maintenance and Support
The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the radar detection system. These parts shall be available for delivery within 30 days of placement of an acceptable order at the supplier's then current pricing and terms of sale for said parts.

The supplier shall maintain an ongoing program of technical support for the radar detection system. This technical support shall be available via telephone, or via personnel sent to the installation site upon placement of an acceptable order at the supplier's then current pricing and terms of sale for on-site technical support services.

Installation or training support shall be provided by a factory-authorized representative and shall be a minimum IMSA-Level II Traffic Signal Technician certified.

All product documentation shall be written in the English language.

Software
All computer system, controller, conflict monitor, and amplifier software shall be supplied with the latest available revision. Any software upgrades released by the manufacturer shall be supplied at no charge to the owner for a period of five years after acceptance of the work.

Load switches shall comply with Subsection 6.2 of the NEMA TS 2 Standard. All load switches shall utilize optically isolated encapsulated modular solid-state relays. Discrete components on circuit boards are not acceptable. Load switch indicator lights shall be LED-type and wired on the input side of the device.

Note: The controller cabinet assembly shall be initially supplied with a full complement of load switches to accommodate each available position of the backpanel.

Flasher

Flashers shall comply with Subsection 6.3 of the NEMA TS 2 Standard and be equipped with two output indicator lights which will show flashing power out to the cabinet assembly.

ITEMS 816.1 and 816.2 (Continued)

Flash Transfer Relays

Flash transfer relays shall comply with Subsection 6.4 of the NEMA TS 2 Standard.

The field electrical loading for flash operation shall be wired through the transfer relays such that the load on the 2-circuit flasher is as balanced as possible within the limitations of the signal phasing.

Note: The controller cabinet assembly shall be initially supplied with a full complement of flash transfer relays to accommodate each available position of the backpanel.

Testing of Grounding System

The Contractor shall perform testing of the equipment grounding system in the presence of the Engineer in accordance with the Standard Specifications. A ground rod shall be installed in the controller cabinet.

Data Base Programming

Each programmable local hardware component (controller, malfunction management unit, and detector amplifier) shall be initially programmed by the Contractor based on information contained on the plans. Three (3) sets of hard copy programming per device shall be supplied and stored in each controller cabinet.

Surge Suppression for Traffic Signal Equipment

Wherever electronic traffic signal equipment is located (cabinets, cameras, etc.), each input & output should be surge protected except traffic signal outputs. Signal outputs from load switches do not need surge suppression since the load switches act as surge suppressors.

The surge protector must be electrically connected to the nearest grounded metal structure or nearest ground rod.

Surge protection for power service shall conform to the current NEMA TS-2 standard except surge capacity shall be 80 kA. The product complies when a lab report from an independent test laboratory stating the product passes the current NEMA TS-2(5.4.2.4) specification (with the additional surge capacity of 80 kA) is submitted with the shop drawings.

Surge protection for all loop, pedestrian button, and pre-emption connections should have peak surge current protection of at least 10K amperes with a response time of less than 5 nanoseconds. The product complies when a lab report from an independent test laboratory stating the product passes this specification is submitted with the shop drawings.

Units should be unconditionally guaranteed for at least 10 years.

ITEMS 816.1 and 816.2 (Continued)

Mast Arm Structures

Mast arm structures shall be galvanized steel, powder coated black, and shall conform to the provisions of M8.18.2. Mast arm structures shall be fabricated by the suppliers approved by MassDOT. Mast arm structures shall be monolever type. All signal heads and signs on the mast arms shall be fixed mounted. Shoe type bases shall be used.

Design shall be in accordance with AASHTO, "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals." 6th edition with latest interim revisions. AASHTO breakaway requirements shall not apply. Shop drawings and wind load calculations (130 mph) shall be submitted and stamped by a professional engineer registered in the Commonwealth of Massachusetts.

Mast arms shall be furnished with luminaire posts and arms.

The work under these items shall be in compliance with Engineering Directive E-16-001 dated December 2015 Overhead Signal Structure Standard Drawings.

Mast Arm Foundations

Mast arm foundations shall be a concrete cored foundation as shown on the 2015 Overhead Signal Structure & Foundation Standard Drawings for Mast Arms Cored Pier Foundations.

The lower portions of all foundations shall be placed directly against undisturbed earth. No forms or reinforcing for foundations shall be set nor shall concrete be placed until the excavation has been inspected by the Engineer and his approval to proceed has been given.

The top of all post foundations in sidewalk areas shall be located flush with the finish grade of the sidewalk. The top of each mast arm foundation shall not be exposed in the sidewalk and shall be flush with the finish grade.

Mast Arm Sign Hanger Brackets

Sign hanger brackets for mast arms shall be used in all locations where a sign is to be mounted to the mast arm. Mast arm sign hanger brackets shall consist of a mast arm clamp assembly cast from 356-T6 aluminum alloy or equivalent, vertical support tube extruded from 6063 aluminum or equivalent, stainless steel bands, clamp screw, hardware, and all miscellaneous materials necessary to fix mount the sign to the mast arm.

The sign hanger bracket shall be universally adjustable capable of making horizontal, vertical, and 360 degree rotational adjustments so that any sign mounted on a mast arm can be adjusted to provide proper alignment and sight perpendicular to the flow of traffic.

Vertical support tubes shall be of sufficient length to allow mounting of the sign to within 3 inches of the top and bottom of the sign.

ITEMS 816.1 and 816.2 (Continued)

Labels

All time settings, switches, harnesses, relays, terminals, and fuses shall be clearly and permanently labeled.

Pedestrian Signal Heads

All pedestrian signal heads shall be mounted so that there is a minimum of 24 inches between any part of the housing or visor and the outer face of the curb. All pedestrian signal heads shall be aluminum.

Pedestrian signals shall be an approved single section 16 inch Light Emitting Diode (LED) type pedestrian signal head capable of displaying international symbols ("Hand/Person Walking" indications) as per the MUTCD with a countdown display.

Backplates

Backplates shall be aluminum with a non-louvered profile. Backplates shall have a 5 inch border width and a dull flat black color with a 3 inch yellow retroreflective border. Only backplates that are listed in the latest MassDOT "Qualified Traffic Control Equipment List" will be used on this project.

Posts and Bases

Traffic signal posts and bases shall be MassDOT standard octagonal bases. The posts and bases shall be steel with a powder coated black finish. Bases shall be provided with a door opening and a cast aluminum door complete with a cap screw fastening device and a tapped hole for a grounding lug.

Vehicle Signal Heads

All proposed vehicle signal heads shall be aluminum and powder coated black. When, in judgment of the Engineer, the visibility of existing or proposed signal faces will be obstructed by trees and other vegetation, the contractor shall clear the obstructions for proper sight distance. Any clearing necessary shall be done within the State, County, or Town layout, as directed by the Engineer.

LED Vehicle and Pedestrian Signal Modules

The LED module shall be an approved item from MassDOT’s Qualified Traffic Control Equipment List.

If the LED module conforms to the latest ITE performance specifications and is Energy Star compliant, it may be submitted for approval to be placed on the Qualified Traffic Control Equipment List.

ITEMS 816.1 and 816.2 (Continued)

To prevent the LED module warranty from being voided, the connecting leads on the module shall not be cut. The original LED module leads shall be connected to the signal head terminal block as continuous wire without splices.

The LED signal module will be replaced or repaired by the manufacturer if it exhibits one of the following:

A failure due to workmanship or material defects within the first 60 months of field operation.

A greater than 40 percent light output degradation or a fall below the minimum intensity levels (as defined by the latest ITE performance specifications) within the first 36 months of field operation.

Accessible Pedestrian Signals

The pedestrian accessible pushbutton shall provide valuable information and cues via both a vibrating arrow button and audible sounds making the intersection accessible for all pedestrians. Informational messages shall be utilized at all pedestrian pushbutton locations. The messages shall conform to the requirements of Section 4E of the MUTCD.

Pedestrian pushbutton controls shall be raised from or flush with their housings and shall be a minimum of 2 inches in the smallest direction. The force required to activate the controls shall be no greater than 5 pounds.

Pedestrian pushbuttons shall be located as close as practicable to the sidewalk curb ramp serving the controlled crossing and shall permit operation from a clear ground space. Pushbuttons shall be located according to the plans and in conformance with Fig 4E-4 of the 2009 MUTCD, with the arrow pointed parallel to the crosswalk being controlled. If two crosswalks, oriented in different directions, end at or near the same location, the positioning of pedestrian pushbuttons and/or legends on the pedestrian pushbutton signs shall clearly indicate which crosswalk signal is actuated by each pedestrian pushbutton. Typically, pushbuttons shall be separated by a minimum 10 foot distance per MUTCD Fig 4E-4. The 5”x8” standard sign (R10-3f) shall be integral to the pushbutton assembly.

Accessible Pedestrian Signals (APS) will be in accordance with the latest version of PROWAG, and MUTCD (2009 - paragraph 2 of Section 4E.11) to provide both audible AND vibrotactile walk indications.

ITEMS 816.1 and 816.2 (Continued)

All sounds shall emanate from the unit via a weather-proof speaker that is protected by a vandal resistant screen. The volume of the sounds shall be 5 dB above ambient background sounds to a maximum of 100 dB. The accessible pedestrian pushbutton shall provide the following operating functions:

- Audible Locator tone, tells the pedestrians that the intersection is equipped with accessible pedestrians pushbutton and where it is.
- Acknowledge tone, tells the pedestrians that they have places the call.
- Informational message, tells the pedestrians about the crossing.
- Walk Cycle message, tells the pedestrians when the Walk Sign is on. Each board has three walk cycle messages; Chirp, Cuckoo, or Custom message.
- Visual: A red LED is lit when the pedestrians has placed a call.
- Tactile: The directional vibro-tactile arrow becomes active with the Walk Sign.

The pedestrian push buttons shall provide a pushbutton information spoken message for pushbuttons spaced less than 10' apart per MUTCD Section 4E.11. The speech walk messages that are used for the pedestrian phasing at the concurrent locations shall state the following per respective roadway:

- Location 4 - Route 140 (Commercial Street) and Route 106 (Chauncy Street)
  - For channelized Route 106 (Chauncy Street) westbound right turn lane
    - "Chauncy Right Turn. Walk sign is on to cross Chauncy right turn.
  - For Chauncy Street
    - "Chauncy Street. Walk sign is on to cross Chauncy Street."
- Location 4A - Route 106 (Chauncy Street) and Copeland Drive
  - For channelized Copeland Drive southbound right turn lane
    - "Copeland Right Turn. Walk sign is on to cross Copeland right turn."
  - For Copeland Drive
    - "Copeland Drive. Walk sign is on to cross Copeland Drive."
  - For Chauncy Street
    - "Chauncy Street. Walk sign is on to cross Chauncy Street."

The accessible pedestrian pushbutton shall be installed at a maximum of 42 inches above the finished sidewalk elevation, the pushbutton shall be raised from or flush with their housings and shall be a minimum of 2 inches in the smallest direction. The force required to activate the controls shall be no greater than 5 pounds.

ITEMS 816.1 and 816.2 (Continued)

Wiring and Service Connections

Traffic signal cable shall be of Type 2, #14 AWG stranded, 10-conductor minimum meeting the requirements of IMSA Specification 20-1, except for mast arm and /or span wire traffic signal cable, which shall be Type 2, #14 AWG stranded, 5-conductor minimum meeting the requirements of IMSA Specification 19-1. All systems shall have a minimum of one (1) 10-conductor cable for each vehicle phase, overlap phase, and pedestrian phase for controller outputs to field wiring required by the timing and sequence plan. A minimum of a five (5) spare conductors shall be provided in the base of each signal post and mast arm. Openings, where cables enter the base of a cabinet, shall be sealed with an approved elastic sealing compound. The open ends of conduits entering or leaving mast arms, posts, and pull boxes shall also be sealed with the approved elastic sealing compound.

The work for service connections shall consist of furnishing and installing all materials and equipment to deliver power to the traffic signals and related electrical systems.

A new service connection is to be provided at the intersection as shown on the plans and the location is approximate only. The Contractor shall coordinate with the servicing utility to determine exact location, arrange to complete the service connection, and be responsible for all charges incidental thereto. A 3-inch diameter, non-metallic conduit shall be used for each service connection.

Optical Emergency Preemption System

The work consists of furnishing and installing optical traffic signal preemption systems ready for operation, as described herein and shown on the plans. Included in the work is the furnishing and installing of traffic signal preemption unit and related equipment, optical detection equipment and all necessary connections to the traffic signal controller. The emergency preemption system equipment shall be included in the latest version of the MassDOT Qualified Traffic Control Equipment List, and shall be compatible with the Town of Medfield's existing emergency preemption system.

The emergency preemption system shall consist of a data-encoded phase selector to be installed within the existing control cabinet. This unit will serve to validate, identify, classify, and record the signal from the optical detectors located on support structures at the intersection. Upon receiving a valid signal from the detector, the phase selector shall generate a preempt call to the controller initiating a preemption operation as shown on the plans.

The phase selector shall be a rack-mounted plug-in two-channel, dual-priority device. The phase selector shall plug into a shelf-mounted single card slot chassis. Programming the phase selector shall be via a PC-based computer utilizing unit specific software. One copy of software on a disk shall be supplied and licensed to the Town as part of this contract. A hard copy of final programming data shall be left in the control cabinet. The Contractor shall supply a complete set of interface cables for phase selector to laptop connection.

ITEMS 816.1 and 816.2 (Continued)

Emergency vehicles equipped with optical energy emitters transmit optical energy impulses to optical detectors mounted at the intersection. When optical energy impulses are received at the intersection, control of the signals shall transfer from the local controller to show a selected display shown on the plans to assist the vehicle through the intersection without conflict. After the vehicle has passed through the intersection, control of the signals shall then return to the local controller which shall restore the appropriate timings that were in effect prior to preemption.

1. General Operation and Description of Work

The following description of work specifies the responsibilities involved in the installation of optical preemption equipment.

The Contractor is required to supply material and labor (required or shown) for the complete installation of optical preemption equipment at the specified location in this project. Intersection preemption equipment required includes optical detectors, phase selectors, card rack, preemption indicator lights, cable, interfacing of preemption equipment to the local controller, making electrical connections, and all required incidentals.

The following are the operational requirements of the optical preemption system:

- Operating sequence, as specified, shall be initiated when detector receives optical energy of the required repetition rate from an emitter.
- Detector shall transform the optical energy signals into electrical signals and transmit the electrical signal to the phase selector for processing.
- Phase selector shall cause the local controller to show a selected display identical to one of the color interval displays normally available in the controller which will assist the emergency vehicles through the intersection without conflict.
- Phase selector shall allow the controller to release from hold and resume normal operation after optical energy signals are lost provided the desired green display has already been obtained.

Detector cable for optical preemption equipment shall meet specifications of the system manufacturer.

2. Installation

The preemption equipment manufacturer shall be responsible for preemption system design and documentation.

Preemption System Design and documentation shall include the following:

ITEMS 816.1 and 816.2 (Continued)

- Provide the installing agency with locations for detector installation. Suggested detector locations are shown on the plans and may be changed to improve the operation. Notice shall be given to the Engineer prior to any change.
- Provide the controller manufacturer, Engineer, and owner with electrical diagrams.

The installer shall install the equipment consistent with the preemption equipment manufacturer's recommended installation procedures and electrical diagrams in a neat and workmanlike manner.

The preemption equipment manufacturer shall be responsible for operational checkout of the specified preemption functions prior to final acceptance and approval by the Town of Mansfield.

Operating checkout includes the following:

- Verifying that the preemption system is properly installed as per the preemption manufacturer's recommendations and the electrical diagrams as provided by the preemption equipment manufacturer.

- Verifying that the priority system timing and range are properly set. Preemption equipment warranties are put into effect.

- Instructing the vehicle drivers or their representative(s) in the operation of the preemption system.

3. Warranty

All components of the preemption system specified herein shall be warranted by the manufacturer to be free of defects in materials and workmanship for a period of two years from the date of delivery or one year from the date of installation, whichever occurs first.

The Contractor shall repair or replace, free of charge to the Town of Mansfield, any part that fails in any manner during the warranty period, and six months after final acceptance of the project by the Owner.

Preemption Indicator Light

Two preemption indicator lights shall be provided and mounted as shown on the plans. They shall be located in a position where they may be visible from all preemption approaches to each intersection. The light shall be weather tight and consist of a clear (white) strobe which shall be illuminated whenever the controller is in the emergency preemption phase. A separate cable is required for the indicator light; the spare signal cable shall not be used. The indicator light shall meet ITE, NEMA, IMSA, and MassDOT standards.

ITEMS 816.1 and 816.2 (Continued)

Fine Tuning, Testing and Adjustment Period

After the Contractor has finished installing the controller and all other associated signal equipment to operate as specified in the contract documents, the fine tuning, adjusting and testing period shall begin. During this period, the Contractor, under the direction of the Engineer, will make necessary adjustments and tests to insure safe and efficient operation of the equipment. No request for final acceptance will be considered until successful completion of the testing period.

Guarantee After Final Acceptance

The Contractor shall diagnose (trouble-shoot) the system and, at his own expenses replace any part of the traffic signal control equipment found to be defective in workmanship, material or manner of functioning within six months from date of final acceptance of all the installations under this Contract. This requirement does not affect the one-year warranty period on equipment specified in Subsection 815.20 of the Standard Specifications.

Upon the date of acceptance of the project by the MassDOT, the Contractor shall turn over all guarantees and warranties to the Engineer, where applicable.

Existing Traffic Signal Equipment Removed and Stacked

All existing traffic signal equipment shall be removed and stacked. Equipment to be removed and stacked shall include but not limited to: traffic signal heads, posts, bases, traffic signal controllers, cabinets, any and all hangers or brackets, and any other materials as determined by MassDOT.

All Traffic Signal Equipment shall be removed and stacked by the Contractor and transported by the Contractor to a location designated by MassDOT.

Record Traffic Signal Layout Plans

It is the responsibility of the Contractor to provide electronic Record traffic signal layout plans indicating all changes made during construction. The plans shall indicate the location of traffic signal equipment retained, removed and reset, and installed, including detectors, signal posts, mast arms and/or strain poles, pedestrian and vehicular signal heads, controller cabinets, conduit, pull boxes and service connections. The plans shall also indicate the final field timing and sequence, major items list, power-pole number, and meter number. Electronic Record plans shall be provided in accordance with MassDOT signal inventory standards, including electronic picture files, one for each approach to the signal. The Contractor shall negotiate a fee with the Designer for the preparation and submission of Record plans of the traffic signal layout to the MassDOT prior to the final acceptance of the project. The Contractor shall negotiate a fee with the Designer for the preparation and submission of Record plans of the traffic signal layout to the City prior to the final acceptance of the project.

ITEMS 816.1 and 816.2 (Continued)

Miscellaneous Requirements

The actuated controller shall have capability to preempt to a preselected phase by external command. Because this is often overlooked, the Contractor's attention is drawn to the requirements of Section 813.60C, Splicing, relative to four optional methods of splicing in signal bases, Section 813.40C, Ground Electrodes, relative to Requirement 1 - Connection to a Water Piping System, and Section 813.61, Equipment Grounding.

All anchor bolts and bolts for holding hand hole and access covers shall be greased at the time of installation.

All proposed conduit shall be 3 inch Type NM, plastic conduit unless otherwise specified. 3 inch conduit shall be paid for under either Item 804.3 or Item 804.32 and shall not be included in the lump sum bid price for Item 816.1 and Item 816.2.

The Contractor shall make all necessary arrangements with the electric company for the service connections or for any main power cut off when necessary, and bear all charges incurred thereby.

The Contractor shall notify the MassDOT of the starting date of the fine tuning period and shall have MassDOT present for an inspection of the traffic signal.

BASIS OF PAYMENT

The lump sum price bid for Item 816.1 and 816.2 shall constitute full compensation for all labor, materials, and equipment necessary or incidental to the installation of a complete intersection traffic control signal system functioning as specified and as shown, including excavation and backfill, foundation, pullboxes and handholes, adjustment of existing traffic signals during construction, removal and stacking of existing equipment, service connections and all charges therefore, except for the 3 inch electrical conduit, Type NM Plastic (UL), which will be paid for under Item 804.3, 3 inch electrical conduit, Type NM Plastic (UL) – Double, which will be paid for under Item 804.32, the 12”x12” pull boxes and 24”x24” handholes which will be paid for under Items 811.31 and 811.23, respectively. Luminaires and associated wiring shall be provided under Item 823.711.

The lump sum price shall also include the removal and stacking of any temporary traffic signals and supports that may exist at these intersections.

ITEM 816.5 TRAFFIC SIGNAL SYSTEM ADJUSTMENT LUMP SUM

This item shall consist of modifying the existing traffic controller timings only to provide the revised operation as shown on the plans or as directed by the Engineer. The modification shall include revisions to the clearance interval and signal coordination timing only for the following locations:

- Location 1 – Route 140 (Commercial Street) and School Street
- Location 2 – Route 140 (Commercial Street) and Norfolk Street
- Location 3 – Route 140 (Commercial Street) and West Street
- Location 5 – Route 140 (Commercial Street) and Forbes Boulevard
- Location 6 - Route 140 (Commercial Street) and Fisher Street

BASIS OF PAYMENT

This item will be paid for as a lump sum, which price shall include all necessary equipment and labor required to modify the existing timing in the controllers as shown on the plan.

ITEM 823.711 COBRAHEAD LUMINAIRE EACH

The work under this item shall conform to the relevant provisions of Section 800 and the following:

DESCRIPTION

The work under this Item shall consist of providing and powering a cobrahead style luminaire. The work also includes but is not limited to the photoelectric switch, splicing, furnishing luminaire, mounting, wiring and power connection from the traffic control cabinet.

Materials

Luminaire shall have lumen output and distribution as indicated on the contract drawings (Utility Plans) and shall conform to the following specifications:

Luminaire shall be:

- Cree Traveyo Series catalog number TRVLG-A-HT-3ME-13L-30K7-UL-GY-N-FAO-Q9-H with Backlight Control Shield (TRV-BLSL).
- GE Current Evolve Luminaire catalog number ERL2-0-16-C5-30-E-GRAY-F-L-R-V1-Y- ELSHS
- Cooper Lighting Streetworks ARCH-M-PA2-110-730-U- T3-AP-10K-HSS-LLPC-FADC-CC- PR7
- Signify Road Focus Medium Luminaire catalog number RPM-90W80LED-730-G1-R3M-UNV- DMG-HHS-TLRD7-PHXL-FAWS-GY3

Or equivalent.

All materials and construction procedures shall conform to the specifications contained herein, and as shown on the contract drawings or as required by the Engineer.

The complete luminaire shall conform to and meet all the current requirements of the National Electrical Manufacturers Association; American Standards Association; The Illuminating Engineering Society of North America; and the National Electric Code, wherever such standards shall apply, and in addition, the following specification shall apply.

Each luminaire shall be supplied with a 7-pin photocell receptacle. Photocell receptacles shall be fully pre-wired and shall incorporate an ANSI C136.41 compliant receptacle. The 0-10V shall be connected from the dimmable LED driver to the receptacle pads as specified in ANSI C136.41. Each photocell receptacle shall be supplied with a twist lock photocell installed in the receptacle.

Luminaire manufacturer must have been manufacturing luminaires for a minimum of 5 years.

Luminaire shall include field adjustable dimming module factory set to full power.

The luminaire shall be UL listed for wet locations, Ingress protection rating of IP66 conforming to ANSI C136.25. The fixture shall consist of an internal LED driver with heatsinks specifically designed for LED applications, a rugged aluminum housing, and a leaf/debris guard.

ITEM 823.711 (Continued)

General Description

Fixture housing is all aluminum construction. Standard fixture utilizes terminal block for power input suitable for #2–#14 AWG wire.Fixture is designed to mount on 2" IP (2.375" O.D.) horizontal tenon and is adjustable +/- 5º to allow for fixture leveling (includes leveling bubble to aid in this process).

Luminaire shall have 40 LEDs +/-20.

Electrical

Modular design accommodates varied lighting output from high power, cool white, 4000K CCT (+/- 500K per full fixture), minimum 70 CRI, long life LED sources. 120-277V 60 Hz, Class 1, 0-10 volt dimming LED driver. LED drivers have power factor >90% and THD <20% at full load. Units shall be provided with integral 10kV surge suppression protection. Surge protection tested in accordance with ANSI standard C136.2-2015. Quick disconnect harness suitable for mate and break under load provided on power feed to driver for ease of maintenance.

Finish

Finish features a finish with a silver powder topcoat, providing resistance to corrosion, ultraviolet degradation and abrasion. The finish is covered by a 10-year limited warranty. Finish shall be endurance tested to withstand 5,000 hours of elevated ambient salt fog conditions as defined in ASTM Standard B 117.

Testing & Compliance

UL listed for wet locations. RoHS compliant. Meets CALTrans 611 Vibration Testing and 3G vibration rating conforming to ANSI C136.31. International Dark-Sky Association listed.

Luminaire shall be labeled to ANSI 136.15.

Optical assembly shall produce an asymmetric forward – Type 3 distribution.

Output: 13,000-Lumens +/- 7% (including house-side shield)
Minimum Luminaire Efficacy: 127 Lumens per Watt (including house-side shield) Average rated Life: >60,000 to 90% of initial output at 25° C (77°F) per IES TM-21.

DLC Listed - Luminaire shall be listed on the qualified product list of the Design Lights Consortium to the latest DLC technical requirements version for outdoor luminaires (with limited exceptions for shielded luminaires).

ITEM 823.711 (Continued)

Warrantee

Provide a minimum five-year warranty covering maintained integrity and functionality of Luminaire housing, LED driver(s), wiring, and connections and LED light source(s). Negligible light output from more than 10 percent of the LED packages constitutes luminaire failure. Warranty period shall begin 90 days after date of invoice, or as negotiated by owner such as in the case of an auditable asset management system.

CONSTRUCTION METHODS

Contractor shall install luminaire level and per manufactures instruction. Contractor shall provide a 20 Amp single pole circuit breaker in traffic cabinet and wire to the cabinet's incoming electrical service power after the service main circuit breaker. Contractor shall install a 120 Volt, 1-phase light power circuit consisting of (2) #12 THWN wires plus #12 THWN ground wire from the traffic cabinet to the luminaires in the plan location, the circuit wiring shall be installed within the 3" conduit for the traffic signal wire.

Upon completion of the installation, an operating test shall be conducted, in the presence of the Engineer, to demonstrate that the roadway lighting systems and associated equipment operate in accordance with the requirements of this Section.

METHOD OF MEASUREMENT

Item 823.711 shall be measured per each cobrahead luminaire installed and accepted by the Engineer.

BASIS OF PAYMENT

Payment for Item 823.711 shall be per the unit price bid for each cobrahead luminaire installed which price shall constitute full compensation for all labor, luminaire, wire, circuit breaker, tools, testing, and equipment necessary to complete the work herein specified. The work shall also include a photometric design, if required by the Engineer, at no additional cost.

ITEM 829.06 ROADSIDE SIGN AND SUPPORT (D6/D8) REMOVED AND DISCARDED EACH

The work under this Item shall include removal and disposal of all existing ground mounted and sign supports including foundations, associated excavations, the supplying and placing of compacted gravel, loam borrow and seeding (where required), and the restoration to original condition of any natural features disturbed in any way or manner by the operation.

The existing sign panels, hardware, and supports that are removed shall become the property of the Contractor and shall be properly disposed of off the project site. Work shall also include the excavation (including Class "B" rock) of any existing foundations to be removed to a minimum removal depth of 3' below roadway finish grade or 1' below finish grade in an area outside of the roadway if foundations do not conflict with the proposed work.

The quantity of existing ground mounted sign and support to be removed and discarded shall be measured by EACH sign and support installation actually removed and discarded. Two signs mounted on one post shall be considered one unit.

Payment for each ground mounted sign and support to be removed and discarded at the locations shown on the plan or as directed by the Engineer will be made at the Contract Unit Price per EACH complete installation removed. Payment shall include all removals and disposals regardless of the number of existing sign panels and supports to be removed and discarded at each installation.

The Contract Price shall constitute full compensation for furnishing and installing all materials, labor, equipment tools, appurtenances, and incidentals necessary to satisfactorily complete these items of work, complete, in place and accepted.

No separate payments will be made for all excavation including class "B" rock excavation, gravel backfill, compaction and restoration work but all costs in connection therewith shall be included in the price bid.

ITEM 831.11 ROADSIDE GUIDE SIGN (MA-D1-XX) - ALUMINUM PANEL (TYPE A) SQUARE FOOT

Work under this Item shall be in accordance with the relevant provisions of Subsection 828 of the Standard Specifications and the following:

Work under this Item shall consist of fabricating and installing new 0.250 inch thick Type A (sheet) aluminum signs as indicated on the plans or as directed by the Engineer. Signs shall be installed on new support posts.

METHOD OF MEASUREMENT

The quantity of Roadside Guide Sign (MA-D1-XX) – Aluminum Panel Type A will be measured by the actual square foot of guide sign panel installed, complete in place.

BASIS OF PAYMENT

Item 831.11 will be paid for at the Contract unit bid price per square foot, which price shall include all labor, materials, equipment, and all incidental costs required to complete the work. Item 831.11 includes providing new brackets and other hardware required to install signs onto new sign supports.

New sign supports shall be paid for under Item 841.11.

ITEM 841.11 SUPPORT FOR GUIDE SIGN (MA-D1-XX) - 5 INCH TUBULAR - STEEL EACH

Work under this Item shall be in accordance with the relevant provisions of Subsection 840 of the Standard Specifications and the following:

Work under this Item shall consist of fabricating and installing new 5 inch tubular sign supports with breakaway slip bases in 4000 PSI concrete foundations as indicated on the plans or as directed by the Engineer.

METHOD OF MEASUREMENT

The quantity of Support For Guide Sign (MA-D1-XX) 5 Inch Tubular – Steel will be measured by each support post installed, complete in place.

BASIS OF PAYMENT

Item 841.11 will be paid for at the Contract unit bid price per Each, which price shall include all labor, materials, equipment, and all incidental costs required to complete the work.

New sign panels shall be paid for under Item 831.11.

ITEM 852.11 TEMPORARY PEDESTRIAN BARRICADE FOOT
ITEM 852.12 TEMPORARY PEDESTRIAN CURB RAMP EACH

DESCRIPTION

Work under these items consist of furnishing, deploying, maintaining in proper operating conditions, and removing temporary pedestrian barricades and temporary pedestrian ramps as part of a Temporary Pedestrian Access Route (TPAR) in order to guide pedestrians around a fully or partially closed sidewalk. These devices are intended to prevent pedestrians from entering the work area and to prevent pedestrians from inadvertently entering the vehicle travel lane by providing visual and physical separation between each space.

MATERIALS

The Temporary Pedestrian Barricade shall have a continuous bottom rail or edge no more than two (2) inches above the ground and six (6) inches in height (minimum) to accommodate cane users, have a smooth and continuous hand railing along the top edge no less than 32 inches above the ground and not obstruct or project into the pedestrian path of travel. Barricade walls shall be nearly vertical and generally within the same plane.

If exposed to traffic, Temporary Pedestrian Barricades shall be crashworthy.

The Temporary Pedestrian Curb Ramp shall provide a 60 inch minimum width, with a firm, stable, and non-slip surface. Protective edging with a two (2) inch minimum height shall be installed when the curb ramp or landing platform has a vertical drop of six (6) inches or greater.

The Temporary Pedestrian Curb Ramp walkway and landing area surface shall be of a solid, continuous, contrasting color abutting up to the existing sidewalk.

If a Temporary Pedestrian Curb Ramp leads to a crosswalk, a detectable warning pad must be used at the base of the ramp; if it leads to a protected path that does not conflict with vehicular traffic then a detectable pad shall not be used.

CONSTRUCTION METHODS

The Temporary Pedestrian Barricade shall be placed in an area that will provide pedestrians with a TPAR on a smooth, continuous hard surface for its entirety. The geometry and alignment of the facility shall meet the applicable requirements of the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities" and the Massachusetts Architectural Access Board.

The recommended width of the TPAR is 60 inches, but if constraints exist a minimum clear width of 48 inches shall be provided along its entirety. If a 60 inch width cannot be accommodated in full, a 60 inch by 60 inch passing space shall be provided every 200 feet or less along the TPAR.

Turning areas shall be 60 inches by 60 inches minimum.

ITEM 852.11and 852.12 (Continued

Lateral joints between any surfaces shall not exceed 0.5 inches. Lateral edges may be vertical up to 0.25 inches high and shall be beveled at 1V:2H between 0.25 inches and 0.5 inches.

The TPAR shall be kept clear of debris, snow, and ice and the Temporary Pedestrian Barricades and Temporary Pedestrian Curb Ramps shall not obstruct drainage.

Removal and/or resetting of Temporary Pedestrian Barricades and Temporary Pedestrian Curb Ramps shall be considered incidental.

COMPENSATION

Payment for Temporary Pedestrian Barricades will be made at the contract price per linear foot installed in place, including all incidental items. This price shall include the cost of furnishing, installing, resetting, removal, and maintaining in good working condition.

Payment for Temporary Pedestrian Curb Ramps will be made at the contract price per each unit installed in place, including all incidental items. This price shall include the cost of furnishing, installing, resetting, removal, and maintaining in good working condition.

ITEM 864.33 SLOTTED PAVEMENT MARKER TWO-WAY WHITE/RED EACH

The work to be done under this item shall consist of furnishing and installing two-way white/red reflectorized pavement markers (slotted in pavement) in accordance with the relevant provisions of Traffic Standard Drawing TR.6.5 "Typical Pavement Markings for Conventional Roadways", and the following:

- Two-way white/red markers shall be installed along solid lines at 40-foot intervals. (Typical locations shown per the Const. and Traffic Standard Dwg, TR.6.5.)
- Two-way white/red markers shall be installed along the broken white lane lines at the midway point between successive skip lines at 80-foot intervals. (Typical locations shown per the Const. and Traffic Standard Dwg, TR.6.3.)

CONSTRUCTION METHODS

The work shall include cutting the tapered pavement slot to the dimensions shown on the Construction Detail issued with Engineering Directive E-05-003, application of the manufacturer's recommended epoxy adhesive, and placing the reflectorized pavement marker in the proper position within the slot so that the reflective face is visible and perpendicular to oncoming traffic and so that the top of the marker is set 1/8± inch below the top of the adjacent pavement.

Surface preparation and installation shall be strictly in accordance with the manufacturer's instructions.

MATERIALS

Reflectorized pavement markings shall be an approved manufacturer and product listed on MassDOT's "Qualified Traffic Control Equipment List".

METHOD OF MEASUREMENT

The number of two-way white/red reflectorized pavement markers (slotted in pavement), completely furnished and installed, shall be measured by the Unit Each as a complete installation.

BASIS OF PAYMENT

The Contract Unit Price for each two-way white/red reflectorized pavement markers (slotted in pavement) shall include cutting the tapered pavement slot, furnishing and installation of the reflectorized markers, including all necessary materials, labor, incidentals, and equipment.

ITEM 864.41 GREEN COLORIZED PAVEMENT MARKINGS SQUARE FOOT

DESCRIPTION

Work under this item consists of furnishing and installing Colorized Pavement Markings at the locations shown on the plans or as directed by the Engineer. All work shall conform to Subsection 860 and the following.

MATERIALS

Colorized Pavement Markings are composed of Epoxy, Methyl Methacrylate (MMA), or Preformed Thermoplastic Materials.

The initial daytime chromaticity coordinates for green colorized pavement shall fall within the area created by the following coordinates:

Initial Daytime Chromaticity Coordinates (Corner Points) for Green Colorized Pavement Markings				
	1	2	3	4
x	0.230	0.266	0.367	0.444
y	0.754	0.460	0.480	0.583

The surface of the Colorized Pavement Markings shall provide a minimum skid resistance value of 55 British Pendulum Number (BPN) when tested in accordance with ASTM E303.

The Contractor shall provide a Certificate of Compliance verifying the product supplied meets the specified daytime chromaticity requirements and friction requirements prior to installation.

CONSTRUCTION METHODS

The Contractor shall supply Shop Drawings to the Engineer for approval a minimum of 30 days in advance of installation. Shop Drawings shall include the product manufacturer's instructions, material safety data sheets (MSDS) for all components including any primers and sealers, and all tools, equipment, and procedures to be used for the installation. No work shall commence until the Shop Drawings have been approved.

It shall be the responsibility of the Contractor to prepare the surface prior to the installation of any Colorized Pavement Markings. Any joints or cracks in the pavement shall be pre-treated per the manufacturer's recommendation. The surface shall be clean and dry prior to installation of the system. If additional surface preparation is recommended by the manufacturer, such as the installation of a primer or preheating, it shall be completed per the manufacturer's specifications. All surface preparation shall be considered incidental to the cost of the item.

Any existing pavement markings that conflict with the Colorized Pavement Markings shall be removed by the Contractor in advance of installation; installation of colorized pavement over pavement markings shall not be allowed. All existing pavement markings that are to remain, castings, curbs, and rumble strips within the vicinity of the colorized pavement application shall be covered and protected by the Contractor. Existing pavement markings damaged by the Colorized Pavement Markings installation shall be removed and replaced by the Contractor at no additional cost.

ITEM 864.41 (Continued)

The Contractor shall follow all installation instructions from the manufacturer, including allowable ranges of temperature and humidity for installation, unless otherwise approved by the Engineer.

Upon completion of installation, a sealer shall be applied if recommended by the manufacturer. The sealer shall be installed per the manufacturer's specification. The application of a sealer shall be considered incidental to the cost of the item.

The Contractor shall maintain protection of the Colorized Pavement Markings installation from vehicle and foot traffic throughout the minimum cure time recommended by the manufacturer.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Colorized Pavement Markings will be measured by the SQUARE FOOT, complete in place.

Colorized Pavement Markings will be paid for at the respective contract unit price per SQUARE FOOT. The contract prices shall include all material, labor, and equipment required or incidental to the satisfactory completion of the work.

ITEM 874.52 MISCELLANEOUS SIGNS REMOVED AND DISCARDED EACH

The work under this item shall conform to the relevant provision of Subsection 800 of the Standard Specifications and the following:

The work shall include removal and disposal of the existing sign panels as shown on the plans, sign supports, foundations, and restoration to original condition, of any natural features disturbed in any way or manner by the operation.

The existing foundations shall be excavated (including Class "B" Rock) to a depth of 3' below roadway finish grade or 1' below finish grade in an area outside of the roadway if foundations do not conflict with the proposed work, and the resulting hole shall be filled with compacted gravel. The existing signs shall not be removed until the new signs and structures replacing them are ready for traffic or until the Engineer shall permit.

The existing sign panels, hardware, and supports that are removed shall become the property of the Contractor and shall be properly disposed of, off the project site.

METHOD OF MEASUREMENT

Item 874.52 will be measured for payment by the Each miscellaneous sign removed and discarded.

BASIS OF PAYMENT

Miscellaneous signs removed and discarded will be paid for at the Contract unit price per each, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

No separate payments will be made for any excavation, including Class "B" Rock Excavation, gravel backfill, compaction, and restoration of any natural features. All costs for excavation, backfill, compaction, restoration, and any incidental work shall be included in the bid price.

ITEM 874.7 MISCELLANEOUS SIGNS REMOVED AND STACKED EACH

The work under this item shall conform to the relevant provision of Subsection 800 of the Standard Specifications and the following:

Work under this item includes removing and stacking signs as designated on the plans. The work will also include the restoration to original condition, of any natural features disturbed in any way or manner by the operation.

The Contractor shall exercise particular care in the dismantling, removal, transporting, and resetting of the existing signs designated on the plans to be reset or stacked. Any sign panel damaged through carelessness or lack of protection by the Contractor shall be replaced at the Contractor's expense.

The existing signs shall not be removed until the new signs and structures replacing them are ready for installation or until the Engineer shall permit.

Existing foundations shall be excavated (including Class "B" Rock) to a depth of at least twelve inches below grade and the resulting hole shall be backfilled with compacted gravel and the surface restored to match existing conditions of adjacent areas.

Signs to be removed and stacked shall be stacked on site and the Contractor shall coordinate with the Town of Mansfield to schedule pick-up time and location or shall become the property of the Contractor to dispose of properly.

METHOD OF MEASUREMENT

Item 874.7 will be measured for payment by the Each miscellaneous sign removed and stacked, complete in place.

BASIS OF PAYMENT

Payment for removing and stacking signs shall be per each under Item 874.7 for all signs removed and stacked within the project, which price shall provide full compensation for dismantling, loading, transporting and stacking of signs; the excavating and disposal of the existing supports and foundations, of the same; the supplying and placing of compacted gravel backfill where foundations and posts are removed; and surface restoration.

No separate payments will be made for any excavation, including Class "B" Rock Excavation, gravel backfill, compaction, and surface restoration. All costs for excavation, backfill, compaction, restoration, and any incidental work shall be included in the bid price.

ITEM 991.1 CONTROL OF WATER – STRUCTURE NO. CULVERT LUMP SUM

Work under this Item shall conform to the relevant provisions of Subsections 7.02 and 140 of the Standard Specifications, all applicable environmental regulations and permits, and the following:

Prior to removing and replacing the existing concrete masonry pipe end and associated culverts with new concrete masonry pipe end and culverts at STA. 29+75, the Contractor will submit plans to the Engineer for approval. These plans shall depict the proposed materials, means and methods of controlling flow and water within the work area. This may include cofferdams, flow diversion, and dewatering systems. These plans shall be in conformance with the environmental permits obtained for this project, contract Plans, and these specifications. The materials and methods not specifically mentioned under this Item shall comply with the Standard Specifications where applicable.

All construction must be performed in the dry. Construction shall be facilitated via bypass pumping or diversion of the flow in the intermittent streams in order to perform construction in the dry. The Contractor shall provide and maintain pumps, pipes and other devices to promptly and continually remove and dispose of water from the work area. The size and configuration of pumps and pipes shall be selected by the Contractor. The Contractor is cautioned that flow rates in the intermittent streams and through the culverts can increase substantially during and after storm events. The water control operations shall include contingencies for accommodating the increased flow during such events.

BASIS OF PAYMENT

Payment for work under this Item shall be paid at the contract unit bid price lump sum. Payment for all water control work shall include all labor, tools and equipment, materials and installation, piping, pumping, maintenance, subsequent removal of all related materials and equipment all as outlined above and shall be included in the lump sum contract price bid under this Item.

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DETAIL SHEETS

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ESTIMATE OF QUANTITIES – DETAIL SHEETS

TOWN/CITY: MANSFIELD YEAR: 2025
STA.: 20+93.80 TO 38+85.12 ROAD: CHAUNCY STREET (ROUTE 106)

Unclassified Excavation	3,500 CY	Gravel Borrow for sidewalks	517 CY
Class A Trench Excavation	20 CY	Gravel Borrow for driveways	213 CY
Test Pit For Exploration	200 CY	Gravel Borrow for PCRs	96 CY
Class B Trench Excavation	350 CY	Gravel Borrow for brick buffer	161 CY
Class B Rock Excavation.	40 CY	Loam Borrow	200 CY
Gravel Borrow for Subbase	757 CY	Loamy Sand Borrow	100 CY
Gravel Borrow for Backfilling		Wood Chip Mulch	25 CY
Structures and Pipes	260 CY	Pavement Fine Milling	19,500 SY

PROPOSED FULL DEPTH CONSTRUCTION AND BOX WIDENING > 4' **Area = 22,139 SF**

SURFACE COURSE:	1-3/4" Superpave Surface Course 12.5 (SSC-12.5) over Asphalt Emulsion for Tack Coat over
INTERMEDIATE COURSE:	1-3/4" Superpave Intermediate Course 12.5 (SIC-12.5) over Asphalt Emulsion for Tack Coat Over
BASE COURSE:	4" Superpave Base Course 25.0 (SBC-25.0) over
SUB-BASE:	4" Dense Graded Crushed Stone for Sub-Base over 8" Gravel Borrow, Type b

PROPOSED FULL DEPTH CONSTRUCTION ≤ 4' WIDE **Area = 4,524 SF**

SURFACE COURSE:	1-3/4" Superpave Surface Course 12.5 (SSC-12.5) over Asphalt Emulsion for Tack Coat over
INTERMEDIATE COURSE:	1-3/4" Superpave Intermediate Course 12.5 (SIC-12.5) over Asphalt Emulsion for Tack Coat over
BASE COURSE:	6" HES Cement Concrete Base Course over
SUB BASE:	8" Gravel Borrow, Type b

PROPOSED PAVEMENT MILLING AND OVERLAY **Area = 143,695 SF**

SURFACE COURSE:	1-3/4" Superpave Surface Course 12.5 (SSC-12.5) over Asphalt Emulsion for Tack Coat over
PAVEMENT MILLING:	1-3/4" Fine Micromilling
LEVELING COURSE:	Superpave Leveling Course 12.5 (SLC-12.5) Compacted 1-1/2" Max. Layers

CEMENT CONCRETE SIDEWALKS, SHARED USE PATHS, ISLANDS AND PEDESTRIAN CURB RAMPS **Area = 21,605 SF**

SURFACE:	4" Cement Concrete Walk Surface 4000 psi, 3/4", 610 over
FOUNDATION:	8" Gravel Borrow, Type b

HMA DRIVEWAYS **Area = 4,640 SF**

SURFACE	1-1/2" Superpave Surface Course 9.5 (SSC-9.5) over
COURSE:	2-1/2" Superpave Intermediate Course 12.5 (SIC-12.5) over
BASE COURSE:	8" Gravel Borrow, Type b

LIST OF BID ITEMS

ITEM 102.511 TREE PROTECTION – ARMORING & PRUNING

LOCATION	STA.	LT/RT
CHAUNCY ST	33+02	LT
	33+68	LT
	34+01	LT
	34+16	LT
	34+47	LT
	34+71	LT
	35+40	LT
COPELAND DR	73+48	LT

And as required by the Engineer.

ITEM 102.52 TREE AND PLANT PROTECTION FENCE

LOCATION	STA.	LT/RT
COPELAND DR	70+30	LT

ITEM 146. DRAINAGE STRUCTURE REMOVED

LOCATION	STRUC. NO.	STA.	LT/RT
CHAUNCY ST	EX-CB-22-1	22+48	LT
CHAUNCY ST	EX-DMH-23	23+16	LT
CHAUNCY ST	EX-CB-23-2	23+15	LT
CHAUNCY ST	EX-CB-26	26+42	RT
CHAUNCY ST	EX-CB-27	27+10	RT
CHAUNCY ST	EX-CB	29+52	RT
CHAUNCY ST	EX-CB	29+50	LT
CHAUNCY ST	EX-CB-31	30+10	LT
CHAUNCY ST	EX-CB-30	30+22	RT
CHAUNCY ST	EX-DMH	30+00	RT
CHAUNCY ST	EX-DMH-32	31+00	RT
CHAUNCY ST	EX-CB-33	31+73	RT
CHAUNCY ST	EX-CB-34	32+48	LT
CHAUNCY ST	EX-CB	32+66	LT
CHAUNCY ST	EX-CB	32+91	LT
CHAUNCY ST	EX-CB	36+01	LT
CHAUNCY ST	EX-CB-37	36+50	RT

ITEM 156. CRUSHED STONE

To be placed under all drainage structures, except leaching basins, with a thickness of 6 inches. To be placed around all leaching basins as shown on the plans.

ITEM 170. FINE GRADING AND COMPACTING – SUBGRADE AREA

To be performed at all areas of full depth roadway construction, box widening, sidewalk and walkway construction, driveway construction, pedestrian curb ramp construction and hardscape construction at islands and SUP buffer.

ITEM 181.11 DISPOSAL OF UNGREGULATED SOIL

80% of excavation for disposal.

ITEM 181.12 DISPOSAL OF REGULATED SOIL – IN-STATE FACILITY

10% of excavation for disposal.

ITEM 181.13 DISPOSAL OF REGULATED SOIL – OUT-OF-STATE FACILITY

7% of excavation for disposal.

ITEM 181.14 DISPOSAL OF HAZARDOUS WASTE

3% of excavation for disposal.

ITEM 201. CATCH BASIN

LOCATION	STRUC. NO.	STA.
CHAUNCY ST	CBCI-21	1+00
CHAUNCY ST	CBCI-23	22+02
CHAUNCY ST	CBCI-24	22+29
CHAUNCY ST	CB-22	22+52
CHAUNCY ST	CB-23-2	23+15
ROUTE 140	CB-157	159+77
ROUTE 140	CB-159	159+77
CHAUNCY ST	CBCI-25	24+55
CHAUNCY ST	CBCI-26	26+69
CHAUNCY ST	CBCI-27	26+91
CHAUNCY ST	CBCI-28-A	29+22
CHAUNCY ST	CB-28-B	29+52
CHAUNCY ST	CBCI-29-A	29+50
CHAUNCY ST	CBCI-29-B	29+68
CHAUNCY ST	CBCI-31	30+15
CHAUNCY ST	CBCI-30	30+16
CHAUNCY ST	CB-32	31+22
GILES PLACE	CBCI-101	100+82
CHAUNCY ST	CBCI-33	31+96
CHAUNCY ST	CBCI-34	32+51
CHAUNCY ST	CB-261	32+60
CHAUNCY ST	CB-262	32+91

ITEM 201. (Continued)

CHAUNCY ST	CBCI-35	35+90
CHAUNCY ST	CBCI-36	35+96
CHAUNCY ST	CBCI-37	36+34
CHAUNCY ST	CBCI-38	36+73
CHAUNCY ST	CBCI-42	38+77
CHAUNCY ST	CB-43	38+82
COPELAND DR	CBCI-70	70+35
COPELAND DR	CB-70	70+

ITEM 202. MANHOLE

LOCATION	STRUC. NO.	STA.	LT/RT
CHAUNCY ST	DMH-23-2	22+88	LT
CHAUNCY ST	DMH-24	23+88	LT
CHAUNCY ST	DMH-25	24+66	LT
CHAUNCY ST	DMH-28	29+56	RT
CHAUNCY ST	DMH-29	29+60	LT
CHAUNCY ST	DMH-300	29+79	LT
CHAUNCY ST	DMH-30-A	30+20	RT
CHAUNCY ST	DMH-30-B	29+80	RT
GILES PLACE	DMH-101	100+82	RT
CHAUNCY ST	DMH-33	31+90	RT
CHAUNCY ST	DMH-261	32+38	LT
CHAUNCY ST	DMH-37	36+50	RT
CHAUNCY ST	DMH-42	38+82	LT

And as required by the Engineer.

ITEM 202.16 MANHOLE - 6 FOOT DIAMETER

LOCATION	STA.	LT/RT
CHAUNCY ST	23+16	LT

And as required by the Engineer.

ITEM 203.1 SPECIAL DRAINAGE MANHOLE

LOCATION	STRUC. NO.	STA.	LT/RT	TYPE
CHAUNCY ST	SDMH-30	29+79	RT	DMH

ITEM 205.1 LEACHING BASIN – 6 FOOT DIAMETER

LOCATION	STRUC. NO.	STA.	LT/RT
COPELAND DR	LB-70-1	70+29	LT
COPELAND DR	LB-70-2	70+19	LT
COPELAND DR	LB-70-3	70+09	LT

ITEM 220. DRAINAGE STRUCTURE ADJUSTED

LOCATION	STA.	LT/RT
CHAUNCY ST	21+32	LT
CHAUNCY ST	21+46	LT
CHAUNCY ST	21+80	LT
CHAUNCY ST	22+00	LT
CHAUNCY ST	22+32	LT
CHAUNCY ST	22+75	LT
CHAUNCY ST	22+43	LT
CHAUNCY ST	23+84	LT
ROUTE 140	155+50	RT
ROUTE 140	158+27	LT
ROUTE 140	158+43	LT
ROUTE 140	161+05	LT
ROUTE 140	160+00	RT
ROUTE 140	160+09	RT
ROUTE 140	160+10	RT
CHAUNCY ST	24+80	LT
CHAUNCY ST	24+80	RT
CHAUNCY ST	25+69	RT
CHAUNCY ST	27+09	LT
CHAUNCY ST	29+60	RT
CHAUNCY ST	29+96	RT
GILES PLACE	100+36	RT
GILES PLACE	100+21	RT
GILES PLACE	100+82	RT
CHAUNCY ST	31+00	RT
CHAUNCY ST	37+13	LT

And as required by the Engineer.

ITEM 220.2 DRAINAGE STRUCTURE REBUILT

For any existing drainage structure encountered to be damaged or in need of reconstruction during installation of proposed drainage pipe and structures, as directed by the Engineer.

ITEM 220.3 DRAINAGE STRUCTURE CHANGE IN TYPE

LOCATION	STA.	LT/RT
CHAUNCY ST	21+75	RT
CHAUNCY ST	22+27	RT
ROUTE 140	157+61	RT
ROUTE 140	159+62	RT
CHAUNCY ST	31+21	LT
CHAUNCY ST	36+21	LT
CHAUNCY ST	36+79	LT

ITEM 220.5 DRAINAGE STRUCTURE REMODELED

LOCATION	STA.	LT/RT
CHAUNCY ST	29+79	RT
GILES PLACE	100+28	LT
CHAUNCY ST	36+88	LT

ITEM 220.7 SANITARY STRUCTURE ADJUSTED

LOCATION	STA.	LT/RT
CHAUNCY ST	35+49	RT
CHAUNCY ST	36+70	RT

ITEM 221. FRAME AND COVER
New manholes, new leaching basins and Changes in Types.

ITEM 221.1 FRAME AND COVER-SECURED

STRUCT. ID
CIT 159
DMH 24

ITEM 222. FRAME AND GRATE – MASSDOT BAR TYPE

STRUCT. ID
CB 157
CB 159

ITEM 222.1 FRAME AND GRATE – MASSDOT CASCADE TYPE

New CB's AND GI's

ITEM 223.2 FRAME AND GRATE (OR COVER) REMOVED AND DISCARDED
For all drainage structures abandoned, removed, changed in type and all broken castings.

ITEM 223.11 PRIVATE FRAME AND GRATE (OR COVER) REMOVED AND RELOCATED
CB 261, CB 262.

ITEM 224.012 12 INCH HOOD

STRUCT. NO.
CB 70

ITEM 227.31 REMOVAL OF DRAINAGE PIPE SEDIMENT
50% of length of existing pipes to remain.

ITEM 227.4 MASONRY PLUG
FOR ALL ABANDONED PIPES

ITEM238.10 10 INCH DUCTILE IRON PIPE

LOCATION	STRUC. NO.	STRUC. NO.
CHAUNCY ST	CBCI-28-A	DMH-28
GILES PLACE	CBCI-101	DMH-101
CHAUNCY ST	CBCI-42	DMH-42
CHAUNCY ST	CB-43	DMH-42

ITEM 238.12 12 INCH DUCTILE IRON PIPE

LOCATION	STRUC. NO.	STRUC. NO.
CHAUNCY ST	CBCI-25	DMH-25
CHAUNCY ST	CBCI-27	EX-DMH-27
CHAUNCY ST	EX-DMH-30	DMH-30-B

ITEM 238.16 16 INCH DUCTILE IRON PIPE

LOCATION	STRUC. NO.	STRUC. NO.
CHAUNCY ST	EX-DMH-21	EX-DMH-22
CHAUNCY ST	DMH-30-A	DMH-30-B
CHAUNCY ST	DMH-30-B	SDMH-30
CHAUNCY ST	DMH-101	EX-DMH-100
CHAUNCY ST	EX-DMH-40	EX-DMH-41
CHAUNCY ST	EX-DMH-41	DMH-42

ITEM 238.18 18 INCH DUCTILE IRON PIPE

LOCATION	STRUC. NO.	STRUC. NO.
CHAUNCY ST	EX-DMH-22	DMH-23
CHAUNCY ST	CULVERT	CULVERT
CHAUNCY ST	CULVERT	CULVERT

ITEM 238.24 24 INCH DUCTILE IRON PIPE

LOCATION	STRUC. NO.	STRUC. NO.
CHAUNCY ST	DMH-28	EX DMH-28
CHAUNCY ST	EX DMH-28	SDMH-30

ITEM 241.15 15 INCH REINFORCED CONCRETE PIPE CLASS III

LOCATION	STRUC. NO.	STRUC. NO.
CHAUNCY ST	EX CB-24	DMH-24

ITEM 241.18 18 INCH REINFORCED CONCRETE PIPE CLASS III

LOCATION	STRUC. NO.	STRUC. NO.
CHAUNCY ST	EX DMH-100	DMH-300

ITEM 241.21 21 INCH REINFORCED CONCRETE PIPE CLASS III

LOCATION	STRUC. NO.	STRUC. NO.
CHAUNCY ST	DMH-23	DMH-24
CHAUNCY ST	DMH-24	EX-DMH-24
CHAUNCY ST	EX-DMH-24	EX-DMH-25

ITEM 241.3 30 INCH REINFORCED CONCRETE PIPE CLASS III

LOCATION	STRUC. NO.	STRUC. NO.
CHAUNCY ST	SDMH-30	EX DMH-282

ITEM 243.12 12 INCH REINFORCED CONCRETE PIPE CLASS IV

LOCATION	STRUC. NO.	STRUC. NO.
CHAUNCY ST	CBCI-21	CIT-21
CHAUNCY ST	CBCI-23	CIT-23
CHAUNCY ST	CBCI-24	CIT-23
CHAUNCY ST	CB-22	EX-DMH-22-1
CHAUNCY ST	EX-CB-22-2	DMH-23-2
CHAUNCY ST	CB-23-2	DMH-23-2
ROUTE 140	CB-157	CIT-157
ROUTE 140	CB-159	CIT-159
CHAUNCY ST	CBCI-26	EX-DMH-27
CHAUNCY ST	CB-28-B	EX-DMH-28
CHAUNCY ST	CBCI-29-A	DMH-29
CHAUNCY ST	CBCI-29-B	DMH-29
CHAUNCY ST	DMH-29	EX-DMH-28
CHAUNCY ST	CBCI-31	EX-DMH-30
CHAUNCY ST	CBCI-30	EX-DMH-30
CHAUNCY ST	CB-32	CIT-32
CHAUNCY ST	EX-DMH-32	DMH-30-A
CHAUNCY ST	CBCI-33	DMH-33
CHAUNCY ST	CBCI-34	CIT-32
CHAUNCY ST	CBCI-35	CIT-35
CHAUNCY ST	CBCI-36	CIT-35
CHAUNCY ST	CIT-35	CIT-39
CHAUNCY ST	CIT-39	EX-DMH-40
CHAUNCY ST	CBCI-37	DMH-37
CHAUNCY ST	DMH-37	EX-DMH-40
COPELAND DR	CBCI-70	CB-70
COPELAND DR	CB-70	LB-70
COPELAND DR	LB-70	LB-70

ITEM 252.12 12 INCH CORRUGATED PLASTIC PIPE

LOCATION	STRUC. NO.	STRUC. NO.
CHAUNCY ST	CB-262	CB-261
CHAUNCY ST	CB-261	DMH-261

ITEM 269.06 6 INCH SLOT-PERFORATED CORRUGATED PLASTIC PIPE (SUBDRAIN)

LOCATION	STA	LT/RT
AT WQ SWALE	162+75	RT

ITEM 271.1 DRAINAGE PIPE REMOVED AND DISGUARDED

LOCATION	STA	LT/RT
CHAUNCY ST	30+10	RT
CHAUNCY ST	32+50	LT

ITEM 281. CEMENT CONCRETE PAVING (WATERWAY)

LOCATION	STA	LT/RT
WQ SWALE	162+75	RT

ITEM 302.06 6 INCH DUCTILE IRON WATER PIPE (RUBBER GASKET)

LOCATION	STA	LT/RT
CHAUNCY ST	33+80	LT

ITEM 309. DUCTILE IRON FITTINGS FOR WATER PIPE

LOCATION	STA	LT/RT
CHAUNCY ST	33+80	LT

ITEM 358. GATE BOX ADJUSTED

LOCATION	STA	LT/RT
CHAUNCY ST	26+58	LT
	26+62	LT
	26+66	LT
	26+71	LT
	28+46	LT
	29+17	LT
	29+24	LT
	29+21	LT
	30+74	LT
	30+79	LT
	33+51	LT

ITEM 358. (Continued)

33+79	LT
35+27	LT
36+67	LT
36+69	LT
36+71	LT
38+00	RT
39+03	RT

And as required by the Engineer.

ITEM 376.2 HYDRANT – REMOVED AND RESET

LOCATION	STA	LT/RT
CHAUNCY ST	33+80	LT

ITEM 381.01 SERVICE BOX (MUNICIPAL STANDARD)

Assume 20% of abutters will need new boxes.

ITEM 381.3 SERVICE BOX ADJUSTED

For total # of abutters.

ITEM 440. CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL

For subgrade areas – 1 application.

ITEM 443. WATER FOR ROADWAY DUST CONTROL

For subgrade areas – 2 application.

ITEM 451. HMA FOR PATCHING

Permanent patching of utility trenches (drainage, water main, and conduit) crossing mill & overlay area in roadway, 6" wide trench on top of cement concrete curb setting in mill & overlay areas, and other miscellaneous hand work throughout the project.

ITEM 453. HMA JOINT ADHESIVE

LOCATION	STATION	STATION	PASSES
CHAUNCY ST (EB)	21+30	27+50	2
CHAUNCY ST (WB)	21+30	27+50	2
CHAUNCY ST (EB+WB)	27+50	38+80	2
RT 140 (NB)	154+95	162+87	2
RT 140 (SB)	158+00	162+75	2
COPELAND	69+58	74+07	2
At limits of work			
At limits of driveway			

ITEM 472. TEMPORARY ASPHALT PATCHING

For temp. patching of utilities and test pits, temp. sidewalks, temp. driveways and temp. pedestrian curb ramps.

ITEM 477.2 MILLED RUMBLE STRIP (TYPE C)

LOCATION	STATION	TO STATION
ROUTE 140	154+94	155+47
ROUTE 140	162+60	162+75

ITEM 482.5 SAWCUTTING ASPHALT PAVEMENT FOR BOX WIDENING

STREET	STATION	STATION	LT/RT
CHAUNCY ST	21+46	22+03	LT
	21+30	23+76	RT
	26+80	30+64	LT
	31+19	35+91	LT
	36+33	38+71	LT
	37+15	38+85	LT
ROUTE 140	158+07	161+68	RT

ITEM 502. GRANITE CURB TYPE VA2 - STRAIGHT

LOCATION	STA.	TO STA.	LT/RT
CHAUNCY ST	31+17	31+21	LT
	31+21	32+64	LT

ITEM 506. GRANITE CURB TYPE VB – STRAIGHT

LOCATION	STA.	TO STA.	LT/RT
CHAUNCY ST	21+41	21+82	RT
	21+84	21+88	RT
	21+95	23+29	RT
	24+88	24+92	RT
	25+00	25+71	RT
	25+43	25+61	RT
	25+67	25+72	RT
	25+12	28+11	LT
	30+65	30+65	LT
	30+80	32+08	RT
	31+17	31+21	LT
	31+21	31+64	LT
	32+08	32+09	RT
	32+32	32+32	RT
	32+92	33+09	LT
	33+09	33+12	LT
	33+10	33+92	RT
	33+13	33+14	LT
	33+39	33+40	LT
	33+42	33+44	LT
	33+92	33+93	RT

ITEM 506. (Continued)

	34+24	34+25	RT
	37+24	37+29	RT
	37+29	37+37	RT
	37+37	37+37	RT
	37+37	38+10	RT
	38+51	38+61	RT
	38+53	38+59	RT
ROUTE 140	158+00	158+31	LT
COPELAND DR	69+61	69+64	LT
	69+91	69+92	LT
ISLAND @ CHAUNCY ST	36+13	36+36	LT

ITEM 506.1 GRANITE CURB TYPE VB – CURVED

LOCATION	STA. TO STA.	LT/RT	
CHAUNCY ST	21+82	21+85	RT
	21+87	21+88	RT
	21+94	21+95	RT
	21+94	21+97	RT
	23+29	23+77	RT
	24+88	25+13	RT
	25+61	25+67	RT
	25+71	25+72	RT
	25+89	26+38	RT
	28+26	28+32	LT
	28+56	28+57	LT
	29+30	29+39	RT
	29+53	29+58	RT
	29+89	29+91	RT
	30+04	30+09	RT
	31+08	31+17	LT
	33+12	33+14	LT
	33+40	33+43	LT
	35+66	35+82	LT
	36+53	36+59	RT
	36+88	37+08	LT
	37+18	37+24	RT
	38+21	38+21	LT
	38+34	38+35	LT
	38+52	38+53	RT
	38+59	38+61	RT
ROUTE 140	157+40	157+44	RT
COPELAND DR	69+43	69+45	LT
	72+78	72+82	LT
ISLAND @ CHAUNCY ST	36+13	36+36	LT

ITEM 509. GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMP – STRAIGHT

LOCATION	PCR #	LT/RT
CHAUNCY ST	1	RT
	14	LT, RT
	16	LT
	17	RT

LOCATION	DWY #	
CHAUNCY ST	2	LT, RT
	3	LT, RT
	5	RT
	8	LT
COPELAND DR	6	LT, RT
	7	LT, RT
	9	LT, RT
	10	LT, RT

ITEM 509.1 GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS – CURVED

LOCATION	PCR#	LT
CHAUNCY ST	4	LT
	5	RT
	6	LT
	7	LT, RT
	8	RT
	9	LT
	10	LT, RT
	11	RT
	12	LT, RT
	13	LT, RT
	14	RT
	15	LT
	16	RT
	17	LT
	18	LT
	19	RT
COPELAND DR	20	LT, RT
	21	LT, RT
LOCATION	DWY#	LT
CHAUNCY ST	1	LT, RT
	4	LT, RT

ITEM 511.1 GRANITE EDGING TYPE SB – STRAIGHT

LOCATION	STA.	TO STA.	LT
CHAUNCY ST	20+94	22+13	RT
	21+79	23+32	LT, RT
	22+47	23+12	LT
	24+53	24+84	LT
	24+82	24+92	LT, RT
	24+99	26+41	LT, RT
	24+99	24+99	LT
	25+00	25+07	LT
	25+01	25+08	LT
ROUTE 140	157+37	157+99	RT
	157+36	157+68	RT
	157+68	157+72	RT
	157+92	157+99	RT
	158+00	158+12	LT, RT
	158+21	158+35	LT, RT
	158+91	159+51	RT
	158+64	158+71	RT
	158+71	159+51	RT
	158+84	161+69	RT
	159+33	159+45	RT
	159+31	159+74	LT
	159+64	160+25	LT
	160+01	160+26	LT

ITEM 512.1 GRANITE EDGING TYPE SB (RADIUS 10 FEET OR LESS)

LOCATION	STA.	TO STA.	LT/RT
CHAUNCY ST	21+79	21+79	LT RT
	23+32	23+32	LT RT
	24+82	24+82	LT RT
	26+41	26+41	LT RT
	24+28	24+30	RT
	24+41	24+44	RT
	25+30	25+33	RT
	22+45	22+47	LT
	22+78	22+81	LT
	23+12	23+13	LT
	23+79	23+85	LT
	24+17	24+20	LT
	24+49	24+53	LT
	24+84	24+91	LT
	25+07	25+08	LT

ITEM 514. GRANITE CURB INLET - STRAIGHT

At CB's as shown along straight curb.

ITEM 515. GRANITE CURB INLET - CURVED

At CB's as shown along curved curb.

ITEM 570.2 HOT MIX ASPHALT CURB TYPE 2

As shown on plans.

ITEM 580. CURB REMOVED AND RESET

Assume 60% of existing straight curb.

ITEM 590.3 CONCRETE BLOCK WALL REMOVED AND STACKED

LOCATION	STA.	TO STA.	LT/RT
CHAUNCY ST	32+57	33+13	RT

ITEM 594. CURB REMOVED AND DISCARDED

All existing curb to be removed but not reset.

ITEM 620.12 GUARDRAIL, TL-2 (SINGLE FACED)

LOCATION	STATION	TO STATION	LT/RT
CHAUNCY ST	29+62	29+66	LT
	29+84	30+25	LT

ITEM 620.131 GUARDRAIL, DEEP POST (SINGLE FACED)

LOCATION	STA.	TO STA.	LT/RT
CHAUNCY ST	29+66	29+84	LT

ITEM 627.1 TRAILING ANCHORAGE

LOCATION	STA	LT/RT
CHAUNCY ST	29+51	LT
	30+25	LT

ITEM 627.82 GUARDRAIL TANGENT END TREATMENT, TL-2

LOCATION	STA	LT/RT
CHAUNCY ST	30+25	RT

ITEM 628.314 TEMPORARY IMPACT ATTENUATOR, REDIRECTIVE, TL-2

For work zones as directed by Engineer.

ITEM 628.315 TEMPORARY IMPACT ATTENUATOR, REDIRECTIVE, TL-3

For work zones as directed by Engineer.

ITEM 628.32 IMPACT ATTENUATOR FOR SHOULDER, CAPABLE OF REDIRECTION

For work zones as directed by Engineer.

ITEM 669. FENCE REMOVED AND STACKED

LOCATION	STATION	TO STATION	LT/RT
CHAUNCY ST	27+00	27+10	RT

ITEM 670. FENCE REMOVED AND RESET

LOCATION	STATION	TO STATION	LT/RT
CHAUNCY ST	20+93	22+95	RT

ITEM 697.1 SILT SACK

Used on all proposed catch basins, gutter inlets, and existing catch basins affected by project.

ITEM 698.2 GEOTEXTILE FABRIC FOR SUBSURFACE DRAINAGE

Used around crushed stone for leaching basins.

ITEM 710.3 BOUND – LETTERED GRANITE

LOCATION	STA	LT/RT	NORTHING EASTING
CHAUNCY ST	21+22.27	RT	2836592.08
	728218.03		
	21+34.37	RT	2836587.49
	728229.33		
	21+80.47	RT	2836568.22
	728271.89		
	22+12.52	RT	2836553.59
	728301.13		
	22+21.13	RT	2836550.77
	728309.29		
	28+60.66	LT	2836482.55
	728953.22		
	28+61.53	LT	2836476.42
	728952.47		
	28+74.63	LT	2836459.48
	728961.48		
	29+26.31	LT	2836441.22
	729010.08		
	29+73.92	LT	2836426.62
	729055.46		
	30+48.22	LT	2836407.31
	729127.21		

ITEM 710.3 (Continued)

30+58.07	LT	2836410.12	
729138.16			
32+51.21	RT	2836299.98	
729308.63			
32+50.71	RT	2836302.36	
729308.74			
33+62.63	RT	2836273.07	
729417.94			
34+78.31	RT	2836247.5	
729530.76			
35+01.62	LT	2836295.84	
729565.62			
35+01.69	LT	2836297.55	
729566.08			
35+38.11	LT	2836290.03	
729601.71			
35+57.22	RT	2836221.16	
729606.56			
35+66.30	LT	2836284.48	729628.8
35+75.57	LT	2836284.41	
729638.25			
36+30.69	RT	2836201.66	
729679.81			
36+30.88	RT	2836205.98	729680.7
36+66.59	RT	2836187.36	
729719.62			
36+86.05	LT	2836295.09	
729741.64			
36+90.10	LT	2836296.5	
729745.07			
37+11.41	LT	2836286.87	
729763.86			
37+24.15	RT	2836191.62	
729785.96			
37+28.79	RT	2836194.29	
729791.01			
37+38.29	LT	2836290.95	
729787.03			
37+38.41	LT	2836286.02	729787.9
37+42.98	RT	2836213	
729804.35			
37+43.05	RT	2836207.85	729805.3
37+78.69	RT	2836223.44	
729839.01			

ITEM 710.3 (Continued)

	37+80.42	LT	2836293.17
	729828.49		
	38+10.10	RT	2836228.88
	729869.94		
	38+16.60	RT	2836230.01
	729876.34		
	38+23.37	LT	2836296.27
	729871.56		
	38+53.16	RT	2836240.46
	729911.63		
	38+72.79	LT	2836294.32
	729922.09		

ITEM 711. BOUND REMOVED AND RESET

LOCATION	STATION	LT/RT	NORTHING	EASTING
CHAUNCY ST	22+90.25	RT	2836532.7	728376

ITEM 769. PAVEMENT MILLING MULCH UNDER GUARD RAIL

LOCATION	STATION	TO STATION	LT/RT
CHAUNCY ST	29+51	30+50	LT

ITEM 802.4 4 IN TELEPHONE CATV CONDUIT – TYPE NM (4 BANK)

LOCATION	STATION	TO STATION	LT/RT
COPELAND DR	69+50	71+50	RT

ITEM 804.3 3 INCH ELECTRICAL CONDUIT TYPE NM – PLASTIC – (UL)

LOCATION	STRUC.	STRUC.
ROUTE 140 & 106	MA1-4	PB-7
	PB-7	PB-8
	PB-8	SH E Pole
	PB-8	PB-9
	PB-9	MA1-2
	PB-9	SH S Pole
	PB-9	HH4
	HH4	PB-10
	PB-10	MA1-6
	PB-10	P10 Pole
	HH4	Ped Button Pole
	HH4	PB-2
	PB-2	P7 Pole
	PB-2	PB-3

ITEM 804.3 (Continued)

	PB-3	MA1-5
	PB-3	PB-4
	PB-4	P5 Pole
	PB-4	PB-5
	PB-5	P6 Pole
	PB-5	PB-6
	PB-6	Ped Button Pole
	PB-6	MA-13
	PB-2	HH3
	HH3	Ped Button Pole
	HH3	P3 Pole
	HH3	Ped Button Pole
	HH3	HH2
	HH2	P1 Pole
	HH2	MA1-1
	HH2	PB-1
	PB-1	HH1
	HH1	CABINET
	Cabinet	UP
106 & COPELAND DR	MA2-3	PB-3
	PB-3	P10 Pole
	PB-3	PB-4
	PB-4	MA2-4
	PB-4	PB-5
	PB-4	PB-1
	PB-1	HH1
	HH1	Ped Button Pole
	HH1	P1 Pole
	HH1	Cabinet
	Cabinet	UP
	HH1	MA2-2
	HH1	PB-2
	PB-2	P7 Pole
	PB-2	MA2-1
	PB-5	Ped Button Pole
	PB-5	P3 Pole
	PB-5	PB-6
	PB-6	P4 Pole
	PB-6	MA2-5
	PB-6	P5 Pole

ITEM 804.32 3 INCH ELECTRICAL CONDUIT TYPE NM – PLASTIC – (UL) – DOUBLE

LOCATION	STRUC.	STRUC.
ROUTE 140 & 106	SERV	CAB
	CAB	HH1
ROUTE 106 & COPELAND DR	SERV	CAB
	CAB	HH1

ITEM 811.23 ELECTIRIC HANDHOLE – SD2.023

LOCATION	STRC.	STA.	OFFSET	LT/RT
ROUTE 140 & 106		HH1	23+04.6	51.8± RT
		HH2	23+68.0	57.3± RT
		HH3	24+41.8	43.0± RT
		HH4	24+76.0	37.0± LT
ROUTE 106 & COPELAND DR		HH1	36+55.8	33.6± RT

ITEM 811.31 PULL BOX 12 X 12 INCHES – SD2.031

LOCATION	STRC.	STA.	OFFSET	LT/RT
ROUTE 140 & 106	PB-1	23+34.0	51.7±	RT
	PB-2	24+89.8	32.4±	RT
	PB-3	25+00.7	46.6±	RT
	PB-4	25+54.2	47.1±	RT
	PB-5	25+77.2	62.6±	RT
	PB-6	25+89.7	49.8±	RT
	PB-7	23+22.8	33.0±	LT
	PB-8	23+78.0	41.1±	LT
	PB-9	24+40.6	48.5±	LT
	PB-10 Interconnect	24+84.5	64.9±	LT
ROUTE 106 & COPELAND DR	PB-1	36+28.6	32.3±	RT
	PB-2	37+22.2	35.2±	RT
	PB-3	35+86.7	38.8±	LT
	PB-4	36+15.6	26.6±	LT
	PB-5	36+32.2	26.8±	LT
	PB-6	36+97.2	35.3±	LT

And as required by the Engineer.

ITEM 864.33 SLOTTED PAVEMENT MARKER TWO-WAY WHITE RED

LOCATION	STA.	TO STA.
ROUTE 140	154+95	158+8
	159+57	162+75

ITEM 901. 4000 PSI, 1.5 IN., 565 CEMENT CONCRETE
For headwall.

ITEM 903. 3000 PSI, 1.5 IN., 470 CEMENT CONCRETE
Thrust block for new hydrant.

ITEM 910.1 STEEL REINFORCEMENT FOR STRUCTURES – EPOXY COATED
For headwall.

ITEM 970. DAMP-PROOFING
For headwall.

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DOCUMENT A00808

PROJECT UTILITY COORDINATION FORM

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Project Utilities Coordination (PUC) Form

CONTACTS AND GENERAL UTILITY INFORMATION

12/23/2024
Revision Date:

City/Town:	Project File #:	PUC Completed by:	Utility Pole Set:	
Mansfield	613052	cjl/jhl	Mansfield Municipal Electric / Verizon	
Route/Street:	**Resident Engineer:**	**Mass DOT PM:**	**Scheduled Ad Date:**	**Total Poles Relocated:**
Route 106 (Chauncy Street)		Gautam Sen	6/14/2025	22

12/23/2024
PRINTED

Consultant:	Contact:	Office #	Cell #	Email
BETA Group, Inc.	Christopher M. Roy	781.255.1982		CRoy@BETA-Inc.com

Utility Company	Contact	Office #	Cell #	Email	Scope, Budget, Duration Submitted		Reimbursement			Potential for District Initiated Early Relocation *		Utilities On Bridge/Structure		Utilities Underground (UG) /Aerial (OH)	
					Yes	No	Agreement	Non-Reimb'le	Notes	YES	NO	YES	NO	UG	OH
Mansfield Electric	Ralph Bellavance	508-922-6475		Ralph.Bellavance@mansfieldma.com	x		x			x			x	x	x
National Grid Electric	Noah Skole	617-706-1736		Noah.Skole@nationalgrid.com		x	x			x			x		x
Comcast	Wendy Brown	978-848-5163		Wendy_Brown@comcast.com	x		x			x			x		x
Verizon	Karen Mealey	774-409-3160		karen.m.mealey@verizon.com	x		x			x			x	x	x
Eversource Gas	Brendan Pitts	508-895-4818		brendan.pitts@Eversource.com	x		x			x			x	x	

Utility Relocation Notes for MassDOT Contractor

Unless otherwise noted by Contract, the MassDOT Contractor is to provide the District Construction Office with 7 Calendar Days advance notification in order to validate the current progress and provide the required 30 Days advance notice-to-proceed for the first Utility - and each subsequent Utility. These advance notifications are to be identified in the Contractor's Schedules (Pre-Con preparation, Baseline, Subnets, and Updated/Monthly Schedules) as specified in Subsection 8.02 (for DBB Contracts) and/or Section 9 (of DB Contracts). Note: The durations included below do not include these lead-times. See Additional 'Important Basis notes for Contractor' - on last PUC Form page.

Additional notes:

Suggested Sequence of Relocation (Based on Consultant proposed construction staging)

The sequence as detailed on the following pages is based on the consultants proposed staging plan. This information was compiled through meetings that included all of the utilities listed below along with the designer and the Town of Mansfield. The information provided is the best available information prior to project advertisement.

Propsal No. 613052-131228

Is 'enabling' (prep) work, by the Contractor, necessary prior to the start of the first series of utility relocations:	Yes	No
	x	

Has any of the Utility work been identified to work concurrently	Yes	No
		x

12/23/2024
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massDOT Massachusetts Department of Transportation Highway Division

	RESPONSIBLE PARTY		DESCRIPTION - Utility Relocation Phases, Tasks and Activities	Estimated Duration (Work Days) by Utilities (Lead time not included)	Concurrent / Exclusive Utility Work Contractor note: In planning and executing the work, the Access Restraints listed in the Special Provisions, takes precedence over the checklist in these 4 columns.				Access Restraint & Limitations of Operations Notes Should an AR be considered for the Contractor ?	
	C = Contractor	U = Utility Co.			Exclusive Utility on site: Utility working with no other Utilities in vicinity	Concurrent Utilities: Utility working with other Utilities on site	Contractor Off-Site: No Contractor physical construction operations on-site (while Utility is	Contractor Concurrent: Contractor and Utility are working on-site - but NOT in the same vicinity	Potential Access Restraint (Yes/No)	Reason/Note (optional)
Stage : 1	C		Contractor to provide 30 day notice before starting work. Contractor to provide clearing, grubbing, tree triming and removal.							
			UTILITY OPERATIONS - Aerial							
Task: 1			***Ngrid Electric***							
		U	** R&R 15 poles & 4 Proposed poles	19	x			x		
		U	** Transfer OHWs to new poles	38	x			x		
			Sub-Total	**57**						
			UTILITY OPERATIONS - Aerial							
Task: 2			***Mansfield Municipal Electric***							
		U	National Grid to Set approximately 19-55' Poles	0	x			x		
		U	MMED to intsall Electric Cabinet & few Handholes as designated on the plans	7	x			x		
		U	MMED to Install Poles and Guy wires Copeland St	2	x			x		
		U	MMED to install new Riser Poles	5	x			x		
		U	MMED to install 5" steel riser pipes and sweeps	5	x			x		
		U	MMED to run new pipes to transformers and services	5	x			x		
		U	MMED to install C/Os and new Overhead Transformers for all Overhead services on Chauncy Street	5	x			x		
		U	National Grid to frame the poles & install 25 kV Ovearhead wires & Switches on top	0	x			x		
		U	MMED to Frame the poles making it ready to run overhaed wires	7	x			x		
		U	MMED to install 2700 Circuit Feet of Messenger Cable 5' bellow NG's lines	7	x			x		
		U	MMED to install 2700 Circuit Feet of 15 kV, 477 Al Hendrix	7	x			x		
		U	MMED to Install new Oveahead Transformers	5	x			x		
		U	MMED to install 2700 of 600 volts secondary main wires	3	x			x		
		U	MMED to energize the newly installed wires	2	x			x		
		U	MMED to Transfer Services from old poles to the newly installed poles	20	x			x		
		U	MMED to Remove all poles, primaries & secindary wires, guy wires, etc.	10	x			x		
			Sub-Total	**90**						
Stage : 2	C		Contractor to install telephone and CATV conduits STA 72+50 to 70+50.							
			UTILITY OPERATIONS - Aerial							
Task: 3			***Comcast***							
		U	Rebuild multiple spans of coax and strand and De-Lash out and Relash Fiber Cables along Rt106 and side streets for the relocation of pole line.	45	x			x		
			Sub-Total	**45**						
			UTILITY OPERATIONS - Aerial							
Task: 4			***Verizon***							
		U	Grants & Easements for new pole and anchor locations to be obtained before work can begin	0	x			x		
		U	Verizon Contract Work to relocate risers, place new conduits, mh frame & cover adjustment, reconnecting conduits to main line	22	x			x		
		U	Verizon Line place all aerial cables,strand & guying	36	x			x		
		U	Verizon Line to transfer cables where applicable	8	x			x		
		U	Verizon Splice to join new cables & trim out all old cables and prepare for removals	48	x			x		
		U	Verizon Line to remove all cables	83	x			x		
		U	Verizon Line to remove 11 jointly owned poles, guying & anchor	10	x			x		
			Sub-Total	**207**						
			UTILITY OPERATIONS - Underground							
Task: 5			***Eversource Gas***							
		U	Install ~ 32' of new 12" CSHP Gas Main & Abandon ~ 20' of existing 12" CSHP (1970) at ~ STA 32+50 as a result of Proposed Utility Realignment at Prop. GICI-34 on Chauncey Street.	8	x			x		
		U	** Adjust (8) GG's.	3	x			x		
			Sub-Total	**11**						

Propsal No. 613052-131228

RESPONSIBLE PARTY		DESCRIPTION - Utility Relocation Phases, Tasks and Activities	Estimated Duration (Work Days) by Utilities (Lead time not included)	Concurrent / Exclusive Utility Work				Access Restraint & Limitations of Operations Notes	
				Contractor note: In planning and executing the work, the Access Restraints listed in the Special Provisions, takes precedence over the checklist in these 4 columns.				Should an AR be considered for the Contractor ?	
C = Contractor	U = Utility Co.			Exclusive Utility on site	Concurrent Utilities	Contractor Off-Site	Contractor Concurrent		
				Utility working with no other Utilities in vicinity	Utility working with other Utilities on site	No Contractor physical construction operations on-site (while Utility is	Contractor and Utility are working on-site - but NOT in the same vicinity	Potential Access Restraint (Yes/No)	Reason/Note (optional)

IMPORTANT BASIS NOTES - FOR CONTRACTOR

1	Unless otherwise specified in the MassDOT Construction Contract, or unless specifically noted within this PUC Form, these durations (herein) are based upon the Contractor providing *unimpeded access* to the Utility company to perform Utility relocations (see Note 5 - Access).
2	"Concurrent Utilities" operations noted herein, are to signify those Utility Company operations that can be worked concurrently (e.g. Utility A and Utility B work on-site together) - MassDOT and the Contractor are to prepare NTPs to Utilities accordingly.
3	"Potential Access Restraints" noted within this PUC Form are for planning purposes. See MassDOT Contract for Contractual Access Restraints (refer to Subsections 8.02, 8.03, and/or 8.06 for Design Bid Build Contracts and Volume II Section 9 for Design Build Contracts).
4	Utility non-work periods - For planning purposes, the durations above contain some non work days (contingency) for New England conditions (precipitation, high temperatures, low temperatures, snow, ice). Gas line work however, typically has a seasonal restriction and can NOT be installed from 15-November to 15-March. Municipally Owned Electric and Gas Utilities are also restricted from proceeding from 15-November to 15-March. The Contractor shall (and the CTD plan) reflect this calendar restriction within the schedule (unless otherwise note).
5	Access - Unless otherwise noted in the Contract, and in addition to the 'enabling' notes above, the Contractor must provide safe and unimpeded access (for trucks, lifts, cranes, etc.) to the Utilities, to allow for the proposed relocation(s) - including but not limited to snow removal, clearing and grubbing, guard rail removal, barrier removal, tree removal, and grading.
6	For all MassDOT construction contracts issued after January 2014, the new Utility Coordination/documentation specification is required. This is Section 8.14 in Design-Bid-Build Contracts (see Design-Build index reference for applicable section #).
7	Prior to starting any and all enabling work for Utilities, the Contractor is to plan in advance with submittals and approved durations.
8	* Potential District Initiated Early Utility Relocation - if noted herein, the District reserves the right to initiate early utility relocation in advance of the Contract NTP. In submitting a bid price and in the development/basis of the Baseline Schedule, the Contractor shall not plan the Work with the potential benefit of any form of 'early utility relocation.' As a requirement of the Baseline submission, unless otherwise noted in this Specification, the earliest that the first Utility company is to receive the 30 days advance notification to mobilize to the site, will be 7 calendar days after the pre-construction meeting and never sooner than 7 days after the Contract NTP.
9	** Assumed Durations.

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DOCUMENT A00810

MassDOT Herbicide Use Report

Proposal No. 613052-131228

MassDOT Herbicide Use Report

Date Submitted:

Use multiple sheets for multiple application techniques or sites as needed.

Contractor Performing Work:

Project or Contract No:

Town/s:

Associated Route:

Project Description:

MDAR ALERT*:

Treatment Description:

Area Treated (as applicable)

Acres: **Sq Yds:** **Miles:**

Weeds Targeted:

Gallons Formula Used:

Application Method:

Date/Time Began:

Date/Time End:

Product Used:

Name: _____	Name: _____	Name: _____
EPA Reg. No: _____	EPA Reg. No: _____	EPA Reg. No: _____
% Active Ingredient	% Active Ingredient	% Active Ingredient
Dry: _____	Dry: _____	Dry: _____
Liquid: _____	Liquid: _____	Liquid: _____
Formulation (dilution rate): _____	Formulation (dilution rate): _____	Formulation (dilution rate): _____

Additional products used (surfactants, etc.) or other information:

Applicators: **License Numbers:**

* Please note:
EDRR Species (MAM, Hogweed, Pepperweed, Kudzu, etc.)
Tree of Heaven 1) stands of >20 trees; 2) >5 trees near nursery, landscape company, or highway rest area where trucks stop

Upon completion, please submit form to MassDOT District Engineer and Landscape Design Section in Boston office.

07/18/2018

DOCUMENT A00811

WATERING LOG
for
MassDOT Plantings

Watering Log for MassDOT Plantings

Project Description:

Contract No:

Project No:

Plant Locations/s: (Attach planting plan/s as necessary)

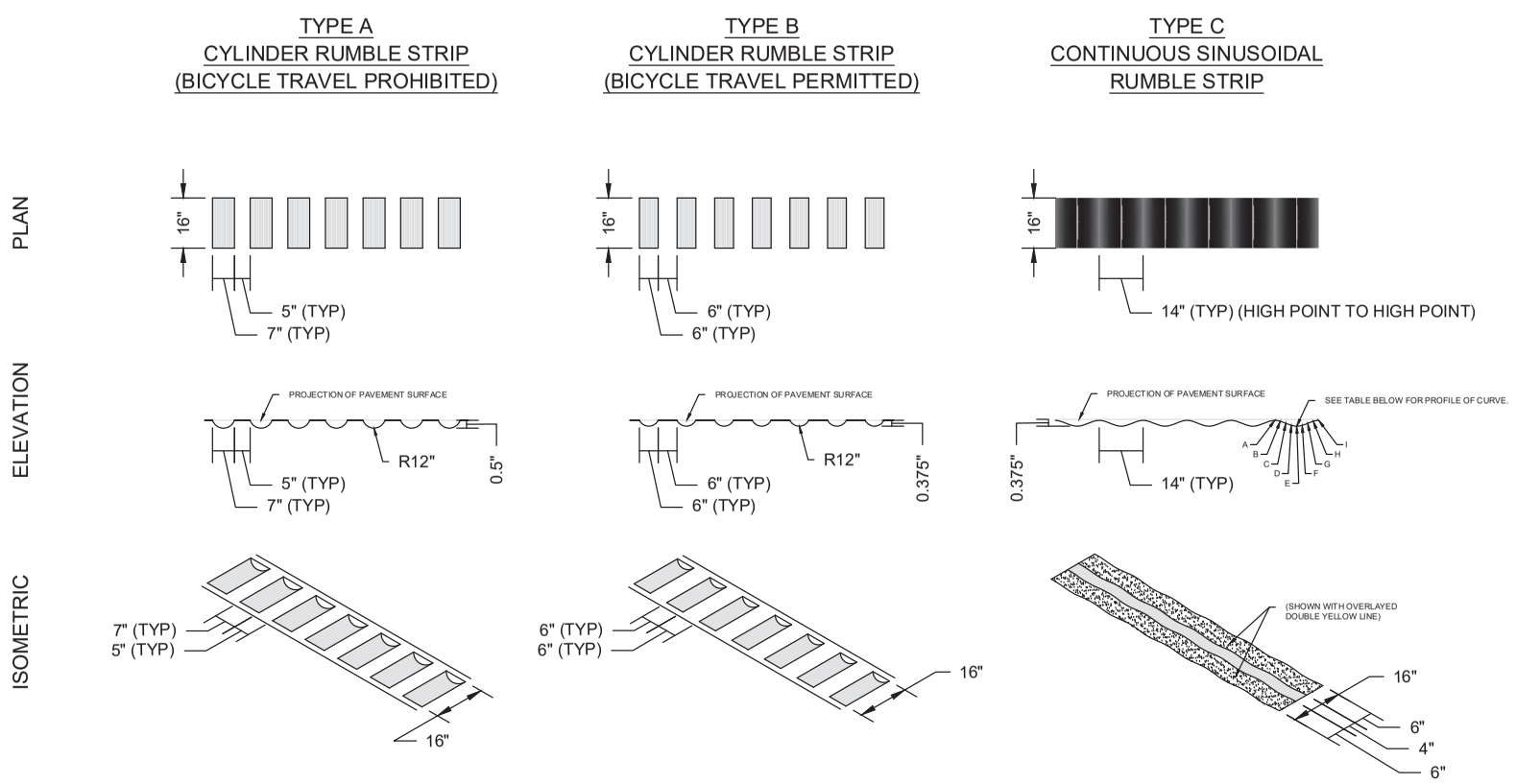
Notes:

	Separate logs shall be kept to track areas or plants with different watering schedules. Trees shall receive a minimum of 10 gallons with each watering and shrubs a minimum of 5 gallons. Provide note that if watering is not performed as scheduled due to rain. Record date of rainfall and amount.												
Date Watered													
Landscape Contractor Initial													
Prime Contractor Initial													
Date Watered													
Landscape Contractor Initial													
Prime Contractor Initial													

Each week, following watering, Log shall be submitted to the MassDOT Engineer.
6/15/2018

DOCUMENT A00816

RUMBLE STRIP DETAILS



NOTES:

1. NOT TO SCALE. SOME LINE WORK EXAGGERATED FOR CLARITY.
2. SEE PLANS FOR LOCATION(S) AND START AND END STATIONS FOR ALL RUMBLE STRIP INSTALLATIONS.
3. HIGH POINT OF SINUSOIDAL RUMBLE STRIP LOCATED $\frac{1}{16}$" BELOW PAVEMENT SURFACE.

DESIGN OF CURVE PROFILE FOR SINUSOIDAL RUMBLE STRIP									
POINT	A	B	C	D	E	F	G	H	I
DEPTH FROM PAVEMENT SURFACE (IN.)	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{7}{32}$	$\frac{11}{32}$	$\frac{3}{8}$	$\frac{11}{32}$	$\frac{7}{32}$	$\frac{1}{8}$	$\frac{1}{16}$
DISTANCE FROM HIGH POINT "A" (IN.)	0	1.75	3.5	5.25	7	8.75	10.5	12.25	14

massDOT Massachusetts Department of Transportation Highway Division

TRAFFIC & SAFETY STANDARDS
SECTION 860

RUMBLE STRIP DETAILS

D-TE OF ISSUE
2020

DR- ING NUMBER
XXX.X.X

DOCUMENT A00820

Massachusetts Department of Transportation
Conditions of Custody

REQUEST FOR RELEASE OF MASSDOT AUTOCAD FILES FORM
(Only to be used following award of contract)

City/Town: MANSFIELD Project File Number: 613052

Contract Number: 131228

Project Description: Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive

All AutoCAD files are provided solely as a courtesy to facilitate public access to information. MassDOT attempts to provide current and accurate information but cannot guarantee so. MassDOT provides such documents, files or other data "as is" without any warranty of any kind, either expressed or implied, including but not limited to, accuracy, reliability, omissions, completeness and currentness. The Commonwealth of Massachusetts and its Consultants shall not be liable for any claim for damages, including lost profits or other consequential, exemplary, incidental, indirect or special damages, relating in any way to the documents, files or other data accessible from this file, including, but not limited to, claims arising out of or related to electronic access or transmission of data or viruses. Because data stored on electronic media can deteriorate undetected or be modified without our knowledge, MassDOT cannot be held liable for its completeness or correctness. MassDOT makes no representation as to the compatibility of these files beyond the version of the stated CAD software.

By signing this form, I agree that it shall be my responsibility to reconcile this electronic data with the conformed contract documents, and that only the conformed contract documents shall be regarded as legal documents for this Project. I understand that this authorization does not give me the right to distribute the files. I agree to the terms above and wish to receive the AutoCAD files.

This signed form shall be emailed to the Highway Design Engineer at the MassDOT -Highway Division at the following email address:

DOTHighwayDesign@dot.state.ma.us
Attn: AutoCAD Files

Name of person requesting AutoCAD files: _____

Affiliation/Company: _____

Address: _____

_____

Telephone number: _____

Email address: _____

Signature/Date: _____

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DOCUMENT A00830

ARMY CORPS OF ENGINEERS

Permit Application

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Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Jamey Tesler, Secretary & CEO
Jonathan L. Gulliver, Highway Administrator

MassDOT
Massachusetts Department of Transportation
Highway Division

March 10, 2025

Dan Vasconcelos
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742

Subject: Pre-Construction Notification Application
Improvements to Chauncy Street (Route 106)
Mansfield, Massachusetts
MassDOT Project #613052

Dear Mr. Vasconcelos:

The Massachusetts Department of Transportation – Highway Division (MassDOT) is submitting this Pre-Construction Notification (PCN) application for the proposed Improvements to Chauncy Street (Route 106), Route 140 to Copeland Drive Project (Phase 1) in Mansfield, Massachusetts (the Project). The Project is being developed by MassDOT in collaboration with the Town of Mansfield and the Federal Highway Administration.

The Chauncy Street corridor has safety and operational deficiencies which require improvements for safe and efficient operation for all users, including motor vehicles, bicyclists and pedestrians. The proposed improvements were designed to address the existing deficiencies and are based on an examination of existing conditions, known deficiencies, future traffic volumes, and discussions with MassDOT and Mansfield Town officials. The Project proposes a shared use path along the southern side of Chauncy Street with ADA compliant ramps; reconstruction of sidewalks along the northern side of Chauncy Street with ADA compliant ramps; new signs and pavement markings; geometric modifications to include turn lanes; and an upgraded traffic signal system at both intersections. The Project also includes extension of an existing culvert north of Chauncy Street that conveys an unnamed intermittent stream southerly under the roadway.

Proposed activities will occur within Waters of the U.S. associated with an unnamed intermittent stream and the proposed culvert extension structure is not able meet the Stream Crossing Standards. Accordingly, this Project requires submission of a PCN for authorization under Army Corp of Engineers' Massachusetts General Permit.

As a result of the proposed work, 271 linear feet (lf) of temporary and 24 lf of permanent impact to Bank, and 317 square feet (sf) of temporary and 115 sf of permanent impact to Waters of the United States will occur. Additionally, the project proposes 10 lf of stream loss. Impacts are associated with work necessary to complete the proposed culvert extensions and replacements. These impacts will be mitigated through used of best available construction methods, installation of erosion controls, and restoration of temporarily impacted areas.

Because the impacts to water of the U.S. do not exceed 5,000 sf, the Order of Conditions issued by the Conservation Commission will serve as the Water Quality Certification for this Project.

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
www.mass.gov/massdot

MassDOT hereby certifies that all information contained herein is true, accurate, and complete to the best of my knowledge and belief. If you have any questions regarding this application, please do not hesitate to contact me at 857-268-1729 or erica.larner@state.ma.us.

Sincerely,

Erica Larner
Wetlands Coordinator
MassDOT - Highway Division, Environmental Services

Cc: Heidi Davis, MassDEP
MassDOT Highway Division
Laura Krause, BETA Group, Inc.
Chris Roy, BETA Group, Inc.
Guatam Sen, MassDOT Project Manager
Mansfield Conservation Commission
Kevin Thompson, MassDOT

Enclosures: PCN Application, plans

Click here to enter text.

Mansfield, MA

Improvements to Chauncy Street (Route 106) Route 140 to Copeland Drive (Phase 1)

MassDOT Project File #613052

March 2025

PRE-CONSTRUCTION NOTIFICATION

89 Shrewsbury Street
Suite 300
Worcester, MA 01604
508.756.1600
www.BETA-Inc.com

Improvements to Chauncy Street (Route 106) Route 140 to Copeland Drive (Phase 1)

Mansfield, MA

PRE-CONSTRUCTION NOTIFICATION

Prepared by: BETA GROUP, INC.
Prepared for: Massachusetts Department of Transportation

March 2025

TABLE OF CONTENTS

TRANSMITTAL AND APPLICATION FORMS

LIST OF APPENDICES

APPENDIX A –PROJECT NARRATIVE

1.0 Introduction 4
2.0 Existing Conditions 4
2.1 Project Locus 4
2.2 Jurisdictional Waters of the US 5
3.0 Proposed Conditions 6
4.0 Construction Sequence 7
4.1.1 Site Preparation 7
4.1.2 Construction 7
4.1.3 Project Close-out 7
5.0 Impacts to Waters of the U.S. 8
5.1 Bank Impacts 8
5.2 Waters of the US / Land Under Water Impacts 8
5.3 Stream Crossing Standards 9
6.0 Impact Avoidance, Minimization, and Mitigation 10
7.0 Invasive Species Control 10
8.0 Erosion and Sedimentation Control 10
9.0 Water Control and Dewatering 11
10.0 Stormwater management 11
11.0 Fisheries and Wildlife / NHESP / Vernal Pools 11
12.0 Historic Coordination 12
13.0 Alternatives Analysis 12
13.1 No Build Option (Alternative 1) 12
13.2 Corridor Alternatives (Alternative 2) 12
13.3 Culvert Type Alternatives (Alternative 3) 13
14.0 Regulatory Compliance 14
15.0 Summary 15

APPENDIX B – FIGURES

Figure 1: USGS Site Locus Map
Figure 2: Environmental Resources Map
Figure 3: FIRMette

APPENDIX C – SITE PHOTOGRAPHS
APPENDIX D – DELINEATION REPORT
APPENDIX E – SHPO, THPO, AND BUAR CORRESPONDENCE
APPENDIX F – USFWS CONSULTATION
APPENDIX G – SPECIAL PROVISIONS
APPENDIX H – STORMWATER REPORT
APPENDIX I – PROJECT CONSTRUCTION PLANS
APPENDIX J – AS-BUILT PLAN - CORNER OF CHAUNCY STREET AND ROUTE 140

U.S. Army Corps of Engineers (USACE), New England District (NAE)

PRE-CONSTRUCTION NOTIFICATION (PCN)

DATA REQUIRED BY THE PRIVACY ACT OF 1974

Authority Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332.

Principal Purpose The information provided will be used in evaluating activities under Pre-Construction Notification procedures within New England.

Routine Uses Disclosure This information may be shared with other federal, state, and local government agencies during the application review process. Submission of requested information is voluntary. However, if information is not provided the PCN application cannot be fully evaluated nor can USACE render a permit decision.

Instructions The applicant must complete ALL required sections of this document before their submission to USACE. The PCN submission to USACE shall include one set of drawings which show the location and character of the proposed activity, statements that address each required field below, and documentation that supports each field (e.g., emails, letters, description/narrative, phone calls, surveys, reports, etc.). Electronic submissions to the following address are strongly preferred: cenae-r-ma@usace.army.mil. The email subject line shall contain the following: General Permit #, PCN, City/Town, and date submitted. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY USACE)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME
First - Erica Middle - Last - Larner
Company - MassDOT Highway Division
E-mail Address - erica.n.larner@dot.state.ma.us

6. APPLICANT'S ADDRESS:
Address- 10 Park Plaza
City - Boston State - MA Zip - 02116 Country - MA

7. APPLICANT'S PHONE NOs. with AREA CODE
a. Residence b. Business c. Fax d. Mobile
857-268-1729

8. AUTHORIZED AGENT'S NAME AND TITLE (*agent is not required*)
First - Laura Middle - Last - Krause
Company - BETA Group, Inc.
E-mail Address - lkrause@beta-inc.com

9. AGENT'S ADDRESS:
Address- 89 Shrewsbury Street, Suite 300
City - Worcester State - MA Zip - 01604 Country - USA

10. AGENT'S PHONE NOs. with AREA CODE
a. Residence b. Business c. Fax d. Mobile
844-800-2382 x7113

STATEMENT OF AUTHORIZATION

11. I hereby authorize, Laura Krause to act on my behalf as my agent in the processing of this general permit PCN application and to furnish, upon request, supplemental information in support of this general permit PCN application.

SIGNATURE OF APPLICANT 03/10/2025 DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME or TITLE (*see instructions*)
Improvements to Chauncy Street (Route 106), Route 140 to Copeland Drive Project (Phase 1)

13. NAME OF WATERBODY, IF KNOWN (*if applicable*)
Unnamed intermittent stream

14. PROPOSED ACTIVITY STREET ADDRESS (*if applicable*)
City: Mansfield State: MA Zip: 02048

15. LOCATION OF PROPOSED ACTIVITY (*see instructions*)
Latitude: 42.0305 °N Longitude: -71.2296 °W

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (*see instructions*)

State Tax Parcel ID: N/A Roadway ROW Municipality: Mansfield

Section: Bristol County Township: Range:

17. DIRECTIONS TO THE SITE.

Head Southwest on I-95 S. Take exit 13A to merge onto MA-140 S towards Mansfield. Turn left onto Chauncy Street at the Route 140 intersection.

18. IDENTIFY THE SPECIFIC GENERAL PERMIT(S) YOU PROPOSE TO USE:

GP 23: Linear Transportation Projects and Wetland/Stream Crossings

19. DESCRIPTION OF PROPOSED GENERAL PERMIT ACTIVITY (*see instructions*)

The project will result in temporary and permanent impacts to federally jurisdictional Waters of the United States associated with the culvert extension necessary to accommodate the proposed roadway widening and sidewalk construction along Chauncy Street. See attached project description.

20. DESCRIPTION OF PROPOSED MITIGATION MEASURES (*see instructions*)

Work within the intermittent stream will be conducted in dry conditions through use of water controls. Sedimentation and erosion controls will be installed downgradient of work near and within Waters of the U.S. Temporarily disturbed Bank, WOTUS, and upland area will be stabilized and revegetated. See attached project description.

21. PURPOSE OF GENERAL PERMIT ACTIVITY (*Describe the reason or purpose of the project, see instructions*)

The purpose of this project is to improve traffic and safety for all users along the Project corridor, as there are safety and operational deficiencies which require improvements for safe and efficient operation for all users, including motor vehicles, bicyclists and pedestrians. See attached project description.

22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by Proposed General Permit Activity (*see instructions*)

Area (square feet)	Length (linear feet)	Volume (cubic yards)	Duration	Purpose
317 - WOTUS			Temporary	Construction staging, water controls for work in the dry
	271 - Bank		Temporary	Installation of erosion controls, culvert replacement
115 - WOTUS			Permanent	Culvert extension
	24 - Bank		Permanent	Culvert extension
	10 - Stream Loss		Permanent	Loss of stream associated with culvert extension

Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site.

23. List any other GP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project on any related activity (*see instructions*)

Order of Conditions from the Mansfield Conservation Commission, coverage under the NPDES CGP

24. If the proposed activity will result in the loss of aquatic resources that exceed those identified in the New England District Compensatory Mitigation Thresholds, explain how the compensatory mitigation requirement will be satisfied. (*see instructions*)

The project will result in the loss of 115 sf of Waters of the US / 10 linear feet of an intermittent stream. These impacts do not exceed the mitigation thresholds.

25. Is Any Portion of the General Permit Activity Already Complete? ☐ Yes ☒ No If Yes, describe the completed work:

26. List the name(s) of any species listed as endangered or threatened under the Endangered Species Act that might be affected by the proposed GP activity or utilize the designated critical habitat that might be affected by the proposed GP activity. (*see instructions*)

The monarch butterfly (Danaus plexippus), a candidate species, and the northern long-eared bat (NLEB) (Myotis septentrionalis), an endangered species, may occur within the Project Area. Documentation demonstrating compliance with Section 7 of the Endangered Species Act is included in Appendix F.

27. List any historic properties that have the potential to be affected by the proposed GP activity or include a vicinity map indicating the location of the historic property or properties. Attach relevant project information, along with any responses received from project notifications to this submittal. (*see instructions*)

One historic resource, the Nelson Paine House (MNF.92), listed by the Massachusetts Historical Commission (MHC), is located just east of the Project corridor outside of the limit of work. Documentation demonstrating compliance with Section 106 of the National Historic Preservation Act is included in Appendix E.

28. For a proposed GP activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, identify the Wild and Scenic River or the "study river":

There are no National Wild and Scenic River Systems within the limit of work.

29. If the proposed GP activity also requires permission from the USACE pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, have you submitted a written request for section 408 permission from the USACE district having jurisdiction over that project? ☐ Yes ☐ No

If "yes", please provide the date your request was submitted to the USACE District:

30. Does the activity require a 401 Water Quality Certification (WQC)? If so, specify the type of 401 WQC that is required (general or individual). In cases where an individual 401 WQC is required, provide the date the 401 WQC certification request was submitted to the certifying authority and their contact information.

The final Order of Conditions will serve as the 401 WQC as impacts to a Water of the U.S. are less than 5,000 sf.

31. If the terms of the GP(s) you want to use require additional information to be included in the PCN (i.e. sampling and analysis plan), please include that information in this space or provide it on an additional sheet of paper marked Block 30. (*see instructions*)

N/A

32. I certify that the information in this pre-construction notification is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE
	03/10/2025	Laura Krause	2/6/2025

The Pre-Construction Notification must be signed by the person who desires to undertake the proposed activity (applicant) and, if the statement in block 11 has been filled out and signed, the authorized agent.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

APPENDIX A

- **Project Narrative**

1.0 INTRODUCTION

The Massachusetts Department of Transportation (MassDOT) Highway Division proposes the *Improvements to Chauncy Street (Route 106), Route 140 to Copeland Drive Project (Phase 1)* (the Project) in Mansfield, Massachusetts. The Project proposes improvements along an 1,800-foot stretch of Chauncy Street, an 800-foot stretch of Route 140 (Commercial Street), and a 400-foot stretch of Copeland Drive that is inclusive of the Chauncy Street intersections with Route 140 and Copeland Drive. The Project corridor has safety and operational deficiencies which require improvements for safe and efficient operation for all users, including motor vehicles, bicyclists and pedestrians. The proposed improvements were designed to address the existing deficiencies and are based on an examination of existing conditions, known deficiencies, future traffic volumes, and discussions with MassDOT and Mansfield Town officials.

The purpose of this Project is to improve traffic and safety for all users along the Project corridor. Improvements include a shared use path along the southern side of Chauncy Street with Americans with Disabilities Act (ADA)-compliant ramps; reconstruction of sidewalks along the northern side of Chauncy Street with ADA compliant ramps; new signs and pavement markings; geometric modifications to include turn lanes; and an upgraded traffic signal system at both intersections. The Project also includes extension and replacement of two 18" parallel corrugated metal pipe (CMP) culverts north of Chauncy Street that convey an unnamed intermittent stream southerly under the roadway.

The Project will result in temporary and permanent impacts to federally jurisdictional Waters of the United States associated with extending and replacing two parallel culverts necessary to accommodate the proposed roadway widening and sidewalk construction along Chauncy Street, as well as restore streamflow. Specifically, impacts to WOTUS include 295 linear feet (lf) of impact to Bank (271 lf temporary / 24 lf permanent); 432 square feet (sf) of impact to WOTUS; and 10 lf of stream loss.

Accordingly, the Project requires authorization under Section 404 of the Clean Water Act. Because the extension of the two parallel culverts will not fully meet the stream crossing standards, the Project requires submission of a Pre-Construction Notification to the USACE for the authorization under the US Department of the Army General Permits for the Commonwealth of Massachusetts.

2.0 EXISTING CONDITIONS

2.1 PROJECT LOCUS

Chauncy Street follows an east-west alignment through the northern portion of the Town of Mansfield (Figure 1 – Site Locus) and is functionally classified as an Urban Principal Arterial. Chauncy Street is under MassDOT jurisdiction from Route 140 to just east of the 243 Chauncy Street Driveway, and under Town jurisdiction east of the 243 Chauncy Street Driveway to the Copeland Drive intersection. Copeland Drive is an Urban Minor Arterial and Route 140 is an Urban Principal Arterial, both under MassDOT jurisdiction. The intersection of Chauncy Street and Copeland Drive is also under MassDOT jurisdiction.

Land use in the vicinity of the Project is primarily commercial, with small, forested areas located primarily around the Chauncy Street and Route 140 intersection. Copeland Crossing Apartments is located north of Chauncy Street at the corner of Chauncy Street and Route 140 and is accessible via Chauncy Street. One entrance to the United States Postal Service (USPS) building is also located off Chauncy Street and is accessible through Giles Place. Businesses located along the Project corridor include CVS, Advance Auto Parts, Dominos, as well as several other small businesses and restaurants.

Chauncy Street accommodates one 15-foot single lane of travel in each direction, divided by a double yellow center line, with two-to-three-foot shoulders. Granite curbing and a mix of concrete and asphalt material sidewalks are provided along both sides of Chauncy Street, except to the west of the Copeland Crossing Apartments driveway on the north side of Chauncy Street. Wheelchair ramps are not present, although crosswalks are marked at all four legs of the Chauncy Street and Copeland Drive intersection. At the Chauncy Street and Route 140 intersection a marked, signalized crosswalk is provided across the south leg of the intersection, and a marked, unsignalized crosswalk is provided connecting the southeast corner of the intersection to the island across the northbound channelized right turn lane. Parking is prohibited on both sides of Chauncy Street.

Pavement along the Project corridor is generally in fair condition with a considerable number of cracks. Pavement markings are overall in good condition along Chauncy Street and both intersections with cracked markings and some faded areas in need of restriping. Utility poles are located on the north and south sides of Chauncy Street directly at the back of curb in some locations and offset between 15 & 18 inches from the existing edge of pavement in other locations. One utility pole is located in the median south of the Route 140 intersection. Overhead wires cross Chauncy Street in multiple locations within the Project Corridor. Within the Chauncy Street roadway, subsurface gas, water, sewer, and telephone lines are present and connect to various business along Chauncy Street. Existing stormwater features consist of curb and gutter conveyance which directs stormwater runoff to closed drainage systems consisting of catch basins, manholes, and culverts.

An L-shaped headwall between Stations 29+50 and 30+00 conveys an unnamed intermittent stream southerly under Chauncy Street via two 18" parallel CMP culverts for ± 62 lf until it enters a vault and continues through a single 30" reinforced concrete pipe (RCP) culvert for 304 lf. The span of the two 18" CMP culverts is 3 feet, and the span of the 30" RCP culvert is 2.5 feet. An as-built of the culverts is included in Appendix J and below for reference.

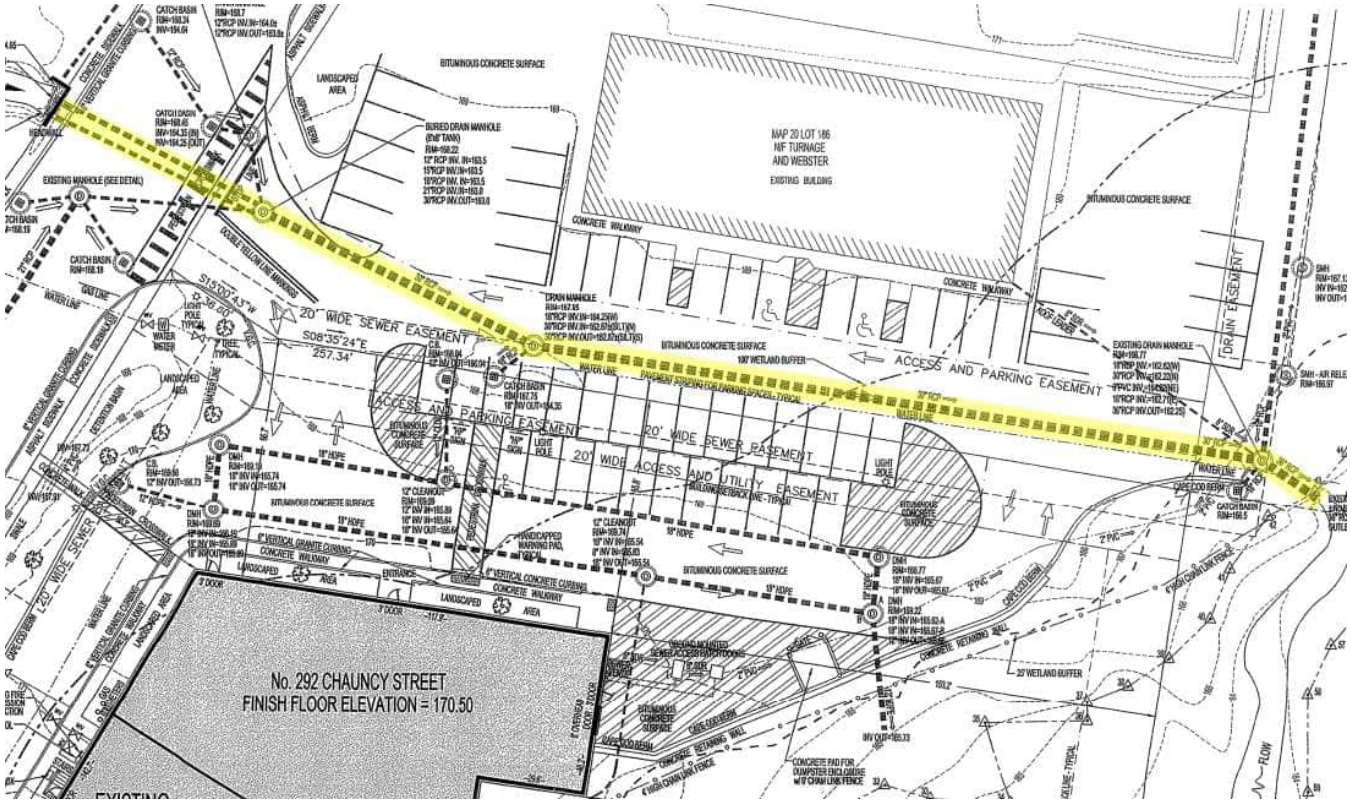
2.2 JURISDICTIONAL WATERS OF THE US

A Site inspection was conducted by BETA Group Inc.'s Wetland Scientists to identify and delineate the boundary of Wetland Resource Areas on and in the immediate vicinity of the Site on July 25, 2023. Wetland Resource Area boundaries were identified and delineated in accordance with methods developed by the Massachusetts Department of Environmental Protection's *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act: Second Edition*, dated 2022, as well as definitions set forth in the state Wetland Regulations, 310 CMR 10.00, and the federal Clean Water Act (33 U.S.C. §1251 et seq (1972)).

Existing Waters of the US within, or immediately adjacent to, the limit of work include inland Bank between Stations 29+50 to 29+75 westbound (to unnamed intermittent stream – B1, B2, and B3 Series Bank), and Vegetated Wetlands located between Stations 27+00 to 30+50 westbound, Stations 155+00 to 157+50 northbound, and Stations 160+00 to 163+00 northbound (WF1, WF2, WF3, WF4, and WF5 series).

An L-shaped headwall between Stations 29+50 and 30+00 conveys an unnamed intermittent stream to the south under Chauncy Street via two 18" parallel CMP culverts for ± 62 lf until it enters a vault and continues through a single 30" RCP culvert for 304 lf under a commercial driveway / parking area before discharging south of 292 Chauncy Street. The stream channel upgradient of the culverts is generally 2 to 4 feet wide and the water depth observed during the Site inspection was approximately 6 to 12 inches. Substrate upgradient of the two 18" parallel culverts was mucky but within the culverts there was no native substrate.

A description of Resource Areas subject to Protection under Section 404 is included in Appendix A – Wetland Delineation Report, including USACE Field Data Forms.



As-built of the culverts conveying the intermittent stream under Chauncy Street.

3.0 PROPOSED CONDITIONS

The proposed work within the Chauncy Street corridor, including the extension and replacement of two parallel culverts, will provide improvements to physical and operational deficiencies for safe and efficient vehicular, bicycle, and pedestrian use. Geometric changes proposed with the Project Corridor will result in an overall increase in impervious surface but will also enable small areas of previously impervious roadway to be revegetated with the creation of 3 new landscaped areas. Improvements being proposed to accomplish the goals of the Project generally include the following:

- Provide an 8-foot-wide cement concrete shared use path on the south side of Chauncy Street within the project limits and at both intersections ;
- Reconstruct existing cement concrete sidewalk along the corridor;
- Install new accessible ramps with detectable warning panels and new sidewalks at the intersections and all driveways. Proposed ramps and sidewalks will meet MassDOT and ADA requirements;
- Provide crosswalks across all intersecting side streets;
- Provide one 11-foot travel lane in both directions along Chauncy Street within the project limits;
- Widen roadway to provide exclusive left-turn lanes on the Chauncy Street approaches to the

Copeland Drive intersection and to provide an exclusive right-turn lane for Chauncy Street eastbound and westbound;
- Widen roadway to provide an exclusive right-turn lane on the Chauncy Street eastbound approach to the Route 140 intersection;
- Rehabilitate pavement by means of pavement milling and a double layer overlay in addition to full depth box widening in various locations;
- Provide new pavement markings and signs;
- Install traffic signalization improvements;
- Make improvements to the existing drainage system including Best Management Practices to the maximum extent practicable;
- Replace two parallel 18-inch culverts carrying an intermittent stream under Chauncy Street (61 linear feet of the eastern culvert and 62 linear feet of the western culvert) to restore streamflow and extend both culverts by 10 linear feet to the north of Chauncy Street to accommodate roadway widening, resulting in 10 lf of stream loss. This will replace and extend both culverts from the existing headwall to the existing vault.
- Installation of erosion and sedimentation controls; and
- Landscaping.

4.0 CONSTRUCTION SEQUENCE

The construction sequence for the Chauncy Street Improvements Project will be determined by the contractor, however, the anticipated construction sequence, equipment proposed, and staging areas associated with the Project are provided below.

4.1.1 SITE PREPARATION

- Mobilize equipment, materials, and personnel;
- Install erosion and sedimentation control measures to protect downgradient resource areas and demarcate the limit of work, including installation of turbidity curtain;
- Ensure compliance with any pre-construction conditions outlined in the Order of Conditions, the Authorization Letter from USACE, and any other required permits

4.1.2 CONSTRUCTION

- Install any traffic control elements;
- Construct roadway improvements including utilities, drainage, sidewalk, and pavement improvements.
- Construct the replacement and extension of the two 18” parallel culverts with installation of the turbidity curtain and water controls (see Section 9 Water Control and Dewatering) to occur prior to the start of construction.

4.1.3 PROJECT CLOSE-OUT

- Restore and stabilize the work area, including removing turbidity, erosion, and sedimentation control measures;
- Demobilize following construction; and
- Monitor the Site.

5.0 IMPACTS TO WATERS OF THE U.S.

Given the location of Waters of the US in proximity to and within the Site, the Project will result in unavoidable impacts meet the Project goal. These impacts include temporary and permanent alterations to streambank and streambed. Work within these areas is associated with installation of water controls (see Section 9 Water Control and Dewatering), removal of the existing concrete headwall, replacement (±62 lf) and extension (10 lf) of the two parallel 18" culverts under Chauncy Street, and construction of a new headwall. The Project components were designed to minimize these impacts to the extent practicable.

Table 1 provides total impact calculations of each resource area to be altered by the Project.

Table 1: Waters of the US Impacts and Restoration

Resource	Temporary Impact	Permanent Impact
Bank	271 LF	24 LF
LUW / WOTUS	317 SF	115 SF
Stream Loss		10 LF

5.1 BANK IMPACTS

The Project will result in temporary and permanent impacts to the Bank of an unnamed intermittent stream. The Banks on both sides of the stream are vegetated and well-defined. Permanent impacts result from extension of the culverts on the north side of Chauncy Street. The existing L-shaped headwall will be replaced with a new linear headwall located 10 feet further north and parallel to Chauncy Street. Extension of the culverts is necessary to improve the intersection with Giles Place. Due to the current configuration of the headwall, permanent impact to the eastern Bank (13 lf) will be greater than impact to the western Bank (11 lf).

Of the 271 lf of temporary Bank impact, 246 lf is associated with the replacement of two parallel culverts under Chauncy Street from the headwall to a vault, with 122 lf associated with the western culvert and 124 lf associated with the eastern culvert. The remaining 25 lf of temporary impacts result from construction access to install the new headwall, grading following construction, and installation of water and sedimentation controls. Temporarily impacted Bank will be restored to match existing grades and seeded with a riparian seed mix. Banks will be restored to pre-construction conditions through the reestablishment of existing grades/slopes, application of a native seed mixture, and use of addition measures such as coir logs and erosion control blankets as needed.

5.2 WATERS OF THE US / LAND UNDER WATER IMPACTS

The Project will result in temporary and permanent impacts to the WOTUS associated with an unnamed intermittent stream. Permanent impacts to WOTUS result from extension of the two parallel 18" diameter pipe culverts and new headwall installation 10 feet north of the existing headwall, as necessary to allow for roadway improvements and pedestrian accommodations along Chauncy Street. Where the culvert is being extended to the north, 10 lf of stream loss is proposed as measured along the center line from the face of the existing headwall to the face of the proposed headwall.

Of the 317 sf of temporary WOTUS impact, 185 sf is associated with the replacement of two parallel culverts under Chauncy Street from the headwall to a vault (±62 lf) with 92 sf associated with the western culvert and 93 sf associated with the eastern culvert. The remaining 132 sf of temporary WOTUS impacts result from construction staging within the streambed to complete the extension of the two parallel culverts, and installation of water controls. No heavy equipment is anticipated to be placed within the WOTUS; however, dewatering may be required as determined by the contractor. Following construction, all staging equipment will be removed from the stream, and the temporarily impacted WOTUS restored using native material.

5.3 STREAM CROSSING STANDARDS

The Project requires the extension of one stream crossing to accommodate the proposed widening necessary to improve the Chauncy Street/Giles Street intersection. The table below describes the Project's compliance with the Massachusetts Stream Crossing Standards. The Stream Crossing Standards cannot be met, and replacement of the existing culverts to comply is not practicable or feasible (see Section 13). The length of the existing culverts extends beyond the Project limits as shown in the culvert as-built plans included in Appendix J.

Table 2 – Stream Crossing Standards

Stream Information and Standards	Existing (B1/B2)	Proposed (B1/B2)
Location	Sta. 29 + 75	Sta. 29 + 75
Stream Type	Intermittent Stream	Intermittent Stream
New or Replacement Crossing	N/A	Extension/Partial Replacement
Standard 1 **Crossing Type**	**Two 18" corrugated metal pipes**	**Two 18" ductile iron pipes**
Standard 2 **Embedment > 2 feet**	Embedment of the existing culverts is unknown, and assumed to be less than 25%[1] - **Not Met**	Culverts to meet existing culvert, which is presumed not to be sufficiently embedded - **Not Met**
Standard 3 **Crossing Span >1.2*BFW**	BFW = 9' 1.2* 9' = 10.8' Span = 3' **Not Met**	BFW = 9' 1.2* 9' = 10.8' Span = 3' (matches existing) **Not Met**
Standard 4 **Openness Ratio >0.82 feet**	$= \frac{2 * (\frac{pi * 1.5'^2}{4})}{366'}$ = 0.0097 feet **Not Met**	$= \frac{2 * (\frac{pi * 1.5'^2}{4})}{376'}$ = 0.0094 feet **Not Met**

[1] *The Massachusetts Stream Crossing Standards: Second Edition* dated June 2012, Page 7, Standard 2 Embedment "All culverts should be embedded (sunk into stream) a minimum of 2 feet, and round pipe culverts at least 25%."

Standard 5 **Substrate Type**	Substrate will match the existing substrate upstream of the existing culverts.
Standard 6 **Water Depth and Velocity**	The culverts will be installed so the finished grade within the culverts will be at the existing streambed elevation, resulting in no change to the water depth or velocity

As documented in the table above, the proposed extension of the two culverts will not substantially change any of the stream crossing characteristics from existing conditions.

6.0 Impact Avoidance, Minimization, and Mitigation

The Project was developed to avoid, minimize and mitigate impacts to Wetland Resource Areas, wildlife habitat, and other sensitive areas. Measures are provided to mitigate temporary and unavoidable permanent impacts. Impacts to Waters of the US have been mitigated through restoration of temporarily impacted areas and stormwater management improvements.

Temporary impacts to streambank will be restored in-kind by grading to preconstruction elevation and seeding with a native seed mix. Following construction, temporary streambed impact areas will be restored in place using material removed from the streambed during construction.

7.0 Invasive Species Control

Temporary alteration to Waters of the United States will create opportunities for invasive species to colonize newly exposed soils. Minor site grading and temporary construction access will create exposed areas of disturbed soils vulnerable to colonization by invasive species. Newly disturbed soils and vegetation present openings for highly prolific invasive plant species to establish and out-compete native plant species. Adjacent existing invasive species populations provide a seed bank for future growth, adding to the invasive management challenge.

The introduction or spread of invasive or other unacceptable plant or animal species on the project Site or areas adjacent to the project caused by the site work shall be avoided to the maximum extent practicable. For example, construction equipment shall be thoroughly cleaned and free of vegetation and soil before and after use. See Appendix G for Invasive Species Control Specifications.

8.0 Erosion and Sedimentation Control

The attached Project Plans in Appendix E provide details and descriptions of the stormwater, erosion, and sedimentation protection measures. Erosion and sedimentation controls will be installed and maintained by the contractor where activities are proposed within 100-feet of Waters of the US. Where work is within proximity of Waters of the US, the proposed controls will provide a limit of work barrier while also preventing silt and sediment from migrating into or towards these Resource Areas. Erosion and sediment controls will be selected by the contractor and may consist of compost-filled filter tubes, straw wattles, erosion control blankets, coir logs, turbidity curtains, and/or silt fencing where appropriate.

The erosion and sedimentation controls will be installed in accordance with the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas, March 1997. As per the standard, the contractor will be responsible for obtaining coverage under the NPDES Construction General Permit. A

Stormwater Pollution Prevention Plan (SWPPP) will be submitted prior to any land disturbance. Per the SWPPP, the contractor will monitor and assess conditions and identify problems in the field during and after construction activities.

9.0 WATER CONTROL AND DEWATERING

The replacement and extension of culverts will require the implementation and maintenance of temporary water controls within the intermittent stream so that the work can be completed in the dry. It is anticipated that the culverts will be extended and replaced one at a time so that flow can be bypassed through one culvert while work occurs at the other. The water control method for the Project could include use of sandbags and a plastic liner with a flow bypass.

Dewatering of the work area will be completed to avoid an increase in turbidity over the baseline conditions. It is anticipated that the work area will be dewatered via pumping to a settling tank or dewatering system that filters the water prior to discharge back to the stream. The dewatering method and water controls will be contractor -designed and will be included in the prepared SWPPP which will be completed by the contractor prior to the start of work.

10.0 STORMWATER MANAGEMENT

The Stormwater Checklist and a Stormwater Report have been completed and submitted with this PCN, Appendix C. As described in the Stormwater Report, the Project constitutes a Redevelopment Project because the work will substantially occur within an existing paved roadway.

The Contractor will be responsible for developing a Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan. The proposed work will result in a net increase in impervious area by 16,535 sf, which will result in minor increases in the volume and rate of stormwater runoff. No changes will occur to the roadway corridor that would alter surface drainage patterns.

Existing stormwater runoff from the Project corridor and surrounding areas is generally collected through a series of curbside catch basins into several closed drainage systems. Stormwater collected in these systems is conveyed to an unnamed intermittent stream and a closed drainage system that is conveyed beyond the Project survey limits.

The existing closed drainage systems will be modified to meet with the proposed design, which includes the installation of new deep sump catch basins and lateral drainage lines. Additional stormwater improvements include the installation of several offline leaching basins on the west side of Copeland Drive and retrofitting the existing grassed swale in the Route 140 median to the north of the Route 106 intersection to be a water quality swale. The proposed stormwater management system modifications will provide an improvement to the existing conditions, while primarily maintaining existing drainage patterns and discharge locations.

11.0 FISHERIES AND WILDLIFE / NHESP / VERNAL POOLS

According to the latest MassGIS data, the Project is not located within Massachusetts Natural Heritage and Endangered Species Program (NHESP) mapped Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife. The Project Area is not located within an Area of Critical Environmental Concern (ACEC), or within 200 feet of mapped Certified or Potential Vernal Pools. In addition, the Project Site is not located

within groundwater or surface water protection zones associated with a public water supply and is not located within proximity to a Coldwater Fishery.

According to the U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Conservation (IPaC) online mapping tool, monarch butterfly (*Danaus plexippus*), a candidate species, and the northern long-eared bat (*Myotis septentrionalis*), an endangered species, (NLEB) may occur within the Project Area.

Based on the FHWA's Programmatic Biological Opinion, USWFS has determined that the Project will (may affect, not likely to adversely affect / will not affect the NLEB). MassDOT's consultation documentation is included in Appendix F.

12.0 Historic Coordination

According to the Massachusetts Historical Commission (MHC)'s online mapping service, MACRIS Maps, there is one historic resources located along the Project corridor. This property, the Nelson Paine House (MNF.92), listed by MHC, is located at 200 Chauncy Street. Based on the information in the MACRIS system, the Nelson Paine House is located at the eastern limit of Project corridor and has not been demolished (Figure 3: Historic Resource Map). Through a review of historic aerials, however, it appears that this structure was demolished between 1980 and 1995.

The Project will be reviewed by the MassDOT Cultural Resource Unit (CRU) to identify potential impacts to historical, cultural and archaeological resources. It is anticipated that this Project will have no adverse effect to cultural, historical, and archaeological resources within the vicinity of the Project Area.

The Section 106 coordination documentation is attached to this application (Appendix E).

13.0 Alternatives Analysis

Concept alternatives were developed and build conditions capacity analyses were conducted for the corridor and intersection to address operational and safety deficiencies recommended from the Road Safety Analysis (RSA) and Safety Review. The provision of bicycle accommodation along the corridor and improving traffic operations and safety along the corridor and at both intersections for turning vehicles were goals of the project.

13.1 No Build Option (Alternative 1)

The No-Build Option, which would effectively result in no action being taken by MassDOT, results in Chauncy Street remaining in the same condition as existing conditions. The Project corridor would continue to experience an increase in traffic volume, and traffic operations are expected to degrade when compared to existing conditions.

This alternative would avoid impacts to the intermittent stream; however, no stormwater, traffic or accessibility improvements would be made.

13.2 Corridor Alternatives (Alternative 2)

Two concepts were initially developed for the corridor that included widened shoulders accommodating bicycles, which met MassDOT criteria for bicycle accommodation at the time.

Alternative 2.1 This alternative would provide a single lane in each direction, with the proposed roadway

essentially occupying the same width as the existing roadway. The roadway in both directions would include sidewalks and bicycle lanes/shoulders, but no left-turn lane accommodations would be made. Maintaining the existing roadway width would not require extension of the culverts, thereby avoiding any Resource Area impacts. This alterative would only partially meet the goals of the project as bicycle accommodations would be provided but traffic operations along the corridor would not be sufficiently improved without left-turn lane accommodations.

Alternative 2.2 This alternative would provide a single lane in each direction with the addition of a two-way left turn lane and would include sidewalks and bicycle lanes/shoulders in both directions. The Town of Mansfield indicated a strong preference for this alternative to accommodate left turns into the closely spaced abutting businesses along Chauncy Street between Route 140 and Copeland Drive. To make room for these improvements within the project corridor, greater Resource Area impacts would be required at the proposed culvert extensions, as the work area would have extended farther north. Significant land takings of abutting properties and businesses would also be required to add two-way left turn lanes, widen the roadway shoulders to accommodate bicycles, and provide pedestrian accommodations. Although this alterative would meet the goals of the Project, extensive Resource Area impacts would be required and the acquisition of private property would be costly.

Alternative 2.2a (the preferred alternative) To avoid the private property takings and large resource area impacts described above, a modified version of Alternative 2.2 was evaluated. This alternative proposes a typical 5-foot sidewalk on the north side of Chauncy Street and an 8-foot bi-directional path (shared use path) on the south side to accommodate bicyclists and pedestrians. Installation of a shared use path on the south side of Chauncy Street also allows for the inclusion of a two-way left turn lane to improve traffic operations.

While the extension of the two culverts would still be required by this alternative; the length of extension and associated Resource Area impacts would be less than required under Alternative 2.2. The goals of the project to provide pedestrian accommodations on both sides of the road, bicycle accommodations, and a two-way left turn lane to improve traffic operations are also met by this alternative. Accordingly, this alternative was selected.

13.3 Culvert Type Alternatives (Alternative 3)

In order to meet the purpose of the Project and accommodate Alternative 2.2a (described above), the two parallel culverts carrying the *B1/B2 Series* intermittent stream need to be extended to the north, and ± 62lf of the culverts will be replaced from the existing headwall to a vault to restore streamflow, as these culverts are in poor condition. The feasibility of upgrading the culverts to meet the Massachusetts Stream Crossing Standards were reviewed as described below.

Alternative 3.1 This alternative proposes replacement and extension of the two culverts that meets the Massachusetts Stream Crossing Standards, which would require a minimum 10.8-foot span culvert with a natural substrate and expanded openness ratio. Improving only the two 18" parallel culverts up to the vault via culvert replacement (±62 lf) and culvert extension (10 lf) upstream of a 304 lf single 30" culvert would provide limited benefit to the ecology and hydraulics of the system.

To improve the ecological conditions within this stream segment, replacement of the entire culvert from the headwall to the discharge point (a total culvert length of 366 lf) to better meet the Stream Crossing Standards would be necessary. This would include replacement of the two 18" parallel culverts up to the vault and replacement of the single 30" culvert from the vault to the discharge point. Considering the 10 lf extension to

the culverts required to accommodate roadway widening (a total culvert length of 376 lf), a structure with a cross sectional area of 308 square feet (approximately 30 feet by 10 ft) would be necessary to comply with the openness ratio requirements, however, a structure of that size is not reasonable for the location. In addition, to fully comply with the standards would be significantly more costly, require significant changes in the roadway profile, result in utility conflicts, require extensive work on private property, and change the stream system's hydraulics.

Alternative 3.2 This alternative proposes the extension and replacement of the two 18" parallel culverts to the vault, removing the parallel culverts, and replacing them with a single 30" diameter culvert to match the downstream pipe diameter. This culvert configuration will change the system's compliance with the stream crossing standards by decreasing the span length. In addition, these culverts cross both water and gas utilities. Changing the culvert size could also result in utility conflicts. Therefore, this alternative was not selected.

Alternative 3.3 This alternative proposes the extension and replacement of the two 18" parallel culverts to the vault, removing the parallel culverts, and installing a culvert that provides a 10.8 foot span for 62 lf, while maintaining the304 linear foot 30" culvert downstream that travels under private property. Providing a culvert span of 10.8 feet under the roadway would necessitate significant roadway profile changes, result in utility conflicts, require impacts to private properties associated with changes in the roadway profile, and would increase costs for the project substantially, while almost no ecological benefit. Therefore, this alternative was not selected.

Alternative 3.4 (**preferred alternative)** This alternative proposes the extension and replacement of the two 18" parallel culverts to the vault that is consistent with the existing culverts in this location, including a new headwall with two 18-inch-diameter pipes that do not meet the Stream Crossing Standards. This culvert configuration will maintain the hydraulics of the existing system through the addition of 10 feet of pipe onto the upstream end of the existing 366-foot-long culvert. This alternative was selected due to its lower cost, and consistency with the existing hydraulics.

Alternative 3.5 This alternative proposes a replacement and extension of the two culverts that meets the Massachusetts Stream Crossing Standards. This alternative proposes the replacement of the culvert from the proposed headwall to vault (a total culvert length of 72 lf) to meet the Stream Crossing Standards, then daylighting the 304 linear foot segment of the stream from the vault to the wetlands. This would require a structure with a cross sectional area of 59 square feet (approximately 10.8 feet by 5.5 ft) to comply with the openness ratio requirements.

While this alternative would improve ecological conditions, it would eliminate, or significantly restrict, access to private property, remove parking on private property, cost more, require changes in the roadway profile, result in utility conflicts, and change the stream system's hydraulics. Therefore, this alternative was not selected.

14.0 Regulatory Compliance

Below is list all other federal, interstate, tribal, state, territorial, or local agency authorizations and reviews required for the proposed Project:

- Section 106 Historic Review, as the Project is partially federally funded.
- Section 7 Project Review, as the Project will occur within the range of the Northern Long-Eared Bat (*NLEB - Myotis septentrionalis*), therefore it is subject to review under Section 7 of the Endangered Species Act (ESA).

- National Environmental Policy Act (NEPA) review through preparation of a programmatic Categorical Exclusion.
- Wetlands Protection Act (WPA) review through the filing of a Notice of Intent to the Mansfield Conservation Commission.

15.0 SUMMARY

The proposed *Improvements to Chauncy Street (Route 106), Route 140 to Copeland Drive Project* will improve traffic and safety for all users along Chauncy Street within the Project limits, including the intersections at Route 140 and Copeland Drive. Pedestrian accommodations proposed include a shared use path proposed along the southern side of Chauncy Street, and reconstruction of existing sidewalks along the northern side of Chauncy Street with ADA compliant ramps. Geometric modifications to include turn lanes and an upgraded traffic signal systems will increase efficiency and safety within the Project Corridor for all users.

The proposed design includes upgrades to the existing drainage system to improve water quality including installation of new deep sump catch basins, installation of several offline leaching basins, and retrofitting the existing grassed swale in the Route 140 median to the north of the Route 106 intersection to be a water quality swale.

The Project has been designed to meet all local, state, and federal standards and comply with the General Conditions of the US Army Corps Massachusetts General Permit.

APPENDIX B

- **Figure 1 – Site Locus**
- **Figure 2 – Environmental Resources Map**
- **Figure 3 – FEMA FIRMette**

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IMPROVING COMMUNITIES TOGETHER

N
W E
S

0 1,000 2,000 Feet

1 inch = 1,000 feet

Figure 1
Site Locus
Chauncy Street (Route 6)
Mansfield, MA

Data Source: MassGIS USGS Topographic Quadrangle Images (2001)

Proposal No. 613052-131228

Figure 2
Environmental Resources Figure
Chauncy Street (Route 106)
Improvements Phase 1
Mansfield, MA

Environmental Resources Legend
- MassDEP Hydrologic Feature
- Marsh/Bog
- Wooded marsh
- Open Water

Wildlife Habitat Legend
- NHESP Certified Vernal Pool
- NHESP Potential Vernal Pool
- NHESP Priority Habitat of Rare Species
- NHESP Estimated Habitats of Rare Wildlife
- Area of Critical Environmental Concern (ACEC)
- MA DFW Coldwater Fisheries Resources

Drinking Water Protection Areas
- Zone A
- Zone B
- ZONE C
- MassDEP IWPA
- MassDEP Zone I
- MassDEP Zone II
- Outstanding Resource Water

N
W E
S

0 150 300 Feet

1 inch = 150 feet

Data Source: MassGIS USGS Color Ortho Imagery (2014), MassDEP Wetlands (1:12000) (2009), NHESP Potential Vernal Pools (2000), NHESP Certified Vernal Pools, NHESP Priority Habitats of Rare Species (2008), NHESP Estimated Habitats of Rare Species (2008), Areas of Critical Environmental Concern (2009), FEMA National Flood Hazard Layer (2014),

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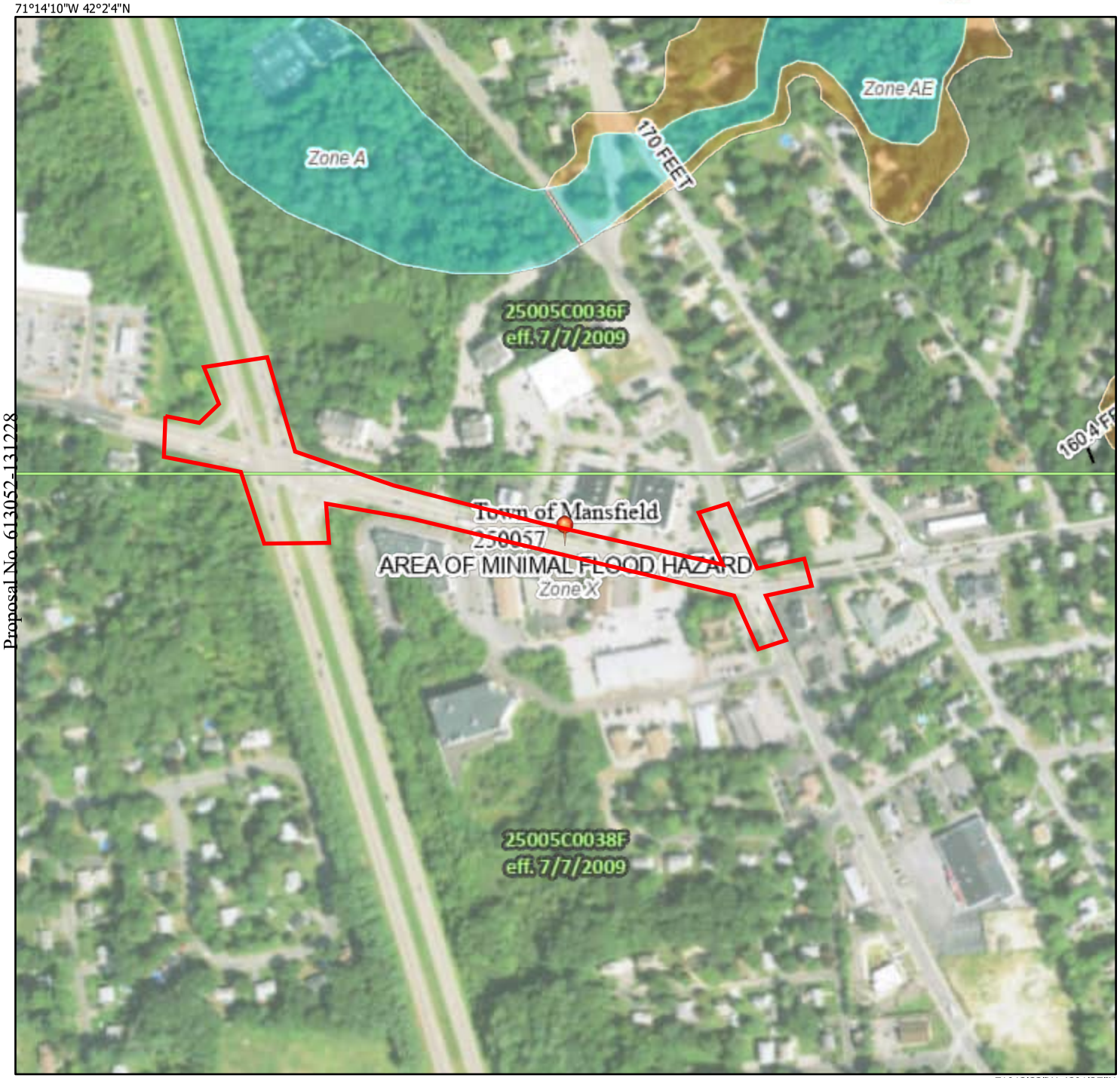
National Flood Hazard Layer FIRMette



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

A00830 - 28

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/21/2023 at 9:09 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX C

- **Photographic Documentation**

Photo 1

View of the intersection of Chauncy Street (Route 106) and Copeland Drive—facing east.

Photo 2

Another view of the intersection of Chauncy Street (Route 106) and Copeland Drive—facing northwest.

PHOTOGRAPHIC DOCUMENTATION

Improvements to Chauncy Street (Route 106)

Mansfield, Massachusetts

Photographs Documented December 15, 2020

Photo 3

View of the intersection of Chauncy Street (Route 106) and Commercial Street (Route 140)—facing east.

Photo 4

Another view of the intersection of Chauncy Street (Route 106) and Commercial Street (Route 140)—facing west.

PHOTOGRAPHIC DOCUMENTATION

Improvements to Chauncy Street (Route 106)

Mansfield, Massachusetts

Photographs Documented December 27, 2023

Photo 5

View of the roadway conditions on Chauncy Street (Route 106)—facing east.

Photo 6

View of the intersection of Chauncy Street (Route 106) and Giles Place—facing west.

PHOTOGRAPHIC DOCUMENTATION

Improvements to Chauncy Street (Route 106)

Mansfield, Massachusetts

Photographs Documented December 15, 2020

Photo 7

View of the headwall and culvert carrying an intermittent stream under Chauncy Street—facing south.

Photo 8

View of the BVW and intermittent stream adjacent to Chauncy Street—facing south.

PHOTOGRAPHIC DOCUMENTATION

Improvements to Chauncy Street (Route 106)

Mansfield, Massachusetts

Photographs Documented December 15, 2020 and July 26, 2023

APPENDIX D

- **Wetland Delineation Report**

Resource Area Boundary Delineation
Chauncy Street (Route 106)
From Route 140 to Copeland Drive
Mansfield, Massachusetts

January 16, 2024

BETA Group, Inc. (BETA) Wetland Scientists conducted Wetland Resource Area delineations along Chauncy Street (Route 106), the Chauncy Street and Commercial Street (Route 140) intersection, and the Chauncy Street and Copeland Drive intersection in Mansfield, Massachusetts (the Site) on July 25, 2023. This report describes Resource Areas Subject to Protection under the Massachusetts Wetlands Protection Act (M.G.L. Chapter 131 Section 40 – the Act), the Town of Mansfield Wetland Protection Bylaw (Chapter 15 – the "Bylaw"), the federal Clean Water Act (33 U.S.C. §1251 et seq (1972)), and the Massachusetts Clean Waters Act (MGL Chapter 21 Section 26-53) that exist on or within 100 feet of the Site as well as the methodologies used to delineate their boundaries.

Site Description

The Site consists of an approximately 1,800-foot section of Chauncy Street, an 800-foot section along Commercial Street, and a 400-foot section along Copeland Drive in Mansfield, Massachusetts (Figure 1 – Site Locus). Land use north, east, and south of the Site is primarily commercial, with small, forested areas located primarily around the Chauncy Street and Commercial Street intersection and interspersed wetlands and waterways (Figure 2 – Environmental Resources). Residential parcels and Stop and Shop are located west of the Site. Existing improvements include paved roadways, roadway shoulders, and an existing sidewalk along the north side of Chauncy Street.

According to the USDA Natural Resources Conservation Service – Soil Survey, mapped soils on and within proximity to the Site are generally classified as Scarboro mucky fine sandy loam, Swansea muck, Freetown muck, Hinckley loamy sand, and Udorthents, refuse substratum (dumps and landfills). Field observations generally confirmed the soil types at the Site. The *Soil Map of Bristol County, Massachusetts, Northern Part* is attached.

State jurisdictional Resource Areas identified within 100 feet of the Site include Bank (to an unnamed intermittent stream), Bordering Vegetated Wetlands (BVW), and Land Under Water (LUW). The MassGIS database was used as the initial step in identifying critical areas on or within proximity to the Site that would be examined more closely if construction activities are proposed. The table below describes selected environmentally critical categories as determined through MassGIS.

Table 1: Selected MassGIS Environmental Data Layers

Mapped Resource On or Within Proximity to Site	Yes	No
Area of Critical Environmental Concern		✓
NHESP Certified Vernal Pool		✓
NHESP Potential Vernal Pool		✓
NHESP Established Habitat of Rare Wildlife		✓
NHESP Priority Habitat of Rare Species		✓
Outstanding Resource Waters		✓
FEMA Flood Zones		✓
Surface Water Protection Area (Zones A and B)		✓
Interim Wellhead Protection Area		✓
Zone I Wellhead Protection Area		✓

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Mapped Resource On or Within Proximity to Site	Yes	No
Zone II Wellhead Protection Area		✓
Wild and Scenic River		✓
Coldwater Fisheries Resource		✓

Source: MassGIS

Jurisdictional Wetland Resource Areas – Massachusetts Wetlands Protection Act

A Site visit was conducted by BETA's Wetland Scientists on July 25, 2023, to identify and delineate the boundaries of Wetland Resource Areas at and in the immediate vicinity of the Site. Resource Area boundaries were identified and delineated in accordance with methods developed by the Massachusetts Department of Environmental Protection's *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act: Second Edition*, dated 2022, as well as definitions set forth in the Wetland Regulations, 310 CMR 10.00. Several areas subject to Protection under the Act exist along the Site and are described below.

Inland Bank (to intermittent stream) – 310 CMR 10.54

According to 310 CMR 10.54(2), the definition of a Bank is the portion of the land surface which normally abuts and confines a water body, occurring between a water body and a vegetated bordering wetland and adjacent floodplain, or, in the absence of these, it occurs between a water body and an upland. The upper boundary of a Bank is the first observable break in the slope or the mean annual flood level, whichever is lower.

BETA identified the resource Bank to one (1) unnamed intermittent stream within and near the Site. Banks were delineated in the field with blue flagging or otherwise identified as described in Table 2.

Table 2: Bank Boundary Description

Flag Series	Location	Description / Notes
B1 / B2 Series Flags B1-100 to 102; B2-200 to 203 *B3 Series Flags B3-300 to 301*	Unnamed intermittent stream, west of 273 Chauncy Street.	The eastern (*B1 Series)* and southern/western (*B2/B3 Series*) Banks of an unnamed intermittent stream were delineated in two segments along the first observable break in slope (consistent with the mean annual flood level), where flow is generally conveyed southerly toward Chauncy Street. This stream channel at this location was generally 2 to 4 feet wide with a mucky substrate, and the water depth observed during the Site visit was approximately 6 to 12 inches. This stream is not mapped on USGS topographic maps or the StreamStats program; therefore, it is presumed to be intermittent. Segment 1: Flags *B1-100 to B1-102* and *B2-200 to B2-203* delineate the Bank of this intermittent stream immediately north of Chauncy Street, west of 273 Chauncy Street. The stream is conveyed under Chauncy Street through 2 separate 18-inch pipes for approximately 370 feet, discharging south of 292 Chauncy Street. Banks consisted of well-defined fill slopes vegetated by silky dogwood (*Cornus amomum*), purple loosestrife (*Lythrum salicaria*), and Japanese knotweed (*Falloipia japonica*). Segment 2: Flags *B3-300 and B3-301* delineate the Bank east of the driveway to the Copland Crossing Condominiums, upstream of the *B1/B2 Series* flagging. The stream is conveyed under the driveway from the *WF2 Series* BVW through a three-sided box culvert of an undetermined size. The flow continues easterly within *WF1 Series* BVW until directed southerly to the *B1/B2 Series*. This Bank consists of a well-defined rock-armored fill

Flag Series	Location	Description / Notes
		slope sparsely vegetated by Japanese knotweed.
Not flagged	Unnamed intermittent stream, interior to the *WF5 Series*	An intermittent stream flowing easterly until its confluence with Robinson Brook was observed interior to the *WF5 Series* BVW. The stream is conveyed under the Commercial Street roadway through two large concrete culverts at the northern end of the BVW between flags *WF5-509* and *WF5-510.* Upon discharge from the culverts, the two stream channels merge into one 3- to 4-foot-wide channel with a mucky substrate, where the water depth was approximately 4 to 6 inches during the Site visit. This stream is not depicted on USGS topographic maps but is mapped on the USGS StreamStats program. The StreamStats report demonstrates that the associated drainage area does meet the definition of perennial under 310 CMR 10.58(2); therefore, the stream is intermittent. Bank of this intermittent stream was not flagged in the field, as it is interior to the WF5 Series BVW, and no work is occurring within the vicinity of the stream.

Bordering Vegetated Wetlands – 310 CMR 10.55

According to 310 CMR 10.55(2), the definition of BVW is freshwater wetlands which border on creeks, rivers, streams, ponds and lakes and are areas where the soils are saturated and/or inundated such that they support a predominance of wetland indicator plants. The boundary of BVW is the line within which 50% or more of the vegetation community consists of wetland indicator plants and saturated or inundated conditions exist.

BETA identified five (5) areas of BVW within or adjacent to the Site. US Army Corps of Engineers' *Vegetated Wetland Boundary Delineation Field Data Sheets* documenting BETA's observed evidence of hydrology, soils, and hydrophytic vegetation at specific data plots are attached. BVW was delineated in the field with pink flagging as described in Table 3.

Table 3: BVW Boundary Description

Flag Series	Location	Description / Notes
WF1 Series Flags WF1-100 to 107	North side of Chauncy Street, near 273 Chauncy Street	The *WF1 Series* BVW is a forested wetland bordering the *B1/B2/B3 Series* intermittent stream north of Chauncy Street. The attached U.S. Army Corps of Engineers Field Data Sheets describes observations of hydrophytic vegetation, hydric soils, and hydrology at a specific data plot.
WF2 Series Flags WF2-200 to 209	North side of Chauncy Street, near 287 Chauncy Street	The *WF2 Series* BVW is a forested wetland bordering an intermittent stream north of Chauncy Street. Dominant hydrophytic vegetation observed includes skunk cabbage (*Symplocarpus foetidus*), cinnamon fern (*Osmunda cinnamomea*), arrowwood viburnum (*Viburnum dentatum*), and red maple (*Acer rubrum*). Invasive species, including Japanese knotweed and oriental bittersweet (*Celastrus orbiculatus*), were also observed. Evidence of hydrology observed in the field includes saturation and drift deposits. A formal data plot was not conducted at this location.
WF3 Series Flags WF3-300 to 315	South of Chauncy Street, east of Commercial Street	The *WF3 Series* BVW is scrub shrub wetland east of Commercial Street that borders on the *B1/B2 Series* intermittent stream, where it outlets south of Chauncy Street and a commercial paved parking area. Two stormwater outlets with rip-rap aprons are located at the northern boundary of the *WF3 Series*. The attached U.S. Army Corps of Engineers Field Data Sheets describe observations of hydrophytic vegetation, hydric soils, and hydrology at a specific data plot.

Flag Series	Location	Description / Notes
WF4 Series Flags WF4-400 to 402	West of Giles Place	The *WF4 Series* BVW is the eastern extent of the *WF1* and *WF2 Series* BVW, and bordering on the same intermittent stream, situated at the toe of slope between Giles Place and the parking lot at 273 Chauncy Street. Dominant hydrophytic vegetation observed includes red maple, swamp loosestrife (*Decodon verticillatus),* broad-leaved cattail (*Typha latifloia*), silky dogwood, and sensitive fern (*Onoclea sensibilis*). Evidence of hydrology observed in the field includes geomorphic position and standing water to a depth of approximately 2 inches at the time of the Site visit. A formal data plot was not conducted at this location.
WF5 Series Flags WF5 -500 to 514	East side of Commercial Street	The *WF5 Series* BVW is a forested wetland situated along the east side of Commercial Street bordering on an unnamed interior intermittent stream that flows easterly until its confluence with Robinson Brook. A portion of this BVW is located beyond the existing fence line and was inaccessible; therefore, flags *WF5-500* to *WF5-502* were hung on the fence line. Dominant hydrophytic vegetation observed includes highbush blueberry (*Vaccinium corymbosum*), red maple, steeplebush *(Spiraea tomentosa*), and cattail. Evidence of hydrology observed in the field includes water-stained leaves, aquatic fauna, and surface water to a depth of 2 to 3 inches at the time of the site visit. A formal data plot was not conducted at this location.

Jurisdictional Wetland Resource Areas – Town of Mansfield

The Massachusetts Department of Transportation (MassDOT) is not subject to local bylaws and ordinances; however, the applicability of the following Bylaw (and associated Regulations) definitions that differ from those found in the Act is provided for completeness:

Bank (upper boundary)

The Bylaw and Regulations define Bank as "the first observable break in the slope or the mean annual flood level, *whichever is higher*" (italics added for emphasis). The B1, B2, and B3 Series Bank boundaries to the unnamed intermittent stream were delineated at the first observable break in slope, which was coincident with the mean annual flood level. Bank delineations comply with the Bylaw definition of Bank.

Buffer Zones

The Bylaw and Regulations protect a 25-foot undisturbed buffer zone (No Disturb Zone) around all Wetland Resource Areas protected under the Bylaw where no alteration is permitted. All Resource Areas identified in this report have a local associated 25-foot No Disturb Zone.

Isolated Areas

Under the Bylaw and Regulations, an isolated wetland area larger than 5,000 sf and/ or any area defined as Isolated Land Subject to Flooding (ILSF) under the WPA is protected. Areas that meet the definition of an isolated wetland or ISLF under the Act or the Bylaw were not observed within 100 feet of the Site.

Vernal Pools

The Bylaw and Regulations protect any vernal pools certified by the State and a 100-foot undisturbed Buffer Zone from the vernal pool boundary. No NHESP mapped certified or

potential vernal pools are mapped along the Site. Additionally, no areas were observed along the Site that would meet the criteria of a vernal pool as defined in the WPA.

Jurisdictional Wetland Resource Areas – Federal Clean Water Act (Section 404)

The wetlands and streams located along the Site are "Waters of the United States," and are therefore subject to the federal Clean Water Act, 33 U.S.C. §1251 et seq (1972). The boundary to "Waters of the United States" is the Vegetated Wetlands boundary, or, in the absence of Vegetated Wetlands, is the Ordinary High-Water Mark (OHWM) for non-tidal rivers and streams, as specified at 33 CFR §328.4.

According to 33 CFR §328.3(c)(4), Vegetated Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

The wetland boundaries previously described in this report (Table 3) were delineated in accordance with this definition. The US Army Corps of Engineers' *Vegetated Wetland Boundary Delineation Field Data Sheets* are attached documenting BETA's observed evidence of hydrology, soils, and hydrophytic vegetation at specific data plots.

Work conducted below the boundary of Vegetated Wetlands or the OHWM is Subject to Jurisdiction under Section 404 of the Clean Water Act. Where present, Vegetated Wetland boundaries (Table 3) are the extent of federal Jurisdiction. Where streams are present and upgradient Vegetated Wetlands are absent, the OHWM (coincident with the delineated Bank) is the extent of federal Jurisdiction.

Jurisdictional Wetland Resource Areas – Massachusetts Clean Waters Act (Section 401)

The limit of jurisdiction under Massachusetts Clean Waters Act (Section 401), as specified in 314 CMR 9.00, is the limit of Section 404 jurisdiction under the federal Clean Water Act. Exceedances of the jurisdictional threshold under 314 CMR 9.00 require filing for a Water Quality Certification under Section 401.

Findings and Recommendations

BETA has identified areas Subject to Protection and/or Jurisdiction under the Massachusetts Wetlands Protection Act, the Mansfield Wetland Protection Bylaw, the federal Clean Water Act, and the Massachusetts Clean Waters Act located on or within 100 feet of the Site and has delineated the boundaries of Bank and BVW that exist along the Site. In order to definitively determine the extent of Conservation Commission jurisdiction, Army Corps jurisdiction, and MassDEP jurisdiction, the boundary flags would need to be located and depicted on a to-scale plan of the Site.

Attachments: Figure 1 – Site Locus
Figure 2 – Environmental Resources
Figure 3 – FEMA FIRMette
Delineation Sketch
Photographic Documentation
US Army Corps of Engineers' *Vegetated Wetland Boundary Delineation Field Data Sheets*
Custom Soil Report for Bristol County, Massachusetts, Northern Part
StreamStats Report

Job No: 23.10326.21

IMPROVING COMMUNITIES TOGETHER

N
W E
S

0 1,000 2,000 Feet

1 inch = 1,000 feet

Figure 1
Site Locus
Chauncy Street (Route 6)
Mansfield, MA

Data Source: MassGIS USGS Topographic Quadrangle Images (2001)

Proposal No. 613052-131228

Figure 2
Environmental Resources Figure
Chauncy Street (Route 106)
Improvements Phase 1
Mansfield, MA

Environmental Resources Legend
- MassDEP Hydrologic Feature
- Marsh/Bog
- Wooded marsh
- Open Water

Wildlife Habitat Legend
- NHESP Certified Vernal Pool
- NHESP Potential Vernal Pool
- NHESP Priority Habitat of Rare Species
- NHESP Estimated Habitats of Rare Wildlife
- Area of Critical Environmental Concern (ACEC)
- MA DFW Coldwater Fisheries Resources

Drinking Water Protection Areas
- Zone A
- Zone B
- ZONE C
- MassDEP IWPA
- MassDEP Zone I
- MassDEP Zone II
- Outstanding Resource Water

N
W E
S

0 150 300 Feet

1 inch = 150 feet

Data Source: MassGIS USGS Color Ortho Imagery (2014), MassDEP Wetlands (1:12000) (2009), NHESP Potential Vernal Pools (2000), NHESP Certified Vernal Pools, NHESP Priority Habitats of Rare Species (2008), NHESP Estimated Habitats of Rare Species (2008), Areas of Critical Environmental Concern (2009), FEMA National Flood Hazard Layer (2014),

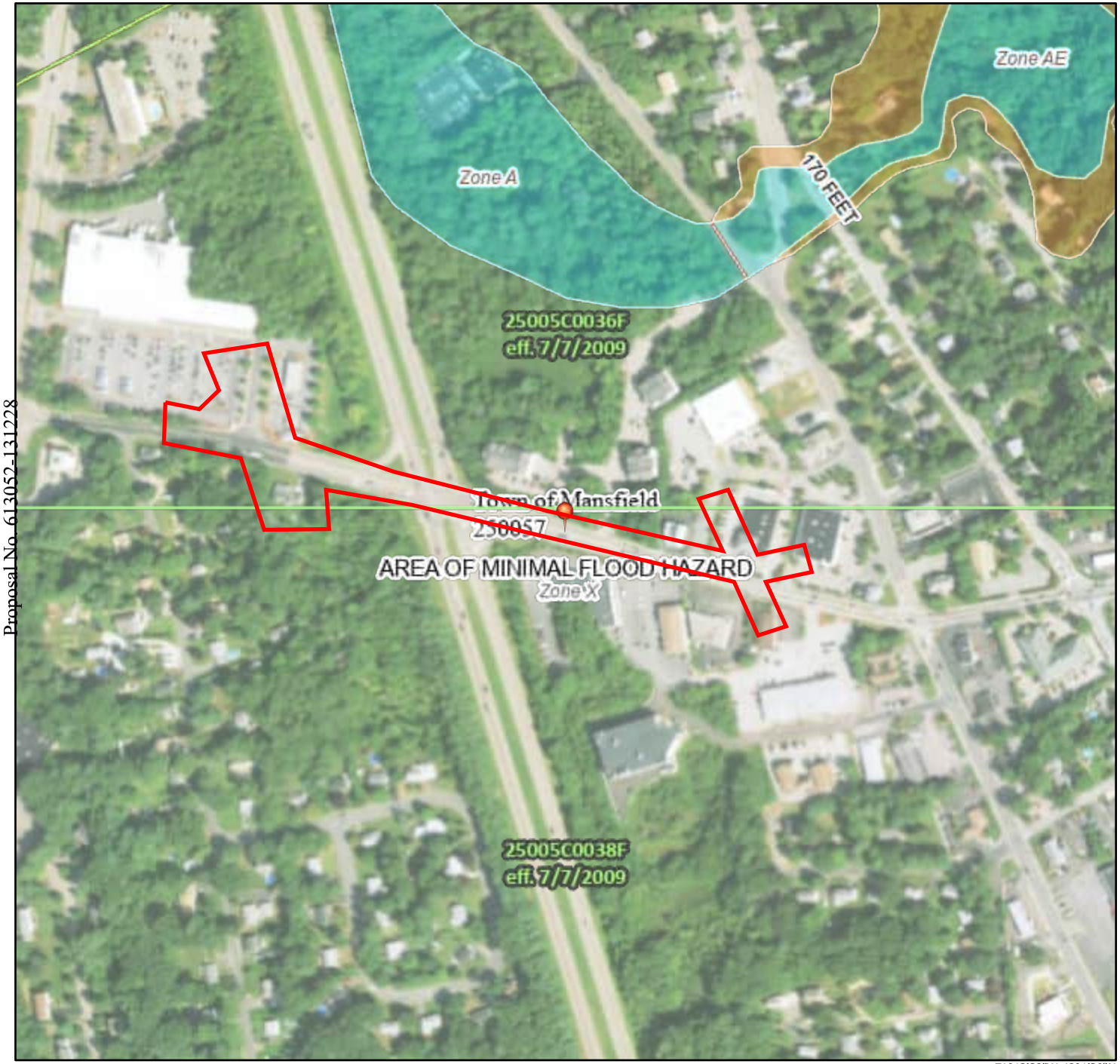
BETA
IMPROVING COMMUNITIES TOGETHER

A00830 - 41

National Flood Hazard Layer FIRMette

FEMA

71°14'16"W 42°2'5"N



Proposal No. 613052-131228

71°13'38"W 42°1'39"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

A00830 - 42

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/8/2024 at 5:59 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Photo 1

View of the B1/B2 Series Banks to the unnamed intermittent stream at the headwall—facing northeast.

Photo 2

View of the B1/ B2 Series intermittent stream interior of the WF1 Series BVW—facing south.

PHOTOGRAPHIC DOCUMENTATION

Chauncy Street (Route 106)

Mansfield, Massachusetts

Photographs Documented July 25,2023

Photo 3

View of the WF 1 Series BVW—facing northeast.

Photo 4

View of the unnamed intermittent stream interior of the WF1 Series BVW where it is conveyed under the Copeland Crossing Condominium driveway—facing south.

PHOTOGRAPHIC DOCUMENTATION

Chauncy Street (Route 106)

Mansfield, Massachusetts

Photographs Documented July 25,2023

Photo 5

View of the WF2 Series BVW—facing south.

Photo 6

View of the WF3 Series BVW—facing south.

PHOTOGRAPHIC DOCUMENTATION

Chauncy Street (Route 106)

Mansfield, Massachusetts

Photographs Documented July 25,2023

Photo 7

View of the WF4 Series BVW—facing northwest.

Photo 8

View of the WF5 Series BVW—facing east

PHOTOGRAPHIC DOCUMENTATION

Chauncy Street (Route 106)

Mansfield, Massachusetts

Photographs Documented July 25,2023

Photo 9

View of the intermittent stream interior to the WF5 Series BVW—facing north.

PHOTOGRAPHIC DOCUMENTATION
Chauncy Street (Route 106)
Mansfield, Massachusetts
Photographs Documented July 25,2023

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Chauncy Street (Route 106) City/County: Mansfield Sampling Date: 7/25/2023

Applicant/Owner: MassDOT Highway Division State: MA Sampling Point: WF1-101-UP

Investigator(s): BETA Group Inc. Section, Township, Range: Bristol County

Landform (hillside, terrace, etc.): gradual slope Local relief (concave, convex, none): convex Slope (%): 0-5

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 42.03112 Long: -71.23184 Datum: WGS84

Soil Map Unit Name: Hinckley loamy sand, 3 to 8 percent slope NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: WF1-101-UP

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana*	60	Yes	FACW
2. *Quercus rubra*	20	Yes	FACU
3. *Acer rubrum*	20	Yes	FAC
4.			
5.			
6.			
7.			
	100	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Rhamnus cathartica*	40	Yes	FAC
2. *Elaeagnus umbellata*	40	Yes	UPL
3. *Acer rubrum*	20	Yes	FAC
4.			
5.			
6.			
7.			
	100	=Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Toxicodendron radicans*	60	Yes	FAC
2. *Lonicera japonica*	30	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90	=Total Cover	
Woody Vine Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 62.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	140	x 3 =	420
FACU species	50	x 4 =	200
UPL species	40	x 5 =	200
Column Totals:	290 (A)		940 (B)

Prevalence Index = B/A = 3.24

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WF1-101-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 4/3	100						Loamy Sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Soil structure would not hold in auger beyond 14" after multiple plots.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Chauncy Street (Route 106) City/County: Mansfield Sampling Date: 7/25/2023

Applicant/Owner: MassDOT Highway Division State: MA Sampling Point: WF1-101-WET

Investigator(s): BETA Group Inc. Section, Township, Range: Bristol County

Landform (hillside, terrace, etc.): Toe of slope Local relief (concave, convex, none): concave Slope (%): 5-10

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 42.03112 Long: -71.23184 Datum: WGS84

Soil Map Unit Name: Hinckley loamy sand, 3 to 8 percent slope NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**	
Hydric Soil Present?	Yes X	No ____	**within a Wetland?**	**Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID:	WF 1 Series

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches):	____
Water Table Present?	Yes X	No ____	Depth (inches):	4
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches):	____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: WF1-101-WET

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana*	20	Yes	FACW
2. *Acer rubrum*	80	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	100	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Cornus amomum*	10	Yes	FACW
2. *Rhamnus cathartica*	40	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	50	=Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Symplocarpus foetidus*	20	Yes	OBL
2. *Onoclea sensibilis*	20	Yes	FACW
3. *Impatiens capensis*	20	Yes	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60	=Total Cover	
Woody Vine Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	70	x 2 =	140
FAC species	120	x 3 =	360
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	210 (A)		520 (B)

Prevalence Index = B/A = 2.48

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WF1-101-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/1	100						loamy sand
10-22	10YR 3/1	80	2.5Y 5/3	20	D	M		loamy sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- X Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Chauncy Street (Route 106) City/County: Mansfield Sampling Date: 7/25/2023

Applicant/Owner: MassDOT Highway Division State: MA Sampling Point: WF3-300-UP

Investigator(s): BETA Group Inc. Section, Township, Range: Bristol County

Landform (hillside, terrace, etc.): Roadside slope Local relief (concave, convex, none): Convex Slope (%): 5-10

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 42.03076 Long: -71.23313 Datum: WGS84

Soil Map Unit Name: Hinckley loamy sand, 3 to 9 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**		
Hydric Soil Present?	Yes ____	No X	**within a Wetland?**	**Yes** ____	**No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____	
Water Table Present?	Yes ____	No X	Depth (inches): ____	
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____	**Wetland Hydrology Present?** **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: WF3-300-UP

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus strobus*	30	Yes	FACU
2. *Quercus rubra*	60	Yes	FACU
3. *Acer rubrum*	10	No	FAC
4.			
5.			
6.			
7.			
	100	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Rhamnus cathartica*	20	Yes	FAC
2. *Quercus rubra*	40	Yes	FACU
3. *Pinus strobus*	20	Yes	FACU
4.			
5.			
6.			
7.			
	80	=Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Toxicodendron radicans*	20	Yes	FAC
2. *Comptonia peregrina*	20	Yes	UPL
3. *Fragaria virginiana*	30	Yes	FACU
4. *Maianthemum canadense*	10	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80	=Total Cover	
Woody Vine Stratum (Plot size: 15' radius)			
1. *Smilax rotundifolia*	20	Yes	FAC
2.			
3.			
4.			
	20	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	70	x 3 =	210
FACU species	190	x 4 =	760
UPL species	20	x 5 =	100
Column Totals:	280 (A)		1070 (B)

Prevalence Index = B/A = 3.82

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WF3-300-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/3	100						Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Soil structure wouldnt hold in auger beyond 12" after multiple plots.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Chauncy Street (Route 106) City/County: Mansfield Sampling Date: 7/25/2023

Applicant/Owner: MassDOT Highway Division State: MA Sampling Point: WF3-300-WET

Investigator(s): BETA Group Inc. Section, Township, Range: Bristol County

Landform (hillside, terrace, etc.): toe of slope Local relief (concave, convex, none): concave Slope (%): 5-10

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 42.03076 Long: -71.23313 Datum: WGS84

Soil Map Unit Name: Hinckley loamy sand, 3 to 9 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**	
Hydric Soil Present?	Yes X	No ____	**within a Wetland?**	**Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID:	WF 3 Series

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): Surface

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: WF3-300-WET

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus strobus*	20	Yes	FACU
2. *Acer rubrum*	80	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	100	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Rosa multiflora*	20	Yes	FACU
2. *Viburnum dentatum*	10	No	FAC
3. *Acer rubrum*	30	Yes	FAC
4. *Fraxinus americana*	10	No	FACU
5.			
6.			
7.			
	70	=Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Juncus effusus*	20	Yes	OBL
2. *Solidago rugosa*	10	No	FAC
3. *Toxicodendron radicans*	60	Yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90	=Total Cover	
Woody Vine Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	0	x 2 =	0
FAC species	190	x 3 =	570
FACU species	50	x 4 =	200
UPL species	0	x 5 =	0
Column Totals:	260 (A)		790 (B)

Prevalence Index = B/A = 3.04

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WF3-300-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/1	100						Organic
1-12	10YR 3/2	65	2.5Y 4/2	20		M		Loamy Sand
			7.5YR 4/6	15	C	PL		
12-16	10YR 3/1	85	7.5YR 4/6	15	C	PL		Loamy Sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: refusal

Depth (inches): 16

Hydric Soil Present? **Yes** X **No** ___

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Bristol County, Massachusetts, Northern Part

January 8, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....8
Soil Map.....9
Legend.....10
Map Unit Legend.....11
Map Unit Descriptions.....11
Bristol County, Massachusetts, Northern Part.....13
43A—Scarboro mucky fine sandy loam, 0 to 3 percent slopes.....13
51A—Swansea muck, 0 to 1 percent slopes.....14
52A—Freetown muck, 0 to 1 percent slopes.....16
245B—Hinckley loamy sand, 3 to 8 percent slopes.....17
652—Udorthents, refuse substratum (Dumps/Landfill).....19
References.....20

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

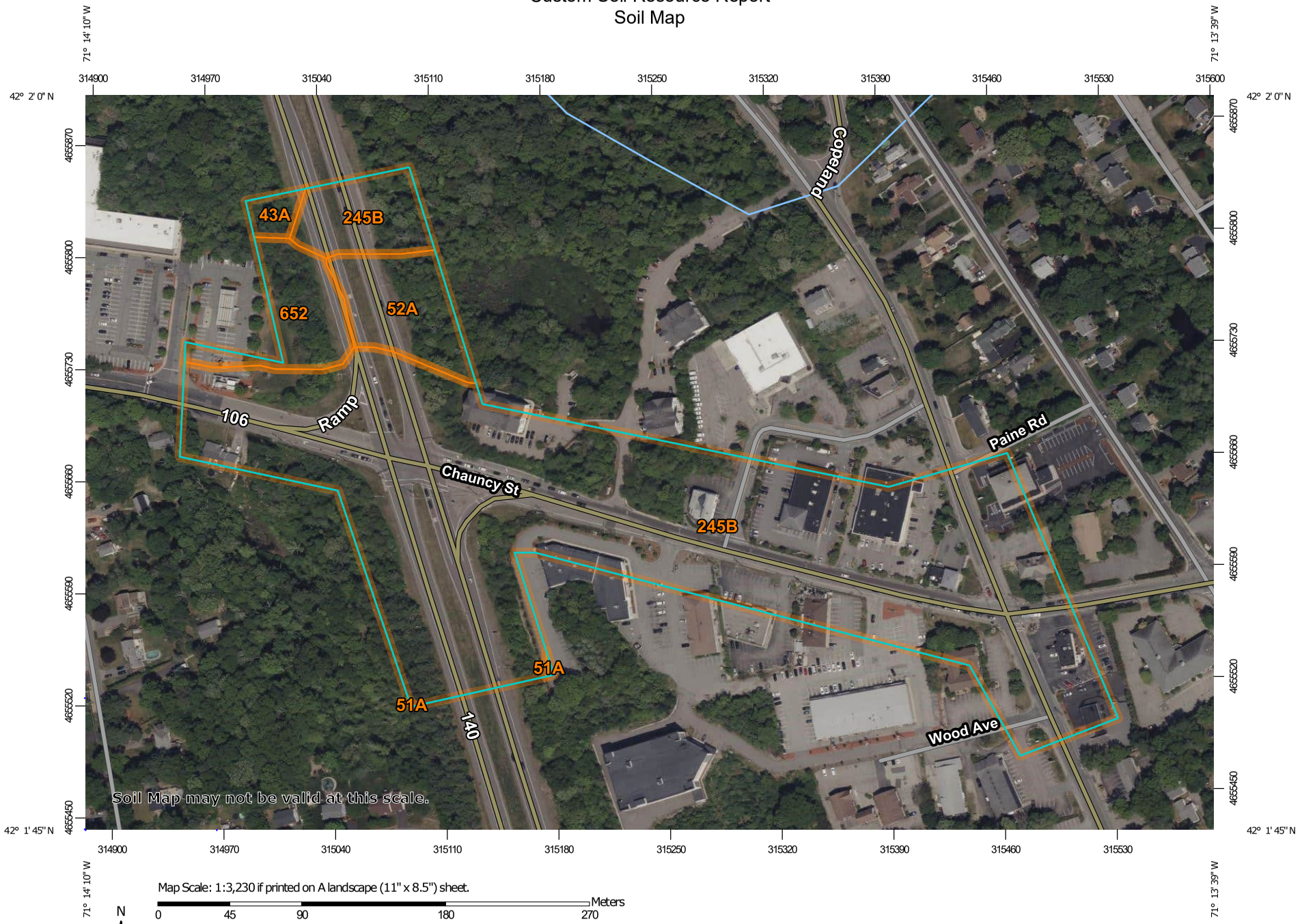
identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Proposal No. 613052-131228

Custom Soil Resource Report
Soil Map



Map Scale: 1:3,230 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

A00830 - 68

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bristol County, Massachusetts, Northern Part
Survey Area Data: Version 16, Sep 10, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Proposal No. 613052-131228

A00830 - 69

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
43A	Scarboro mucky fine sandy loam, 0 to 3 percent slopes	0.2	1.0%
51A	Swansea muck, 0 to 1 percent slopes	0.0	0.1%
52A	Freetown muck, 0 to 1 percent slopes	1.1	6.0%
245B	Hinckley loamy sand, 3 to 8 percent slopes	16.9	87.8%
652	Udorthents, refuse substratum (Dumps/Landfill)	1.0	5.2%
Totals for Area of Interest		**19.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Bristol County, Massachusetts, Northern Part

43A—Scarboro mucky fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svky
Elevation: 0 to 1,320 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Scarboro and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scarboro

Setting

Landform: Drainageways, outwash deltas, outwash terraces, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy glaciofluvial deposits derived from schist and/or sandy glaciofluvial deposits derived from gneiss and/or sandy glaciofluvial deposits derived from granite

Typical profile

Oe - 0 to 3 inches: mucky peat
A - 3 to 11 inches: mucky fine sandy loam
Cg1 - 11 to 21 inches: sand
Cg2 - 21 to 65 inches: gravelly coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.42 to 14.17 in/hr)
Depth to water table: About 0 to 2 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Ecological site: F144AY031MA - Very Wet Outwash
Hydric soil rating: Yes

Minor Components

Swansea

Percent of map unit: 10 percent
Landform: Bogs, swamps
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Wareham

Percent of map unit: 5 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Walpole

Percent of map unit: 5 percent
Landform: Deltas, depressions, outwash terraces, depressions, outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

51A—Swansea muck, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2trl2
Elevation: 0 to 1,140 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Swansea and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swansea

Setting

Landform: Bogs, swamps
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Highly decomposed organic material over loose sandy and gravelly glaciofluvial deposits

Typical profile

Oa1 - 0 to 24 inches: muck
Oa2 - 24 to 34 inches: muck
Cg - 34 to 79 inches: coarse sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Rare
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 16.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: B/D
Ecological site: F144AY043MA - Acidic Organic Wetlands
Hydric soil rating: Yes

Minor Components

Freetown

Percent of map unit: 10 percent
Landform: Bogs, swamps
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Whitman

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

52A—Freetown muck, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2t2q9
Elevation: 0 to 1,110 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Freetown and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freetown

Setting

Landform: Depressions, depressions, swamps, kettles, marshes, bogs
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Highly decomposed organic material

Typical profile

Oe - 0 to 2 inches: mucky peat
Oa - 2 to 79 inches: muck

Properties and qualities

Slope: 0 to 1 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Rare
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 19.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: F144AY043MA - Acidic Organic Wetlands
Hydric soil rating: Yes

Minor Components

Whitman

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Swansea

Percent of map unit: 5 percent
Landform: Bogs, swamps, marshes, depressions, depressions, kettles
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

245B—Hinckley loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2svm8
Elevation: 0 to 1,430 feet
Mean annual precipitation: 36 to 53 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hinckley and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Outwash deltas, outwash terraces, kames, kame terraces, moraines, eskers, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope, footslope

Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 8 percent
Landform: Outwash deltas, outwash terraces, moraines, eskers, kames, outwash plains, kame terraces
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Landform: Outwash deltas, outwash terraces, moraines, outwash plains, kame terraces
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Head slope, side slope, base slope, tread
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

Agawam

Percent of map unit: 2 percent
Landform: Outwash deltas, outwash terraces, moraines, eskers, kames, outwash plains, kame terraces
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

652—Udorthents, refuse substratum (Dumps/Landfill)

Map Unit Setting

National map unit symbol: 9983
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Dumps: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Hadley

Percent of map unit: 5 percent
Hydric soil rating: No

Udorthents

Percent of map unit: 5 percent
Hydric soil rating: Unranked

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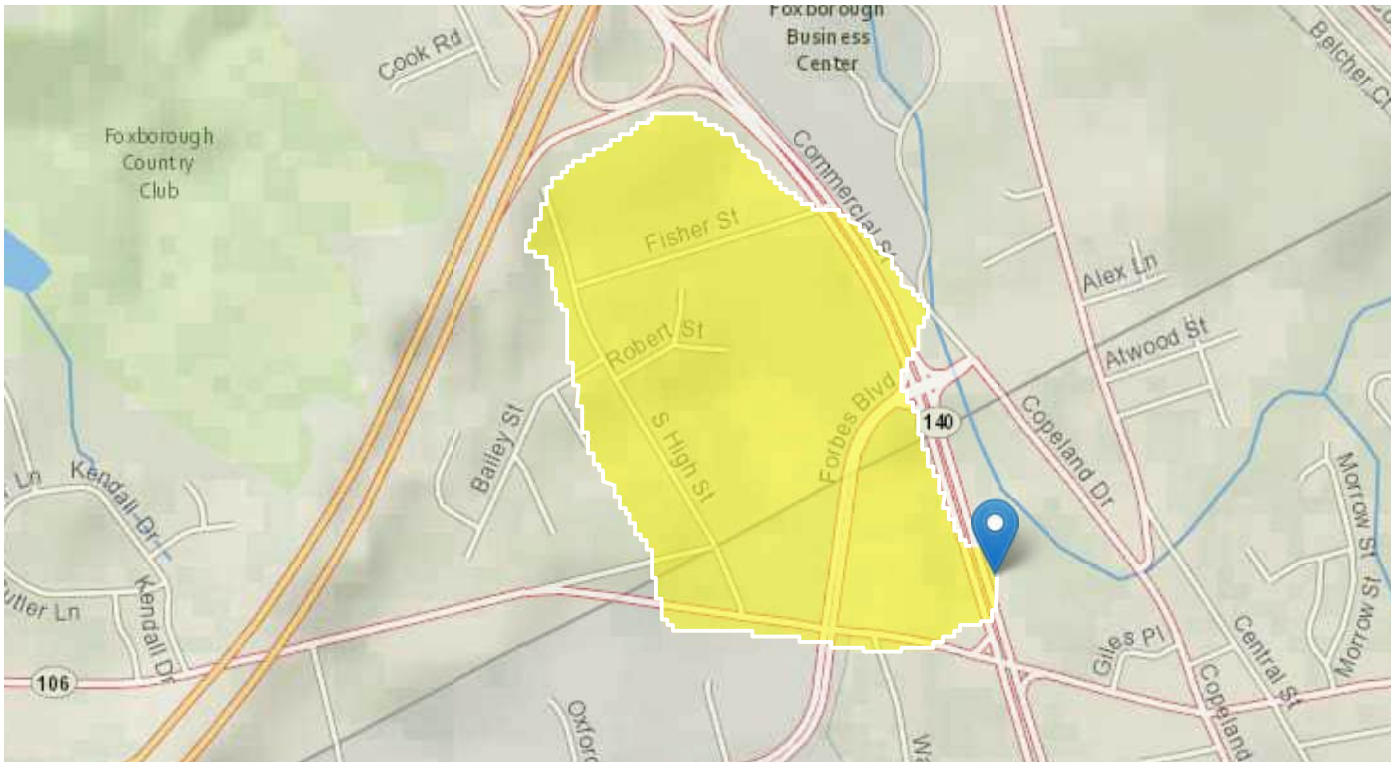
StreamStats Report

Region ID: MA
Workspace ID: MA20240108220450832000
Clicked Point (Latitude, Longitude): 42.03278, -71.23396
Time: 2024-01-08 17:05:13 -0500



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLDEM10M	Mean basin slope computed from 10 m DEM	4.063	percent
BSLDEM250	Mean basin slope computed from 1:250K DEM	2.56	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	0.13	square mile per mile
DRNAREA	Area that drains to a point on a stream	0.22	square miles
ELEV	Mean Basin Elevation	210	feet
FOREST	Percentage of area covered by forest	47.12	percent
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	2.54	percent

Parameter Code	Parameter Description	Value	Unit
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	44.67	percent

Peak-Flow Statistics

Peak-Flow Statistics Parameters [Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	0.16	512
ELEV	Mean Basin Elevation	210	feet	80.6	1948
LC06STOR	Percent Storage from NLCD2006	2.54	percent	0	32.3

Peak-Flow Statistics Flow Report [Peak Statewide 2016 5156]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
50-percent AEP flood	13	ft^3/s	6.52	25.9	42.3
20-percent AEP flood	22.1	ft^3/s	10.9	44.8	43.4
10-percent AEP flood	29.5	ft^3/s	14.2	61.3	44.7
4-percent AEP flood	40.4	ft^3/s	18.7	87.1	47.1
2-percent AEP flood	49.5	ft^3/s	22.2	110	49.4
1-percent AEP flood	59.3	ft^3/s	25.7	137	51.8
0.5-percent AEP flood	70.1	ft^3/s	29.5	167	54.1
0.2-percent AEP flood	85.7	ft^3/s	34.3	214	57.6

Peak-Flow Statistics Citations

Zarriello, P.J.,2017, Magnitude of flood flows at selected annual exceedance probabilities for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2016–5156, 99 p. (https://dx.doi.org/10.3133/sir20165156)

Maximum Probable Flood Statistics

Maximum Probable Flood Statistics Parameters [Crippen Bue Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	0.1	3000

Maximum Probable Flood Statistics Flow Report [Crippen Bue Region 2]

Statistic	Value	Unit
Maximum Flood Crippen Bue Regional	1900	ft^3/s

Maximum Probable Flood Statistics Citations

Crippen, J.R. and Bue, Conrad D.1977, Maximum Floodflows in the Conterminous United States, Geological Survey Water-Supply Paper 1887, 52p. (https://pubs.usgs.gov/wsp/1887/report.pdf)

Probability Statistics

Probability Statistics Parameters [Perennial Flow Probability]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	0.01	1.99
PCTSNDGRV	Percent Underlain By Sand And Gravel	44.67	percent	0	100
FOREST	Percent Forest	47.12	percent	0	100
MAREGION	Massachusetts Region	0	dimensionless	0	1

Probability Statistics Flow Report [Perennial Flow Probability]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PC
Probability Stream Flowing Perennially	0.67	dim	71

Probability Statistics Citations

Bent, G.C., and Steeves, P.A.,2006, A revised logistic regression equation and an automated procedure for mapping the probability of a stream flowing perennially in Massachusetts: U.S.

Geological Survey Scientific Investigations Report 2006–5031, 107 p. (http://pubs.usgs.gov/sir/2006/5031/pdfs/SIR_2006-5031rev.pdf)

Bankfull Statistics

Bankfull Statistics Parameters [Bankfull Statewide SIR2013 5155]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	0.6	329
BSLDEM10M	Mean Basin Slope from 10m DEM	4.063	percent	2.2	23.9

Bankfull Statistics Parameters [Appalachian Highlands D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	0.07722	940.1535

Bankfull Statistics Parameters [New England P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	3.799224	138.999861

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	0.07722	59927.7393

Bankfull Statistics Disclaimers [Bankfull Statewide SIR2013 5155]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Bankfull Statistics Flow Report [Bankfull Statewide SIR2013 5155]

Statistic	Value	Unit
Bankfull Width	7.51	ft
Bankfull Depth	0.57	ft
Bankfull Area	4.21	ft^2
Bankfull Streamflow	7.7	ft^3/s

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	8.11	ft
Bieger_D_channel_depth	0.726	ft
Bieger_D_channel_cross_sectional_area	5.94	ft^2

Bankfull Statistics Disclaimers [New England P Bieger 2015]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Bankfull Statistics Flow Report [New England P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	16.5	ft
Bieger_P_channel_depth	0.986	ft
Bieger_P_channel_cross_sectional_area	16	ft^2

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	7.27	ft
Bieger_USA_channel_depth	0.873	ft
Bieger_USA_channel_cross_sectional_area	7.54	ft^2

Bankfull Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
Bankfull Width	7.51	ft
Bankfull Depth	0.57	ft
Bankfull Area	4.21	ft^2
Bankfull Streamflow	7.7	ft^3/s
Bieger_D_channel_width	8.11	ft
Bieger_D_channel_depth	0.726	ft
Bieger_D_channel_cross_sectional_area	5.94	ft^2
Bieger_P_channel_width	16.5	ft
Bieger_P_channel_depth	0.986	ft

Statistic	Value	Unit
Bieger_P_channel_cross_sectional_area	16	ft^2
Bieger_USA_channel_width	7.27	ft
Bieger_USA_channel_depth	0.873	ft
Bieger_USA_channel_cross_sectional_area	7.54	ft^2

Bankfull Statistics Citations

Bent, G.C., and Waite, A.M.,2013, Equations for estimating bankfull channel geometry and discharge for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2013–5155, 62 p., (http://pubs.usgs.gov/sir/2013/5155/)

Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_campa

August Flow-Duration Statistics

August Flow-Duration Statistics Parameters [Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	2.56	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.13	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

August Flow-Duration Statistics Disclaimers [Statewide Low Flow WRIR00 4135]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

August Flow-Duration Statistics Flow Report [Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit
August 50 Percent Duration	0.0321	ft^3/s

August Flow-Duration Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

Flow-Duration Statistics

Flow-Duration Statistics Parameters [Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	0.13	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1
BSLDEM250	Mean Basin Slope from 250K DEM	2.56	percent	0.32	24.6

Flow-Duration Statistics Disclaimers [Statewide Low Flow WRIR00 4135]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Flow-Duration Statistics Flow Report [Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit
50 Percent Duration	0.204	ft^3/s
60 Percent Duration	0.13	ft^3/s
70 Percent Duration	0.0711	ft^3/s
75 Percent Duration	0.0526	ft^3/s
80 Percent Duration	0.044	ft^3/s
85 Percent Duration	0.0302	ft^3/s
90 Percent Duration	0.0219	ft^3/s
95 Percent Duration	0.0111	ft^3/s
98 Percent Duration	0.00679	ft^3/s
99 Percent Duration	0.00452	ft^3/s

Flow-Duration Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p.

(http://pubs.usgs.gov/wri/wri004135/)

Low-Flow Statistics

Low-Flow Statistics Parameters [Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	2.56	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.13	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

Low-Flow Statistics Disclaimers [Statewide Low Flow WRIR00 4135]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0114	ft^3/s
7 Day 10 Year Low Flow	0.00389	ft^3/s

Low-Flow Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

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Application Version: 4.19.3
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

APPENDIX E

- **SHPO and THPO Correspondence and PNF**

APPENDIX F

- **USFWS Consultation**

APPENDIX G

- **Special Provisions**
  - **Treatment of Invasive Plants**
  - **Invasive Plant Management Strategy**
  - **Control of Water**

necessary for the satisfactory completion of the work.

ITEM 102.3 HERBICIDE TREATMENT OF INVASIVE PLANTS HOUR

CONTRACTS:

- INCLUDE HERBICIDE REPORT FORM IN THE BOOK – SEE PROPOSAL DOCS FOLDER DOCUMENT A00810

REV. 2023.03.01 *(REV. DATE TO BE REMOVED BY CONTRACTS)*

This work must be performed by persons who meet the qualifications below and are approved by the Landscape Design Section.

Work under this item consists of herbicide treatment of invasive plants currently existing within the project limits and as directed. An Invasive Plant Management Strategy (IPMS) shall be submitted to the Engineer for review and approval and the IPMS shall be implemented on-site. The IPMS shall be measured and paid for under Item 102.33 Invasive Plant Management Strategy.

Work under this item shall be coordinated with work and schedule for Selective Clearing, Clearing and Grubbing, Mowing, Tree Removal, Planting, and Wetland Mitigation items.

Payment is per hour on-site and shall be compensation for a minimum crew of 2 licensed applicators, 2 back-pack sprayers and mist-blowers, a properly equipped spray truck with spray hoses, and a tank with sufficient capacity for a full day of work. If there is only one applicator, hourly payment shall be adjusted to 50 percent of the unit price. This item is not intended for manual removal of plants.

Management of plants determined to have been introduced to the site via imported loam, compost, mulch, plants, equipment, or other construction activities will be the Contractor's responsibility and at the Contractor's expense.

Herbicide shall be applied during daytime hours only.

Measures to prevent the introduction of invasive plant species to the site and to address introduction due to construction-related activities shall be covered under the Standard Specifications, Division I - Subsections 7.01(D) Plant Pest Control and 7.13 Protection and Restoration of Property as amended in these Special Provisions.

Plant species targeted for management under this item shall be as determined in the field per the site walk and as specified in the IPMS.

The definition of invasive plant species shall be as described by Massachusetts Invasive Plant Advisory Group (MIPAG): "non-native species that have spread into native or minimally managed plant systems in Massachusetts, causing economic or environmental harm by developing self-sustaining populations and becoming dominant and/or disruptive to those systems."

Control of invasive plants shall begin immediately with the initiation of construction activities and prior to any clearing or site disturbance. Treatment areas shall include stockpile locations and may, upon approval of the Engineer, extend outside the project limit. Treatment shall be done each consecutive year for the duration of the contract unless specified otherwise in the IMPS or unless directed otherwise by the MassDOT invasive species contact. Work shall be done during the growing season from May – October unless otherwise specified in the IPMS.

Areas identified for vegetation control measures shall be as shown on the plans and as determined in the field by the Engineer and a MassDOT Landscape Architect. Contact at MassDOT Landscape Design Section may be contacted at: Andrew.Schlenker@dot.state.ma.us.

QUALIFICATIONS

The applicators shall submit and meet the qualifications outlined below. A list of contractors specializing in invasive management and approved by MassDOT Landscape Design Section is available on the following website: https://www.mass.gov/lists/landscape-design-and-roadside-maintenance under Invasive Plant Management.

Requirements

1. Company must provide proof of qualifications by providing the following:
   a. Narrative describing company, its expertise and experience with invasive plant control.
   b. Demonstrate experience with herbicide treatment as part of restorations and in sensitive areas.
   c. Describe company's technical qualifications and past performance.

2. Company must meet licensing requirements:
   a. All crew applicators must have a Massachusetts Commercial Applicator License (CORE).
   b. At least one or more applicator must have a ROW certification, if required for work.
   c. Company must provide name(s) of applicator(s) and Applicator License/Certification number for all contractor crew leaders working on the project.
   d. Company must provide documentation of any warnings, penalties or fines received in the last three (3) years.

3. Company must provide proof of experience with invasive plant control and include following:
   a. At least five (5) references from prior invasive plant control work completed in last five (5) years. Provide contact information including address, phone number and email.
   b. Provide a summary of each of these projects including nature of the problem, specific invasive vegetation treated, dates and period of treatment, methodologies used, and summary of success or not in terms of meeting performance objectives. Include summary of equipment used.
   c. Photo documentation of these projects.
   d. GPS coordinates of project locations, if available.

4. Crew leader must have expertise with invasive plant control and provide the following:
   a. Have held Core license for at least five (5) years.

b. Resume listing five (5) or more years of experience applying pesticides with the company or with another company specializing in vegetation management.

SUBMITTALS

No work shall begin without approval of the submittals.

Submittals include the following items:

Invasive Plant Management Strategy (IPMS)

At least thirty (30) days prior to proposed treatment the IPMS shall be submitted for approval by the Engineer and MassDOT Landscape Architect. All chemicals, methods and work done under this item shall be consistent with the IPMS. The IPMS shall be as described under Item 102.33.

Herbicide Use Report

Within two (2) weeks after each application, the Contractor shall provide to the Engineer a completed and signed MassDOT Herbicide Use Report.

Photo Documentation

Digital photos with date and time of herbicide application work may be required and shall be submitted upon request.

MATERIALS

All proposed herbicides shall be as approved in the IPMS. Herbicides shall be labeled for the method of treatment and shall meet all federal, state and local regulation requirements. Application rates will depend on herbicide proposed and shall be per the manufacturer's label for specific application.

METHODS

All methods used shall be as approved in the IPMS which shall be determined during the Initial Site Walk as described under Item 102.33 Invasive Plant Management Strategy.

The Contractor shall be responsible for marking delineated areas and plants to be preserved, removed, or otherwise treated. Fencing or other materials needed for marking and delineating protected areas shall be incidental to this item.

The Contractor shall notify the Engineer a minimum of 3 days prior to date of expected herbicide application. Applicators shall notify the Engineer upon arriving on-site and upon leaving the site.

Herbicide Applications

All herbicide application shall conform to Massachusetts Pesticide Laws and Regulations per the Massachusetts Department of Agricultural Resources (MDAR) Pesticide Bureau.

Mixing, applying and/or disposing of herbicides shall always be in accordance with instructions on their labels and all applicable federal, state, and local regulations. Mixing shall not occur within sensitive areas, wetlands, or buffer zones.

Contractor shall not spray 2 hours prior to precipitation, during rain, or during windy conditions. The Contractor shall be responsible for monitoring weather conditions and adjusting the work schedule as appropriate for the herbicide and application method to be used.

Targeted vegetation shall be identified and marked prior to treatment. Plants treated by foliar spray, injection or glove application or other methods that leave standing vegetation, as opposed to cut-stump application, shall remain clearly marked for identification through the contract period.

Desirable vegetation shall be protected from both spray and other physical damage.

Contractor is responsible for any damage to vegetation not designated for removal or treatment. Vegetation damaged shall be restored. Cost of replacement plants and/or restoration shall be borne by the Contractor.

Contractor shall ensure that the public does not enter a work area while herbicide application or spraying is underway.

Disposal Of Invasive Plant Material

All material to be cleared shall become the property of the Contractor. The satisfactory disposal of all cleared plant material (seeds, roots, woody vegetation, associated soils, etc.) shall be the Contractor's responsibility.

The Contractor shall take measures to prevent viable plant material from leading to further infestations (seeds, roots, woody material, etc.) while stockpiled, in transit, or at final disposal locations. All precautions shall be taken to avoid contamination of natural landscapes with invasive plants or invasive plant material.

Chipping, shredding, or on-site burning of plant material must be approved by the Engineer and included in the IMPS.

For plant material taken to an incinerating facility per the IPMS, a receipt from that facility shall be submitted to the Engineer as proof of disposal.

Where feasible, it is preferable to dispose of plants on-site or to bury them on-site with on-going monitoring for re-sprouting. Disposal locations and methods must be approved and included in the IPMS. Site work such as grading and seeding to stabilize and restore disposal area shall be incidental to this item.

The Contractor shall be responsible for treating or otherwise managing areas of re-growth due to improper disposal. Treatment shall be at the Contractor's expense.

Follow-Up Treatment

Plants and areas shall be re-treated as necessary and as appropriate to the time of year. Treatment shall be for the duration of the contract and per the IPMS.

MEASURE OF SUCCESS

The expectation is a minimum of 85-95 percent control achieved after the first treatment, depending on plants targeted and extent of population, and based on the expectations laid out in the IPMS. The expectation for the contract duration is 95-100% eradication by the end of the treatment period, unless otherwise specified in the IPMS.

METHOD OF MEASUREMENT

Item 102.3 will be measured for payment by the Hour of crew time spent on the project doing actual herbicide application work. A crew shall be defined as a minimum of two licensed applicators each equipped with (at minimum) back-pack sprayer and mist blower. The crew shall also have a properly equipped spray truck with hoses and a tank with sufficient capacity for a full day of work.

BASIS OF PAYMENT

Item 102.3 will be paid at the contract unit price per Hour, which price shall include all labor, materials, equipment, tools, and all incidentals required to complete the work.

Payment will be based upon time spent on the project doing actual work and shall not include travel time to and from the Contractor's place of business and shall also not include time for investigative field trips.

If there is only one applicator, hourly payment shall be adjusted to 50 percent of the unit price.

The Invasive Plant Management Strategy will be paid for under Item 102.33.

ITEM 102.33 INVASIVE PLANT MANAGEMENT STRATEGY HOUR

REV. 2023.03.01 *(REV. DATE TO BE REMOVED BY CONTRACTS)*

This item consists of providing an Invasive Plant Management Strategy (IPMS) for the control of invasive plants currently existing on the project site and/or as directed and shall be coordinated with Item 102.3 Herbicide Treatment of Invasive Plants. The IPMS shall be submitted for review and approval and the IPMS shall be implemented on-site.

Herbicide treatment for invasive plants shall be as described under Item 102.3 Herbicide Treatment of Invasive Plants and shall be compensated per that Item.

Work under this item shall be coordinated with work and schedule for Selective Clearing, Clearing and Grubbing, Mowing, Tree Removal, Planting, and Wetland Mitigation as relevant to the project.

Individual attending the site walk and determining the Invasive Plant Management Strategy must demonstrate expertise with vegetation management and invasive plant control and submit qualifications as described below.

QUALIFICATIONS

Individual shall be from the same company as that providing services for Item 102.3 Herbicide Treatment of Invasive Plants and shall submit the following, if not submitted under Item 102.3:

- Submit copy of current Core license.
- Submit a resume listing five (5) or more years of experience managing invasive plants with a company specializing in vegetation management.
- References shall be submitted if requested.

SUBMITTALS

Task Summary & Reports

For measurement of payment, the contractor shall submit the total sum and a breakdown of hours for the tasks performed. At a minimum, the tasks shall include the Initial Site Walk, the IPMS Written Report, and if necessary to accommodate project or site changes, a Follow-up Site Inspection and accompanying IPMS Amendment.

Interim Site Monitoring Reports and/or a Final Report shall be submitted if requested by the MassDOT Landscape Design contact. The MassDOT Landscape Design contact must be notified to attend the final walk through when a Final Report has been requested.

Invasive Plant Management Strategy (IPMS)

At least thirty (30) days prior to construction activities and/or any proposed treatment, submit a written IPMS proposal for approval by the Engineer and MassDOT Landscape Architect. All chemicals and methods proposed shall be consistent with applicable Massachusetts Wetlands Protection Act Order of Conditions.

The IPMS shall be completed in coordination with the Roadway Contractor and the Engineer and shall include the following as appropriate to the project:

I. Project Information

a. Company writing IPMS and performing herbicide application.
b. Date of site walk

c. Attendees at site walk
d. Expected end date of contract and expected last treatment (month/season)

II. Brief Description of Conditions

a. Provide a free-hand sketch on construction plans or aerial image showing species, location, and as relevant, show or note extent of population as relevant to Strategy (i.e., population extends off ROW preventing eradication, small population and eradication deemed feasible within contract schedule, etc.).

III. Coordination with Roadway Contractor regarding other work

a. Tree Work: Note coordination to be implemented with tree removal, clearing, and clearing and grubbing as applicable to the project.
b. Wetland Mitigation - Include management proposed for wetland mitigation areas in the IPMS, if and as required.
c. Planting: If there will be planting in areas proposed for treatment, propose treatment and schedule to avoid herbicide damage to plants.
d. Mowing: If coordination is required with state mowers, note need in IPMS.

IV. Soil Management

a. Provide specifics on how soil with invasive plant roots (in particular) or seeds will be handled (i.e., separate stockpiles, plant material will be buried on-site, re-used on-site, disposed off site and if so, where?).
b. Show stockpile locations on plan and include treatment schedule.
c. Note measures that will be implemented to avoid spread through equipment, including how and where equipment will be cleaned.

V. Invasive Plant Treatment & Management

a. Proposed chemical and methods of treatment for each species or area.
b. Time of treatment based on target plant species.
c. Submit product label including application methods and rates (entire MSDS information need not be submitted if available online).
d. Proposed performance metrics or measure of treatment success if different from that specified under Item 102.3.
e. Method for disposing invasive plant material. This includes material that may result in spread (i.e., seeds, roots) and material that has been treated and/or is not viable (foliage, dead wood, etc.). Methods may include grinding in place, stockpiling and treating, and incinerating offsite.
f. Expected follow-up treatment for duration of contract.

VI. Monitoring Schedule if requested by MassDOT.

Note: The IPMS is critical for identifying pre-construction conditions as well as strategies for minimizing import or spread of invasive plants. Failure to provide an approved IPMS may jeopardize this item, in which case, the contractor will be responsible for management of invasive plants found on-site at no cost to the contract.

Photo Documentation

Digital photos with date and time verification shall be provided with the IPMS and with any follow-up monitoring or reporting.

METHODS

Initial Site Walk

Prior to any construction activities and soil disturbance, the Contractor shall walk the site with the Engineer and the MassDOT Landscape Architect to determine the IPMS. During the site walk the Contractor shall identify limits of work and, as necessary, mark locations of areas designated for treatment and individual plants targeted for treatment or removal. The Contractor shall be responsible for marking delineated areas and plants to be preserved, removed, or otherwise treated. Fencing or other materials needed for marking and delineating protected areas shall be incidental to this item.

IPMS Follow-up Amendment

The IPMS may be amended to address additional concerns or adjust to conditions if required by the MassDOT Landscape Architect. The amended IPMS shall be submitted to the Engineer and MassDOT Landscape Architect for approval at least fourteen (14) days prior to any proposed treatment.

Interim Site Monitoring Inspection Reports

If required by the MassDOT Landscape Architect and Engineer, Interim Site Monitoring and an accompanying report shall be conducted.

Final Inspection

A final inspection and report documenting the status of the invasive control may be required for regulatory purposes or for instances where control will be continued by others. The report shall include photo documentation of pre-construction (existing) and post-treatment conditions, notations on a plan or aerial image of area treated, summary of treatment performed, and control achieved.

METHOD OF MEASUREMENT

Item 102.33 will be measured for payment by the Hour. The basis for measurement shall be per the completion of tasks as approved under the Task Summary submittal.

BASIS OF PAYMENT

Item 102.33 will be paid at the contract unit price per Hour, which price shall include all labor, materials, equipment, tools, and all incidentals required to complete the work.

Payment shall not include travel time to and from the Contractor's place of business.

ITEM 102.511 TREE PROTECTION – ARMORING & PRUNING EACH

ITEM 874.7 MISCELLANEOUS SIGNS REMOVED AND STACKED EACH

The work under this item shall conform to the relevant provision of Section 800 of the Standard Specifications and the following:

Work under this item includes removing and stacking signs as designated on the plans. The work will also include the restoration to original condition, of any natural features disturbed in any way or manner by the operation.

The Contractor shall exercise particular care in the dismantling, removal, transporting, and resetting of the existing signs designated on the plans to be reset or stacked. Any sign panel damaged through carelessness or lack of protection by the Contractor shall be replaced at the Contractor's expense.

The existing signs shall not be removed until the new signs and structures replacing them are ready for installation or until the Engineer shall permit.

Existing foundations shall be excavated (including Class "B" Rock) to a depth of at least twelve inches below grade and the resulting hole shall be backfilled with compacted gravel and the surface restored to match existing conditions of adjacent areas.

Signs to be removed and stacked shall be stacked on site and the Contractor shall coordinate with the Town of Mansfield to schedule pick-up time and location or shall become the property of the Contractor to dispose of properly.

COMPENSATION

Payment for removing and stacking signs shall be per each under Item 874.7 for all signs removed and stacked within the project, which price shall provide full compensation for dismantling, loading, transporting and stacking of signs; the excavating and disposal of the existing supports and foundations, of the same; the supplying and placing of compacted gravel backfill where foundations and posts are removed; and surface restoration.

No separate payments will be made for any excavation, including Class "B" Rock Excavation, gravel backfill, compaction, and surface restoration. All costs for excavation, backfill, compaction, restoration, and any incidental work shall be included in the bid price.

ITEM 991.1 CONTROL OF WATER LUMP SUM

Work under this Item shall conform to the relevant provisions of Sections 7.02 and 140 of the Standard Specifications, all applicable environmental regulations and permits, and the following:

Prior to removing and replacing the existing concrete masonry pipe end and associated culverts with new concrete masonry pipe end and culverts at STA. 29+75, the Contractor will submit plans to the Engineer for approval. These plans shall depict the proposed materials, means and methods of controlling flow and water within the work area. This may include cofferdams, flow diversion, and dewatering systems. These plans shall be in conformance with the environmental

permits obtained for this project, contract Plans, and these specifications. The materials and methods not specifically mentioned under this Item shall comply with the Standard Specifications where applicable.

All construction must be performed in the dry. Construction shall be facilitated via bypass pumping or diversion of the flow in the intermittent streams in order to perform construction in the dry. The Contractor shall provide and maintain pumps, pipes and other devices to promptly and continually remove and dispose of water from the work area. The size and configuration of pumps and pipes shall be selected by the Contractor. The Contractor is cautioned that flow rates in the intermittent streams and through the culverts can increase substantially during and after storm events. The water control operations shall include contingencies for accommodating the increased flow during such events.

BASIS OF PAYMENT

Payment for work under this Item shall be paid at the contract unit bid price lump sum. Payment for all water control work shall include all labor, tools and equipment, materials and installation, piping, pumping, maintenance, subsequent removal of all related materials and equipment all as outlined above and shall be included in the lump sum contract price bid under this Item.

APPENDIX H

- **Stormwater Report**

Mansfield, Massachusetts

Improvements of Chauncy St (Route 106) Route 140 to Copeland Drive (Phase 1)

MassDOT Highway Division
Project File # 613052
February 2025

STORMWATER MANAGEMENT REPORT

PREPARED FOR

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Table of Contents

1 Introduction 1

2 Project Summary 2

3 Existing Conditions 4

4 Proposed Conditions 7

5 Impaired Waters and TMDLs 10

6 Stormwater Management Standards 12

List of Figures

Figure No.	Description	Page
Figure 1	Locus Figure	3
Figure 2	Existing Key Features and Wetland Resource Areas	6

List of Tables

Table No.	Description	Page
Table 1	Existing Drainage Areas	5
Table 2	Impervious Area	7
Table 3	Proposed Drainage Areas	8
Table 4	Proposed SCMs	9
Table 5	Impaired Waters and TMDL Information	10
Table 6	Nutrient Removal for Project	11
Table 7	Rainfall Depths (in)	13
Table 8	Peak Discharge Rates (cfs)	13
Table 9	Required Recharge Volume for Project	14
Table 10	Provided Recharge Volumes at Each Design Point	14
Table 11	WQV at Each Design Point	16
Table 12	WQV Provided by the SCMs at Each Design Point	16

Attachments

Appendix A:	MassDEP Checklist for Stormwater Report
Appendix B:	Soils and FEMA Information
Appendix C:	Supporting Calculations
Appendix D:	Hydrologic Data
Appendix E:	O&M Plan and LTPPP
Appendix F:	Watershed Plans

1

Introduction

This Stormwater Management Report has been prepared to demonstrate compliance with the Massachusetts Stormwater Management Standards (the Standards) in accordance with the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00) and Water Quality Certification Regulations (314 CMR 9.00). Appendix A includes a completed Massachusetts Department of Environmental Protection (MassDEP) Checklist for Stormwater Report, stamped by a Massachusetts registered professional engineer.

The Project follows the guidance presented in the MassDOT Stormwater Design Guide (SDG), and stormwater management systems are designed in accordance with the Standards.

2

Project Summary

The Applicant, MassDOT, is proposing Project #613052 to complete highway widening, resurfacing, and streetscape improvements along Chauncy St (Route 106), Commercial St (Route 140) and Copeland Drive (the "Project") located in Mansfield, MA.

As proposed, the Project consists of roadway widening, drainage improvements, a shared use path along the southern side of Chauncy Street (Route 106) with ADA compliant ramps, a brick buffer between the roadway and the shared use path, reconstruction of sidewalks along the northern side of Chauncy Street (Route 106) with ADA compliant ramps, new signs, and pavement markings, as well as geometric modifications to include turn lanes and an upgraded traffic signal system at the intersection of Chauncy St (Route 106) and Commercial St (Route 140) and the intersection of Chauncy Street (Route 106) and Copeland Drive.

The purpose of this project is to improve traffic and safety for all users along Chauncy Street (Route 106) and at the aforementioned intersections.

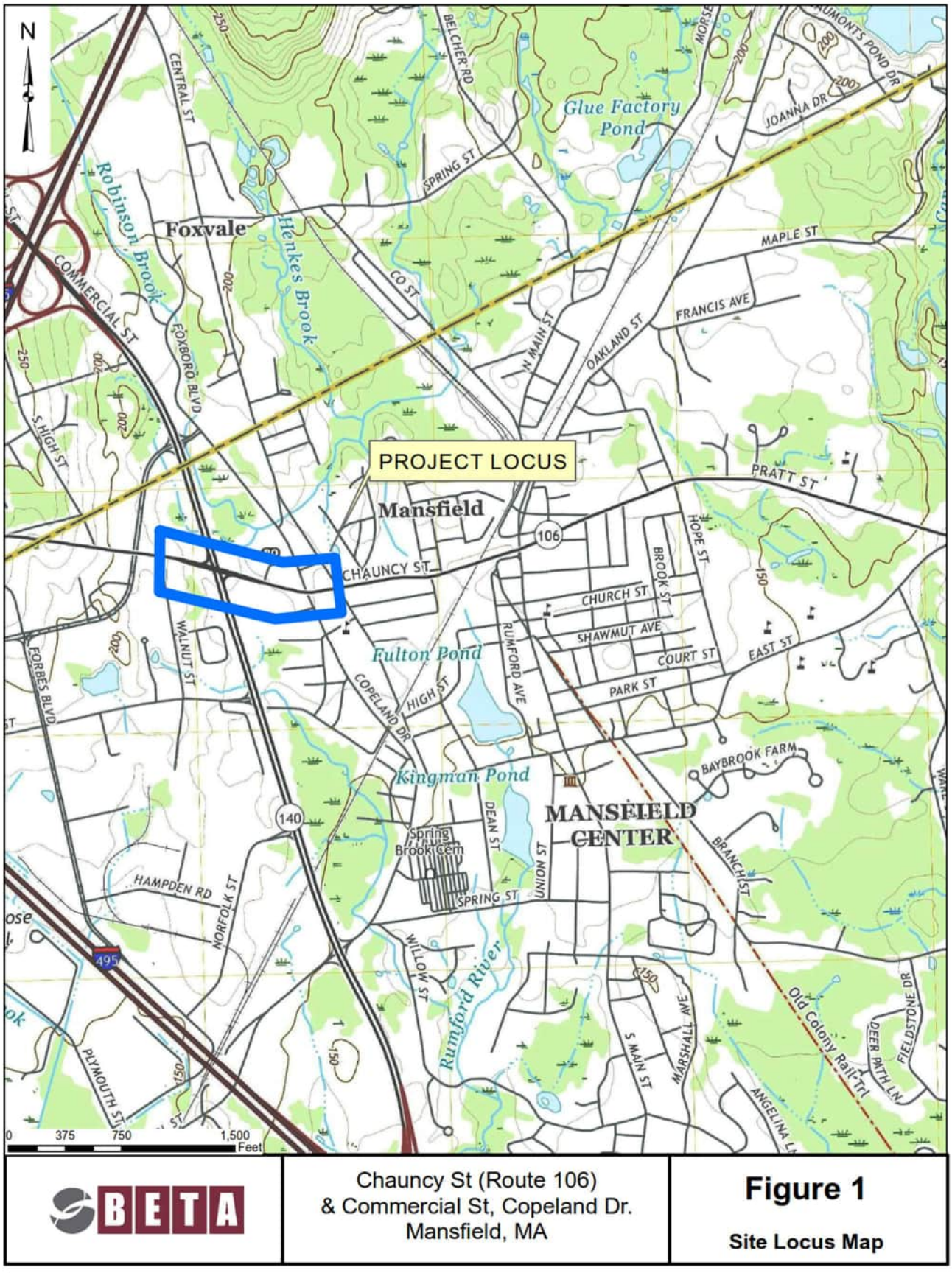
The project is located along a section of Chauncy Street (Route 106) which begins approximately 200 feet west of its intersection with Commercial St (Route 140) and ends east of Copeland Drive, including the Chauncy Street (Route 106) and Commercial St (Route 140) intersection and the Chauncy Street (Route 106) and Copeland Drive intersection. Chauncy St (Route 106) follows an east-west alignment through Mansfield, connecting to Foxborough to the north and west, and to Mansfield to the east. In this area, Chauncy Street (Route 106) is approximately 35' – 50' wide with one travel lane in each direction. Existing sidewalks are present on both sides of Chauncy Street (Route 106) for the majority of the project limits. Commercial Street (Route 140) is a divided highway with a total width of approximately 115' and two travel lanes in each direction. Copeland Drive is approximately 40' wide with one travel lane in each direction.

The total project length is approximately 1,800 feet along Chauncy Street (Route 106), 800 feet along Commercial St (Route 140), and 450 ft along Copeland Drive. The total area of disturbance is approximately 3.65 acres, excluding proposed mill and overlay areas.

Wetland resource areas are located in proximity to the project area. Refer to Notice of Intent narrative for a summary of project compliance. The project is not considered a Land Use with Higher Potential Pollutant Loads (LUHPPL) and the project is not located within or near to a Zone II or Interim Wellhead Protection Area, any other critical areas, or a NHESP-mapped habitat.

See Figure 1 for the Project Locus Map.

Figure 1 Locus Figure



3

Existing Conditions

The project is primarily a section of Chauncy Street (Route 106) between 360 Chauncy Street (located 200± feet west of the intersection of Commercial Street (Route 140) and 205 Chauncy Street (located 200± to the east of the Intersection of Copeland Drive). The project also includes an 800 foot section of Commercial Street (Route 140), a 450 foot section of Copeland Drive between 93 Copeland Drive and 131 Copeland Drive, and a 60 foot section of Giles Place.

Existing impervious areas include the respective roadways as well as sidewalks and driveways along Chauncy Street (Route 106), Commercial Street (Route 140), Copeland Drive, and Giles Place. Grassed areas are present along each roadway as well as within the Route 140 median. Topography at the Site varies between being sloped towards or away from the roadways and existing drainage patterns are described below.

The project is located in the IWP Priority: Taunton watershed. Existing drainage patterns consist of curb and gutter conveyance which directs stormwater runoff to closed drainage systems consisting of catch basins, manholes, and culverts. These systems discharge stormwater runoff to several points of analysis. The southwestern system at the intersection of Route 140 and Route 106 discharges to a series of outfalls near to the #3-series wetlands (DP 1). The northwestern and central systems carry flows from the remaining portions of Route 140, Giles Place, and Route 106 from the westerly project limits to a high point approximately 200 feet west of the intersection of Copeland Road. These systems discharge directly or indirectly to a culvert near 273 Chauncy Street (DP 2 and 3). The northeastern system carries flows from Chauncy Street (Route 106) from the roadway high point to the easterly project limits and the majority of Copeland Road to the east beyond the project limits (DP 4). The southeastern system carries the remaining flows from Copeland Drive to the south beyond the project limits (DP 5). No existing stormwater control measures (SCMs) are present within the limits of the Site.

Table 1 presents the existing drainage areas and their characteristics. See Appendix F for existing drainage areas.

Table 1 Existing Drainage Areas

Drainage Area	Design Point	Area (acres)	Curve Number
Ex-1E	DP-1	0.66	87
Ex-2E	DP-2	4.06	73
EX-3E	DP-3	0.83	83
EX-4E	DP-4	1.13	85
EX-5E	DP-5	0.24	85

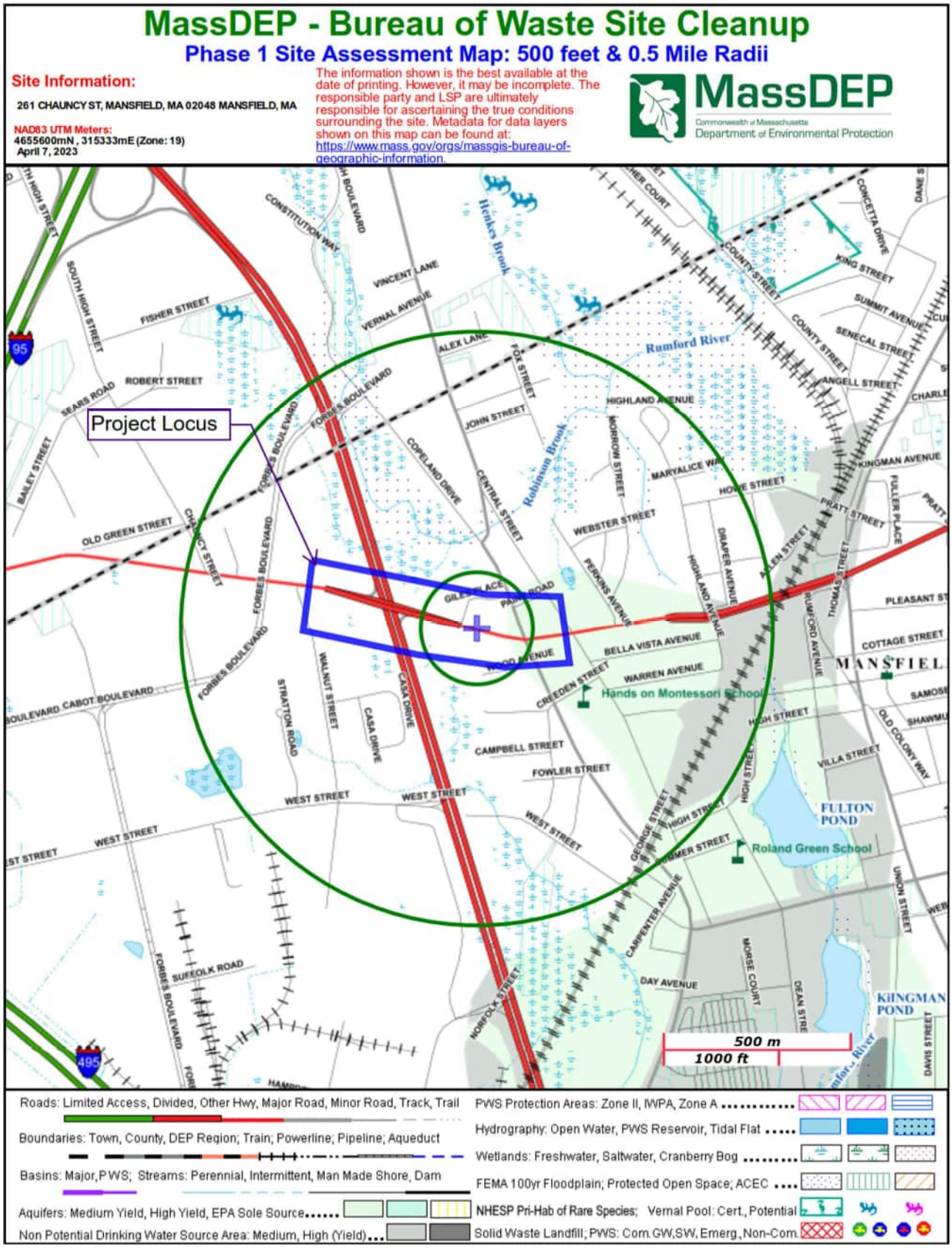
Key features in and around the project area include wetland resource areas located near the intersection of Chauncy St (Route 106) and Commercial St (Route 140), and in proximity to the intersection of Chauncy Street (Route 106) and Giles Place. Buffer zones associated with these resource areas extend into the project limits, as shown on Figure 2 and the plans in Appendix F.

The Project is not located within the 100-year floodplain as shown on the National Flood Hazard Layer FIRMette, Panel 25005C0036F eff. 7/7/2009, included in Appendix B.

Review of the NRCS Soil Survey maps of the project area identified Hinckley loamy sand with hydrologic soil group (HSG) A (high infiltration rate), Sudbury fine sandy loam with HSG B (moderate infiltration rate), and Freetown muck with HSG B/D (moderate infiltration rate when drained and very low infiltration rate when undrained). NRCS soils information is shown on the plans in Appendix F and included in Appendix B.

Two test pits have been conducted at the Site in areas potentially suited for infiltration. TP-1 was completed at the northwest corner of Copeland Drive and Wood Avenue. TP-2 was completed at the southeast corner of Route 106 and Route 140. Both test pits identified subsurface conditions as loamy sand or medium or medium to coarse sand. Groundwater was identified at a depth of 52” below grade in TP-2 and was not encountered in TP-1. Test pit locations are shown on the plans in Appendix F and logs are included in Appendix B.

Figure 2 Existing Key Features and Wetland Resource Areas



4

Proposed Conditions

The Project consists of modifying the roadway width and intersection geometry as well as constructing a shared use path along the southern side of Chauncy Street (Route 106). The existing sidewalk along the northern side of Chauncy Street (Route 106) will be reconstructed. The western limit of the northern sidewalk will be extended to Commercial Street (Route 140) and the western limit of the southern shared use path will extend to #360 Chauncy Street, including new pedestrian crossings across Commercial Street (Route 140). The project will also include new ADA compliant ramps, new signs, pavement markings, and upgraded traffic signal systems.

The project will modify the existing closed drainage system, generally retaining or upgrading existing trunklines and proposing new deep sump catch basins to meet modified curb lines. The existing culvert near #273 Chauncy St will be replaced and extended, and a new headwall constructed to meet with the proposed roadway layout. Proposed structural stormwater control measures (SCMs) include three leaching basins located near #100 Copeland Drive. Additionally, the existing grassed swale located in the Route 140 median north of the intersection will be upgraded to a water quality swale. The proposed SCMs will provide stormwater treatment that does not exist today and will improve the existing conditions. Proposed topography and high/low points will generally remain similar between pre- and post-development conditions.

The project will include in an increase in impervious area of approximately 16,965 sq. ft.

Refer to Appendix F for detailed delineation of post-development flow patterns and watershed boundaries and Appendix D for hydrologic calculations. Supplemental calculations used for the design are provided as Appendix C.

Table 2 provides a breakdown of the impervious area for the Project.

Table 2 Impervious Area

Condition	Impervious Area (sq. ft)
Existing	194,420
Proposed	211,385
Net	+16,965

The project will retain existing drainage grading patterns to the maximum extent practicable. Proposed grading does not include significant alterations to the roadway profile, cross section,

or high points. Proposed sidewalks will require only a minor degree of daylighting to meet existing grades. The proposed closed drainage system has been designed to utilize existing outfall locations and only minimal changes in subwatershed boundaries are proposed.

The project has significant right-of-way constraints, which severely restrict the opportunity to install substantial Structural Control Measures (SCMs) and Low Impact Development (LID) techniques. Opportunities for non-structural SCMs are restricted by the limited right-of-way and proximity to wetland resource areas. A second potential area for leaching basins was considered at the southeast corner of the Route 140/106 intersection; this area was deemed infeasible due to the presence of shallow groundwater and conflicts with existing gas and communications utilities which restrict the installation of drainage pipes for stormwater conveyance to the basins.

No significant impacts are proposed to natural resource areas and only minimal tree clearing or trimming is required. Impacts are proposed for modifications to the existing culvert including temporary and permanent impacts to streambank and land under water. No other impacts to wetland resource areas or any other key features are anticipated.

LID measures incorporated at the project include the enhancement and preservation of existing vegetation, maintaining pre-development drainage patterns, and construction of a water quality swale. The reduction of impervious cover was considered; however, the introduction of new impervious area is required to install the shared use path and extend sidewalks to areas where none currently exist.

Despite constraints, the proposed stormwater management systems will provide an improvement to the existing conditions by installing deep sump catch basins and SCMs. Refer to Summary of Compliance with the Ten Stormwater Management Standards.

Table 3 presents the proposed drainage areas and their characteristics under proposed conditions. Appendix F shows proposed drainage patterns and drainage area delineations by design point.

Table 3 Proposed Drainage Areas

Drainage Area	Design Point	Area (acres)	Curve Numbers
Pr-1P	DP-1	0.71	85
Pr-2P & 2Pb	DP-2	4.01	76
PR-3P	DP-3	0.83	88
PR-4P	DP-4	1.04	92
PR-5P & 5Pa	DP-5	0.33	76

See Appendix F for proposed drainage areas and proposed SCMs by design point.

Table 4 lists the proposed SCMs and provides a description of each.

Table 4 Proposed SCMs

SCM	Description
Deep-Sump Catch Basin	Construction of 27 new deep-sump catch basins throughout the project limits.
Leaching Basins	Construction of 3 new leaching basins within the projects limits.
Water Quality Swale	Upgrade of the existing grassed swale along Route 140 to a Water Quality Swale with vegetated check dams.

5

Impaired Waters and TMDLs

As described under the Existing Conditions section, the Project is located in the IWP Priority: Taunton Watershed. The project is also located upgradient of the Rumford River and Mount Hope Bay, though no direct discharges to these waterbodies are proposed. Rumford River, Taunton River, and Mount Hope Bay are listed as impaired based on the MassDEP Year 2020 Integrated List of Waters, also known as the 303(d) list.

Table 5 lists the receiving water bodies that are impaired and if the water body has a TMDL.

Table 5 Impaired Waters and TMDL Information

Water Body	303(d) Category	303(d) Impairments	TMDL	TMDL Pollutant	TMDL Report Name
Rumford River	5	Curley Leaf Pondweed, Benthic macroinvertebrates, Dioxin, Pentachlorophenol	No	N/A	N/A
Taunton River	5	Dissolved Oxygen E. Coli	Yes	Bacteria/Pathogens	Final Pathogen TMDL for the Taunton River Watershed June 2011
Mt Hope Bay	5	Chlorophyll-a, Dissolved Oxygen, Enterococcus, Fecal Coliform, Fish Bioassessments, Nitrogen, Total	Yes	Pathogen	Final Pathogen TMDL for the Narragansett/Mt. Hope Bay Watershed July 2010

As stated in the Final Pathogen TMDLs for the Taunton River Watershed and Narragansett/Mt. Hope Bay Watershed, leading sources of bacterial surface water pollution include leaking sewer pipes, illicit connections of sanitary sewers to storm drains, failing septic systems, combined sewer overflows (CSOs), sanitary sewer overflows (SSOs), agricultural areas, and stormwater runoff. As part of the proposed drainage system modification, any illicit connections from the sanitary sewer system will be eliminated. As a transportation facility, pathogen loads from the roadway surfaces are anticipated to be minimal.

See Standard 4 in Section 6 below for more water quality calculations and discussion.

SCMs were selected and designed to specifically treat for Nitrogen due to the listed impairment for the Mt. Hope Bay watershed. Selected SCMs to treat this impairment include leaching basins and a water quality swale.

Table 6 lists each water body, the proposed SCMs that drain to it, and each SCM's estimated Total Nitrogen removal per year.

Table 6 Nutrient Removal for Project

Water Body	SCM	Total Nitrogen Removal (lbs/yr)
Mt. Hope Bay		
	Water Quality Swale	2.3
	Leaching Basins	1.1
	Total Provided by SCMs	3.4

6

Stormwater Management Standards

As demonstrated below, the proposed Project complies with the MassDEP Stormwater Management Standards (the Standards) to the maximum extent practicable. The Project is classified as a redevelopment under the first definition “Maintenance and improvement of existing roadways, including widening less than a single lane, adding shoulders, correcting substandard intersections, improving existing drainage systems and repaving.” Certain standards need be met only to the maximum extent practicable.

Standard 1: No New Untreated Discharges

No new stormwater conveyances may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

The Project has been designed to comply with Standard 1.

No new stormwater outfalls are proposed for the Project and all stormwater runoff captured by the proposed drainage system will be discharged to existing closed drainage systems. The existing outfall located offsite to the south will be retained. The existing outfall to the unnamed stream west of Giles Place will be slightly relocated to connect directly to the reconstructed culvert via a new drainage manhole. Existing outfalls at the southeast corner of the Route 106/140 intersection include riprap aprons for scour protection.

Stormwater runoff will be pretreated by deep-sump catch basins, and portions of the project will be treated by leaching basins or a water quality swale, prior to discharge. See Standard 4 for the water quality treatment provided by the Project.

Standard 2: Peak Rate Attenuation

Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.

The Project has been designed to comply with Standard 2 only to the maximum extent practicable as the project is a limited, redevelopment project. A net increase in peak discharge rate and runoff volume is anticipated for most points of analysis during the 2-year, 10-year, and 100-year 24-hour design storm events based on Northeast Regional Climate Center precipitation data. Refer to Tables 7 and 8.

Table 7 Rainfall Depths (in)

Design Storm Event	Rainfall Depth (in)
2-year	3.27
10-year	4.95
100-year	9.04

Table 8 provides a summary of peak rates for each design point under existing and proposed conditions. Appendix D provides computations and supporting information regarding the hydrologic modeling.

Table 8 Peak Discharge Rates (cfs)

Design Point	Existing			Proposed		
	2-year	10-year	100-year	2-year	10-year	100-year
DP-1	1.51	2.64	5.39	1.48	2.67	5.61
DP-2	4.54	10.40	26.64	5.49	11.63	28.01
DP-3	1.58	2.96	6.39	1.95	3.36	6.77
DP-4	2.36	4.26	8.94	2.81	4.57	8.78
DP-5	0.50	0.90	1.89	0.30	0.69	2.17
Project Total	10.49	21.16	49.25	12.03	22.92	51.34

The project is unable to fully meet this standard due to constraints at the project site as described below. This project includes a net increase of 16,965± sq. ft. of impervious surface, which will result in minor increases to the volume and rate of stormwater runoff from the project area. This accounts for an approximate 5.63% increase in impervious area throughout the entire study area of approximately 6.92 acres. The project has significant right-of-way constraints, private commercial features, and wetland resource areas located in proximity to the roadway corridor. Despite project constraints and an increase in peak flow rates, the proposed deep-sump catch basins, leaching basins, and water quality swale will improve existing conditions throughout the project corridor. Refer to HydroCAD calculations provided in Appendix D for additional information.

Standard 3: Recharge

Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures, including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

The project has been designed to meet this standard only to the maximum extent practicable for the total impervious area as a redevelopment; however, the project will meet this standard fully for the new impervious area. The project has significant right-of-way constraints, private commercial features, and wetland resource areas located in proximity to the roadway which restrict opportunities for recharge. A portion of the required recharge volume will be provided in the proposed leaching basins and the water quality swale. The leaching basins have been designed to infiltrate the required recharge volume for their respective catchment areas.

Leaching Basins were designed using an underlying soil type of loamy sand and a Rawl's Rate of 2.41 in/hr has been utilized in the drawdown calculations. This soil type is supported by the NRCS HSGR of A and the soil conditions identified in TP-1 and TP-2.

Grassed areas adjacent to the roadways and within the project's right-of-way were evaluated for potential locations of SCMs. However, the areas at the intersection of Route 140 and Route 106 are generally upgradient of the proposed roadway modifications and thus limited opportunities for recharge area available. The southeastern corner of this intersection was considered for SCM opportunities but has been deemed infeasible due to shallow groundwater and the presence of existing gas and communication utilities which restrict methods of conveying stormwater runoff to an SCM. The portions of the Site east of this intersection have limited right-of-way and thus opportunities for SCMs are limited. Despite this, the grassed area at the intersection of Wood Avenue and Copeland Drive was selected as a suitable location for Leaching Basins.

Despite project constraints, the proposed deep sump catch basins, leaching basins, and water quality swale will improve existing conditions throughout the project corridor.

Table 9 provides the required recharge volume for the Project, and Table 10 provides the recharge volumes proposed for each design point.

Table 9 Required Recharge Volume for Project

	HSG A	HSG B	HSG C	HSG D	Total
Existing Impervious (sq. ft.)	182985	11435	0	0	194420
Proposed Impervious (sq. ft.)	199730	11655	0	0	211385
Net Impervious Area (sq. ft.)	16745	220	0	0	16965
Target depth, F (in)	0.6	0.35	0.25	0.1	-
Required Recharge Volume, ReV (cf)	837	6	0	0	844

Table 10 Provided Recharge Volumes at Each Design Point

	HSG A	HSG B	HSG C	HSG D	Total
DP-1					
Net Impervious Area (sf)	475	0	0	0	475
Required Recharge Volume, ReV (cf)	23.75	#	0	0	23.75
Provided Recharge Volume (cf)					0
DP-2					

	HSG A	HSG B	HSG C	HSG D	Total
DP-2					
Net Impervious Area (sf)	8680	220	0	0	8900
Required Recharge Volume, ReV (cf)	434.00	6.42	0	0	440.42
Provided Recharge Volume (cf)					223.2
DP-3					
Net Impervious Area (sf)	2760	0	0	0	2760
Required Recharge Volume, ReV (cf)	138.0	0	0	0	138.0
Provided Recharge Volume (cf)					0
DP-4					
Net Impervious Area (sf)	2340	0	0	0	2340
Required Recharge Volume, ReV (cf)	117.0	0	0	0	117.0
Provided Recharge Volume (cf)					0
DP-5					
Net Impervious Area (sf)	2490	0	0	0	2490
Required Recharge Volume, ReV (cf)	124.50	0	0	0	124.50
Provided Recharge Volume (cf)					1012.6

Note: DP-6 is a combination of DP-2 and DP-3 and therefore has been excluded from the above table due to redundancy.

As depicted in the tables above, the project-wide required recharge volume is 844 cu. ft. and the provided SCMs will provide a recharge volume of 1,236 cu. ft.

The infiltration SCMs are designed to drain completely within 72 hours.

Appendix B provides soil evaluation information and Appendix C provides computations, drawdown calculations, and supporting information regarding recharge.

Standard 4: Water Quality Treatment

Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when:

- Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained.
- Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook.
- Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.

The Project has been designed to comply with Standard 4 only to the maximum extent practicable as the project is a limited, redevelopment project. Proposed drainage system improvements, including the installation of deep sump catch basins, installation of leaching basins, and installation of the water quality swale will provide treatment of stormwater runoff that does not currently exist and will improve existing conditions. The project will provide treatment of existing and new impervious areas to the maximum extent practicable. The

proposed leaching basins will provide 80% TSS removal for a treatment area of 4,500± Sq. Ft and the proposed water quality swale will provide 70% TSS removal for a treatment area of 10,900± Sq. Ft. Additionally, the proposed deep-sump catch basins will provide 25% TSS removal for 162,930± Sq. Ft. of impervious area and the project will provide an equivalent area for 80% TSS removal of 64,949 Sq. Ft.

The project is predominantly located in an area of soils with rapid infiltration rate (>2.4 in/hr) and is required to treat the 1-inch water quality volume and provide at least 44% TSS removal as pretreatment for infiltration SCMs. The project will only meet these requirements to the maximum extent practicable due to previously mentioned project constraints.

Table 11 shows the required WQV to be treated for both new and existing impervious area within each drainage area, organized by design point.

Table 11 WQV at Each Design Point

Design Point	WQV for New IA (cf)	WQV for Existing IA (cf)	Total WQV (cf)
DP-1	39.6	1955.0	1994.6
DP-2	741.7	8130.4	8872.1
DP-3	230.0	2260.0	2490.0
DP-4	195.0	3175.8	3370.8
DP-5	207.5	680.4	887.9
Project Total	1413.8	16201.7	17615.4

Table 13 shows the WQV provided by the SCMs at each design point.

Table 12 WQV Provided by the SCMs at Each Design Point

Design Point	Pretreatment (y/n)	WQV Provided (cf)	Meets Total WQV	Meets Required WQV for New IA
DP-2				
Water Quality Swale	N	223.2	No	No
Total		223.3		
DP-5				
Eastern Leaching Basins	Y	1012.6	Yes	Yes
Total		1012.6		
Project Total		1,235.8	No	No

In DP-1, the project does not propose any water quality volume. Deep-sump catch basins are proposed to provide some TSS removal and will improve the existing conditions. This watershed is constrained by the presence of wetland resource areas.

In DP-2, a water quality swale is proposed to treat a portion of Route 140 and will provide a water quality volume of 223 cu. ft. Deep-sump catch basins are also proposed to provide additional TSS removal.

In DP-3 and DP-4, the project does not propose any water quality volume. Deep-sump catch basins are proposed to provide some TSS removal and will improve the existing conditions. These watersheds are constrained by limited right-of-way, the presence of private commercial properties the presence of wetland resource areas.

In DP-5, the project provides 1013 cu. ft. of water quality volume via the installation of three leaching basins constructed in series.

For the proposed leaching basins, pretreatment is provided via deep-sump catch basins. For the water quality swale, pretreatment is provided via vegetated check dams which will function as sediment forebays.

As previously noted, the project is a limited, redevelopment project with limited right-of-way, proximity to wetland resource areas, and private commercial features located in proximity to the roadway; therefore, the project is required to meet this standard only to the maximum extent practicable. Additional SCMs were evaluated at several locations, as described under Standard 3, but were not considered to be practicable. Despite project constraints, the proposed deep sump catch basins, leaching basins, and water quality swales will improve existing conditions throughout the project corridor. Refer to Appendix C for calculations relating to TSS Removal. Refer to Illicit Discharge Compliance Statement under Standard 10.

For MassDOT facilities, Long-Term Pollution Prevention Plans (LTPPPs) are implemented at a programmatic level through MassDOT's highway operation and maintenance program by district. Appendix E includes the LTPPP for this project.

Standard 5: Land Uses with Higher Potential Pollutant Loads

For Land Uses with Higher Potential Pollutant Loads (LUHPPLs), source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all LHPPLs cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from LUHPPLs shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.

Standard 5 does not apply to the Project. There are no Land Uses with Higher Potential Pollutant Loads within the project area.

Standard 6: Critical Areas

Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply and stormwater discharges near or to any other critical area require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters and Special Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A "stormwater discharge" as defined in 314 CMR 3.04(2)(a)1 or (b), to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00.

Standard 6 does not apply to the Project. There are no Critical Areas near the project area.

Standard 7: Redevelopment

A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

The Project is a Limited Redevelopment project under the first definition: "Maintenance and improvement of existing roadways, including widening less than a single lane, adding shoulders, correcting substandard intersections, improving existing drainage systems and repaving." Proposed deep sump catch basins, leaching basins, and water quality swales will provide treatment to the maximum extent practicable and represent an improvement to the existing conditions. Standards 1, 8, 9, and 10 are fully met and Standards 2, and 4 are met to the maximum extent practicable. Standard 3 is met for new impervious area. Standards 5 and 6 are not applicable to this project.

Standard 8: Erosion and Sediment Control

A plan to control construction related impacts, including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.

The implementation of erosion and sediment (E&S) controls during construction is considered a standard practice for all MassDOT projects. E&S controls will be installed before any land disturbance begins for the Project and will remain in place for the duration of the Project. The E&S controls for the Project are shown on the project plans and include erosion control barrier, coir logs, catch basin inlet protection, tree protection, and control of water.

The Project disturbs one or more acres of land; therefore, the project contractor will request coverage under the NPDES Construction General Permit (CGP) and develop a Stormwater

Pollution Prevention Plan (SWPPP). The SWPPP follows the requirements of this standard and complies with the NPDES CGP.

The SWPPP will be provided as part of the construction documents; however, a Construction Period Pollution Prevention and Erosion and Sediment Control Plan is included in Appendix E.

Standard 9: Operation and Maintenance Plan

A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed.

A Long-Term Operation and Maintenance Plan has been included. Operations and maintenance of stormwater management systems will be the responsibility of MassDOT and the Town of Mansfield DPW. The majority of the project is within MassDOT's jurisdiction and generally includes Commercial Street (Route 140), Copeland Drive, and Chauncy Street (Route 106). The portion of the project along Giles Place is within the Town's jurisdiction.

Street sweeping and inspection and maintenance of SCMs will be in accordance with MassDOT and Town-wide Operations and Maintenance schedules.

MassDOT O&M plans are implemented on a programmatic level by each MassDOT district. Each MassDOT district office is responsible for providing operation and maintenance for the MassDOT stormwater management systems within their respective jurisdictions.

Appendix E includes the O&M Plan for this project.

Standard 10: Prohibition of Illicit Discharges

All illicit discharges to the stormwater management system are prohibited.

Illicit Discharge Statement

The project's stormwater management systems, as shown on the plans submitted with this report, have been designed in full compliance with Standard 10. The project area does not have any known illicit connections. Any illicit connections to the stormwater management system found in the project limit of work during construction will be removed and/or resolved through MassDOT's or the Town of Mansfield's Illicit Discharge Detention and Elimination (IDDE) Programs. The Long-Term Pollution Prevention Plan, provided in Appendix E, includes measures to prevent illicit discharges.

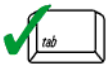
Appendix A: MassDEP Checklist for Stormwater Report

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

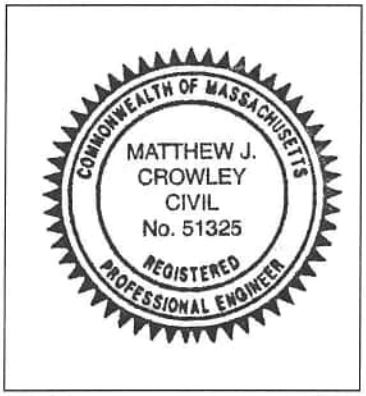
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



02/10/25

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

- ☐ New development
- ☒ Redevelopment
- ☐ Mix of New Development and Redevelopment

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☐ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☒ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☒ Use of “country drainage” versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☒ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): _____

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☐ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☒ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☒ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☒ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☒ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☐ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☒ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☒ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☒ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☒ Bike Path and/or Foot Path
- ☒ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☒ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☒ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☒ Description and delineation of public safety features;
- ☒ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☒ An Illicit Discharge Compliance Statement is attached;

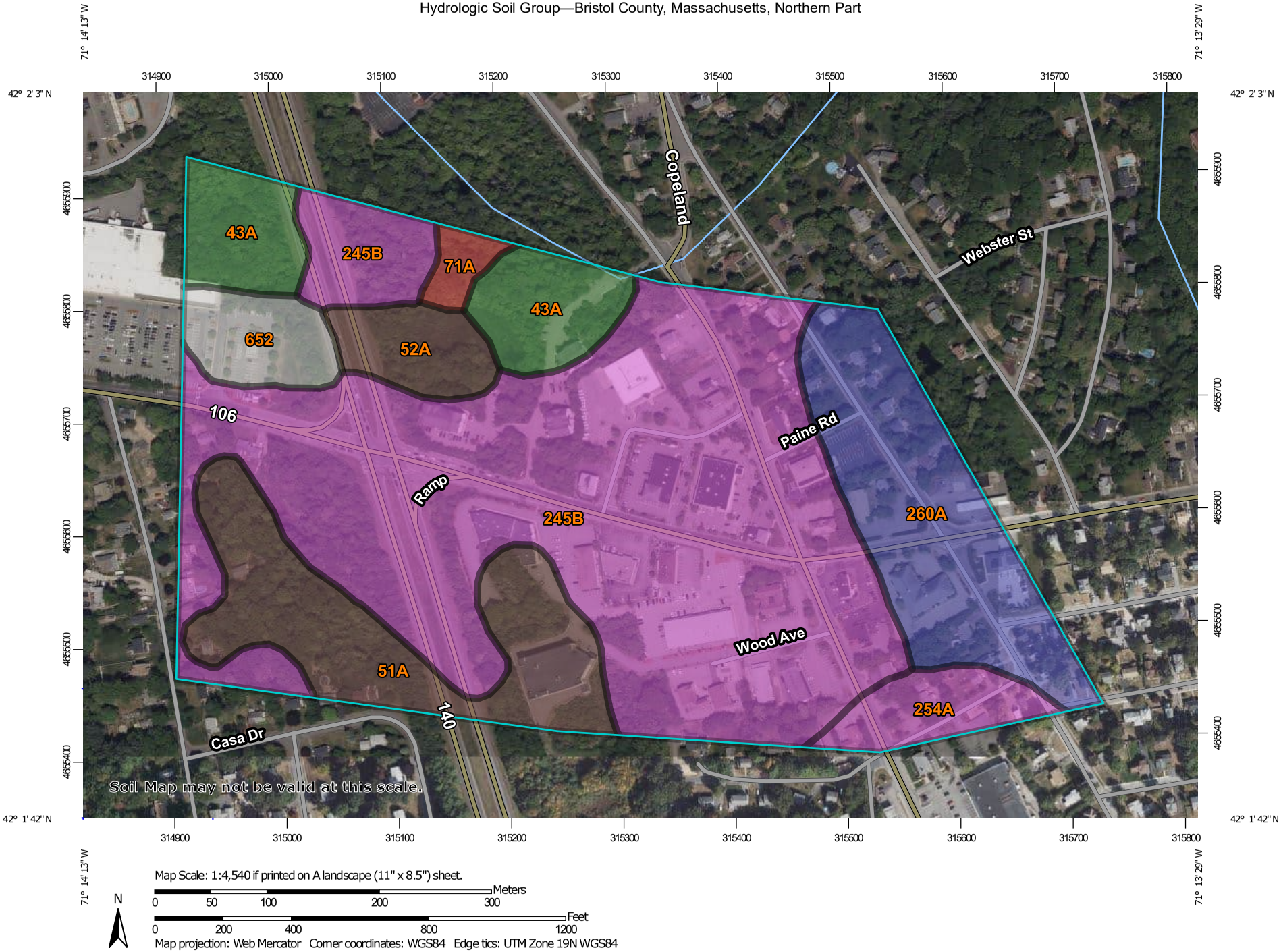
☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

Appendix B: Soils and FEMA Information

Proposal No. 613052-131228

A00830 - 136

Hydrologic Soil Group—Bristol County, Massachusetts, Northern Part



Map Scale: 1:4,540 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

Proposal No. 613052-131228

A00830 - 137

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bristol County, Massachusetts, Northern Part
Survey Area Data: Version 16, Sep 10, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 25, 2020—Jun 5, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
43A	Scarboro mucky fine sandy loam, 0 to 3 percent slopes	A/D	5.7	7.6%
51A	Swansea muck, 0 to 1 percent slopes	B/D	9.3	12.3%
52A	Freetown muck, 0 to 1 percent slopes	B/D	2.5	3.3%
71A	Ridgebury fine sandy loam, 0 to 3 percent slopes, extremely stony	D	0.8	1.1%
245B	Hinckley loamy sand, 3 to 8 percent slopes	A	41.8	55.5%
254A	Merrimac fine sandy loam, 0 to 3 percent slopes	A	2.5	3.4%
260A	Sudbury fine sandy loam, 0 to 3 percent slopes	B	10.1	13.4%
652	Udorthents, refuse substratum (Dumps/ Landfill)		2.6	3.4%
Totals for Area of Interest			**75.3**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Commonwealth of Massachusetts
City/Town of Mansfield

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

MASS DPW
Owner Name

Rte 140 & 106
Street Address

Map/Lot #

Mansfield
City

MA
State

Zip Code

B. Site Information

1. (Check one) ☐ New Construction ☐ Upgrade ☐ Repair Stormwater

2. Soil Survey Available? ☒ Yes ☐ No If yes: NRCS-WSS (Source) 245B (Soil Map Unit)

   Hinckley Loamy Sand (Soil Name) excessively drained (Soil Limitations)

   sand (Geologic/Parent Material) (Landform)

3. Surficial Geological Report Available? ☐ Yes ☒ No If yes: (Year Published/Source) (Publication Scale) (Map Unit)

4. Flood Rate Insurance Map

   Above the 500-year flood boundary? ☒ Yes ☐ No Within the 100-year flood boundary? ☐ Yes ☒ No
   If Yes, continue to #5.

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No MassGIS Wetland Data Layer: (Wetland Type)

7. Current Water Resource Conditions (USGS): 12-24 (Month/Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: 3.9 inches of rainfall on previous day

Proposal No. 613052-131228

A00830 - 140

Commonwealth of Massachusetts
City/Town of Mansfield

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 1 | 12-13-2024 (Date) | 8:15 (Time) | clear cold (Weather)

1. Location

Ground Elevation at Surface of Hole: _____ feet Latitude/Longitude: /

Description of Location: corner of Wood Street & Copeland and intersection 140 & 106

2. Land Use: commercial (e.g., woodland, agricultural field, vacant lot, etc.) | n (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3 (Slope (%))

grass (Vegetation) | _____ (Landform) | _____ (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from:

Open Water Body	_____ feet	Drainage Way	_____ feet	Wetlands	_____ feet
Property Line	12 feet	Drinking Water Well	_____ feet	Other	_____ feet

4. Parent Material: _____ Unsuitable Materials Present: ☐ Yes ☐ No

If Yes: ☐ Disturbed Soil ☒ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Estimated Depth to High Groundwater: >120 inches _____ elevation

Proposal No. 613052-131228

A00830 - 141

Commonwealth of Massachusetts
City/Town of Mansfield

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 1

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-18	A & fill	10 YR 3/2				Loam					
18-31	Bw	10 YR 5/6				sandy loam	5-10	5-10	crumb	dry	friable
31-120	C1	5 Y 5/4				M-C Sand	35-40	15-20	grain	loose	

Additional Notes:

C1 layer less stones with depth. Hole caving at bottom

Proposal No. 613052-131228

A00830 - 142

Commonwealth of Massachusetts
City/Town of Mansfield

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 2 | 12-13-2024 (Date) | 8:50 (Time) | clear - cold (Weather)

1. Location

   Ground Elevation at Surface of Hole: _____ feet Latitude/Longitude: /

2. Land Use: roadway shoulder (e.g., woodland, agricultural field, vacant lot, etc.) | none (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3 (Slope (%))

   Vegetation: grass | Landform: _____ | Position on Landscape (SU, SH, BS, FS, _____

3. Distances from:

Open Water Body	_____ feet	Drainage Way	_____ feet	Wetlands	_____ feet
Property Line	_____ feet	Drinking Water Well	_____ feet	Other	_____ feet

4. Parent Material: sand Unsuitable Materials Present: ☒ Yes ☐ No

   If Yes: ☐ Disturbed Soil ☒ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: 57 (Depth Weeping from Pit) | 57 (Depth Standing Water in Hole)

   Estimated Depth to High Groundwater: 52 inches | _____ elevation

Proposal No. 613052-131228

A00830 - 143

Commonwealth of Massachusetts
City/Town of Mansfield

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 2

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-18	A & fill	10 YR 3/2									
18-40	Bw	10 YR 5/6				loamy sand	10-15	10-15	grain	wet	loose
40-68	C1	10 YR 5/3	52	7.5 YR 5/8 10YR3/1	8-10	Med Sand	15-20	5-10	grain	wet	loose

Additional Notes:

Proposal No. 613052-131228

A00830 - 144

Commonwealth of Massachusetts
City/Town of Mansfield

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

D. Determination of High Groundwater Elevation

1. Method Used:

	Obs. Hole #1	Obs. Hole #2
☐ Depth observed standing water in observation hole	inches	inches
☐ Depth weeping from side of observation hole	inches	inches
☒ Depth to soil redoximorphic features (mottles)	>120 inches	52 inches
☐ Depth to adjusted seasonal high groundwater (S_h) (USGS methodology)	inches	inches

Index Well Number _____ Reading Date _____

$S_h = S_c – [S_r \times (OW_c – OW_{max})/OW_r]$

Obs. Hole # _____ S_c _____ S_r _____ OW_c _____ OW_{max} _____ OW_r _____ S_h _____

Obs. Hole # _____ S_c _____ S_r _____ OW_c _____ OW_{max} _____ OW_r _____ S_h _____

E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material
   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?
      ☐ Yes ☐ No
   b. If yes, at what depth was it observed? Upper boundary: _____ inches Lower boundary: _____ inches
   c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

Proposal No. 613052-131228

A00830 - 145

Commonwealth of Massachusetts
City/Town of Mansfield
Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

F. Board of Health Witness

Name of Board of Health Witness	Board of Health

G. Soil Evaluator Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Signature of Soil Evaluator	Date
	12-13-2024
Typed or Printed Name of Soil Evaluator / License #	Expiration Date of License
Gary D. James, P.E. 13765	06/26

Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

Proposal No. 613052-131228

A00830 - 146

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Field Diagrams

Use this sheet for field diagrams:

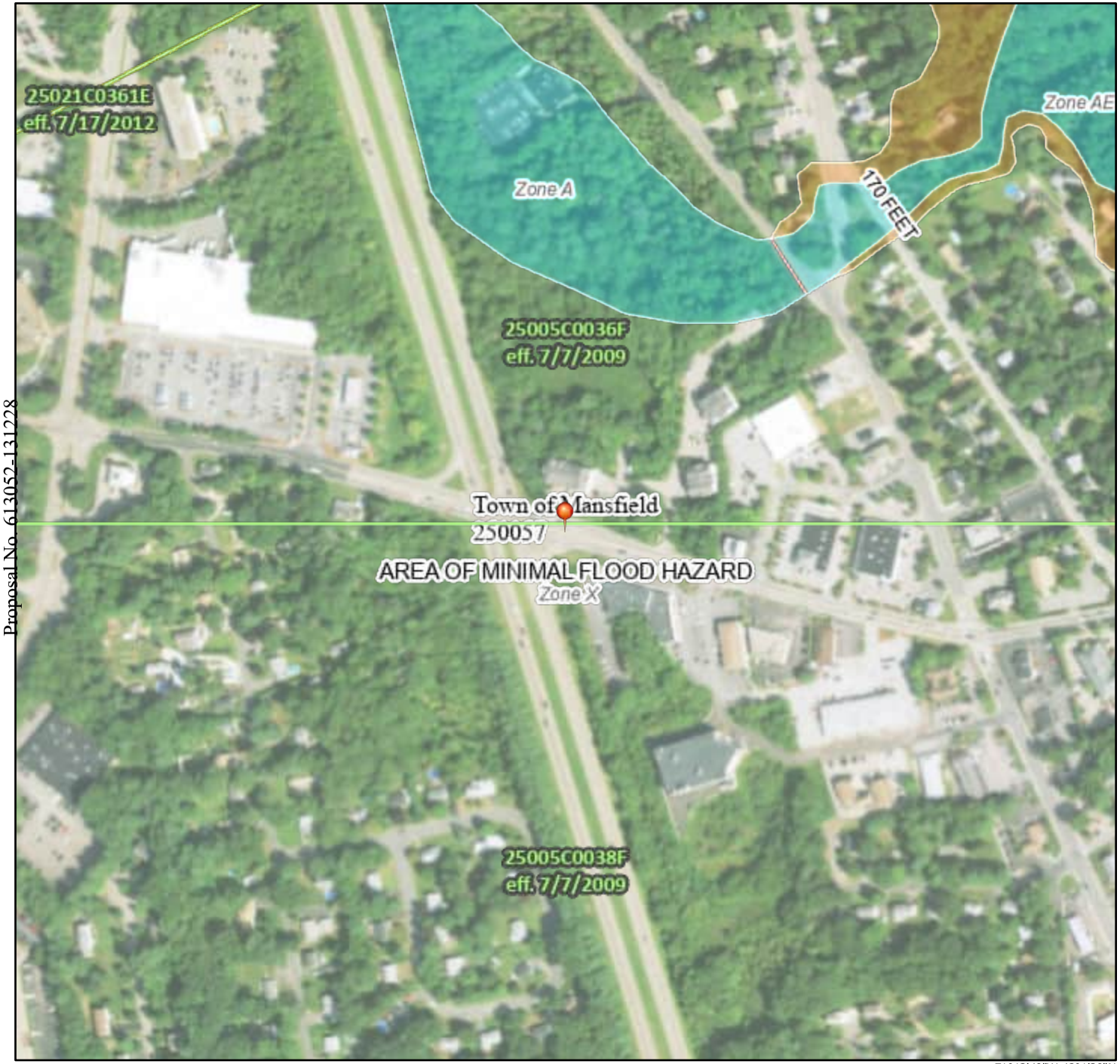
Proposal No. 613052-131228

A00830 - 147

National Flood Hazard Layer FIRMette

FEMA

71°14'18"W 42°2'6"N



Proposal No. 613052-131228

71°13'40"W 42°1'39"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

A00830 - 148

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/7/2023 at 9:55 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Appendix C: Supporting Calculations

Proposal No. 613052-131228

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point

Smoothing	Yes
State	
Location	
Latitude	42.030 degrees North
Longitude	71.232 degrees West
Elevation	50 feet
Date/Time	Wed Mar 29 2023 09:17:53 GMT-0400 (Eastern Daylight Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr
1yr	0.29	0.45	0.56	0.73	0.91	1.15	**1yr**	0.79	1.09	1.33	1.68	2.14	2.73	3.03
2yr	0.36	0.55	0.69	0.91	1.14	1.44	**2yr**	0.98	1.33	1.66	2.08	2.61	3.27	3.64
5yr	0.43	0.67	0.84	1.13	1.44	1.83	**5yr**	1.24	1.66	2.12	2.66	3.32	4.14	4.65
10yr	0.49	0.77	0.97	1.32	1.72	2.20	**10yr**	1.48	1.97	2.56	3.21	4.00	4.95	5.60
25yr	0.58	0.92	1.18	1.63	2.17	2.81	**25yr**	1.87	2.46	3.28	4.11	5.11	6.28	7.15
50yr	0.67	1.07	1.38	1.93	2.59	3.38	**50yr**	2.24	2.92	3.95	4.96	6.14	7.53	8.62
100yr	0.77	1.24	1.60	2.27	3.10	4.06	**100yr**	2.68	3.46	4.76	5.98	7.39	9.04	10.39
200yr	0.89	1.45	1.87	2.69	3.71	4.90	**200yr**	3.21	4.10	5.75	7.22	8.91	10.86	12.54
500yr	1.08	1.78	2.32	3.37	4.72	6.26	**500yr**	4.07	5.14	7.37	9.26	11.42	13.88	16.08

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr
1yr	0.25	0.38	0.47	0.63	0.78	0.87	**1yr**	0.67	0.86	1.06	1.39	1.84	2.54	2.51
2yr	0.34	0.53	0.66	0.89	1.09	1.31	**2yr**	0.94	1.28	1.50	1.98	2.53	3.24	3.59
5yr	0.39	0.60	0.75	1.03	1.31	1.56	**5yr**	1.13	1.53	1.78	2.33	2.94	3.94	4.38
10yr	0.43	0.67	0.83	1.16	1.49	1.78	**10yr**	1.29	1.74	2.01	2.63	3.29	4.55	5.08
25yr	0.50	0.76	0.94	1.35	1.77	2.10	**25yr**	1.53	2.05	2.38	3.10	3.82	5.54	6.18
50yr	0.55	0.83	1.04	1.49	2.01	2.38	**50yr**	1.73	2.32	2.70	3.50	4.28	6.45	7.15
100yr	0.61	0.92	1.15	1.66	2.28	2.70	**100yr**	1.96	2.64	3.06	3.96	4.80	7.53	8.30
200yr	0.67	1.01	1.27	1.85	2.57	3.08	**200yr**	2.22	3.01	3.48	4.49	5.38	8.83	9.64
500yr	0.76	1.13	1.46	2.12	3.01	3.63	**500yr**	2.60	3.55	4.10	5.30	6.26	10.93	11.71

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr
1yr	0.32	0.50	0.61	0.82	1.01	1.22	**1yr**	0.87	1.19	1.38	1.83	2.36	2.92	3.27
2yr	0.38	0.58	0.71	0.97	1.19	1.41	**2yr**	1.03	1.38	1.62	2.12	2.72	3.35	3.75
5yr	0.48	0.74	0.91	1.26	1.60	1.84	**5yr**	1.38	1.80	2.10	2.74	3.46	4.36	4.93
10yr	0.58	0.90	1.11	1.55	2.00	2.28	**10yr**	1.73	2.23	2.58	3.33	4.16	5.30	6.11
25yr	0.76	1.16	1.44	2.05	2.70	3.01	**25yr**	2.33	2.94	3.38	4.30	5.32	6.90	8.13
50yr	0.92	1.41	1.75	2.52	3.39	3.72	**50yr**	2.93	3.63	4.15	5.21	6.40	8.44	10.09
100yr	1.14	1.72	2.16	3.12	4.27	4.60	**100yr**	3.69	4.49	5.09	6.32	7.71	10.32	12.55
200yr	1.40	2.10	2.67	3.86	5.38	5.68	**200yr**	4.64	5.56	6.26	7.68	9.27	12.65	15.63
500yr	1.86	2.76	3.56	5.17	7.35	7.51	**500yr**	6.34	7.34	8.22	9.92	11.86	16.54	20.90

Powered by ACIS Northeast Regional Climate Center

PROJECT NAME:	**Chauncy Street (Route 106)**	PROJ NO.	**6076**
DESCRIPTION:	**Standards 3 & 4 Worksheet**	DATE	**01/29/25**
CALCULATED BY:	**SLB**	SHEET	**1**

Recharge Volume (Rv) and Water Quality Volume (WQv)
Provided Volumes Worksheet

Calculation of Required Recharge Volume

	Soil Group	Impervious Area (Sq. Ft.)	Runoff Depth (In.)	Recharge Volume (Cu. Ft.)
Pre-Development	Total	**194420**		
	HSG A	182985		
	HSG B	11435		
Post-Development	Total	**211385**		**10326.44**
	HSG A	199730	0.60	9986.50
	HSG B	11655	0.35	339.94
Net Change	Total	**16965**		**843.67**
	HSG A	16745	0.60	837.25
	HSG B	220	0.35	6.42

Recharge Volume (R_V) Required = Impervious Area x Runoff Depth (from HSG)

*For sites comprised of primarily HSG C and D soils, proponents are reqired to infiltrate to the maximum extent practicable. All portions of the project located within jurisdictional areas are also located in areas of HSG C and D mapped soils.

Total Recharge Volume Required: **844 CF**

Total Recharge Volume Provided: **1,236 CF**

Calculation of Required Water Quality Volume

	Impervious Area (Sq. Ft.)	Runoff Depth (In.)	Water Quality Volume (Cu. Ft.)
Total Impervious Area	211385	1.0	17615
Net New Impervious Area Only	16965	1.0	**1414**
Treatment Area Only (2Pb, 5Pa)	15400	1.0	**1283**

Water Quality Volume (WQ_V) Required = Impervious Area x Runoff Depth (0.5" or 1.0" Depth)

Total Water Quality Volume Provided: **1,236 CF**

PROJECT NAME:	**Chauncy Street (Route 106)**	PROJ NO.	**6076**
DESCRIPTION:	**Standards 3 & 4 Worksheet**	DATE	**01/29/25**
CALCULATED BY:	**SLB**	SHEET	**2**

Recharge Volume (Rv) and Water Quality Volume (WQv)
Provided Volumes Worksheet

Calculation of Required Recharge Volume by Design Point

	Soil Group	Runoff Depth (In.)	Net Impervious Area (Sq. Ft.)	Recharge Volume Required (Cu. Ft.)	Recharge Volume Provided (Cu. Ft.)
DP 1L	Total			**23.75**	0.0
	A	0.6	475	23.75	
DP 2L	Total			**440.42**	**223.2**
	A	0.6	**8680**	434.00	
	B	0.35	**220**	6.42	
DP 3L	Total			**138.00**	0.0
	A	0.6	**2760**	138.00	
DP 4L	Total			**117.00**	0.0
	A	0.6	**2340**	117.00	
DP 5L	Total			**124.50**	**1012.6**
	A	0.6	**2490**	124.50	

Recharge Volume (R_V) Required = Impervious Area x Runoff Depth (from HSG)

Calculation of Required Water Quality Volume

	New Impervious Area (Sq. Ft.)	Water Quality Volume - New (Cu. Ft.)	Total Impervious Area (Sq. Ft.)	Water Quality Volume - Total (Cu. Ft.)	Water Quality Volume - Provided (Cu. Ft.)
DP-1L	475	**39.58**	23935	**1994.58**	0.0
DP 2L	8900	**741.67**	106465	**8872.08**	**223.2**
DP-3L	2760	**230.00**	29880	**2490.00**	0.0
DP-4L	2340	**195.00**	40450	**3370.83**	0.0
DP-5L	2490	**207.50**	10655	**887.92**	**1012.6**

Water Quality Volume (WQ_V) Required = Impervious Area x Runoff Depth (0.5" or 1.0" Depth)

Calculation of Provided Treatment Volumes

SCM Name	Design Point	Impervious Treatment Area (Sq. Ft.)		Water Quality Volume - Provided (Cu. Ft.)
East Leaching Basin (5LB)	5L	4500		**1013**
Water Quality Swale	2L	10900		**223**
Projectwide Total:		**15400**		**1236**

PROJECT NAME:	**Chauncy Street (Route 106)**	PROJ NO.	**6076**
DESCRIPTION:	**Standards 3 & 4 Worksheet**	DATE	**01/29/25**
CALCULATED BY:	**SLB**	SHEET	**3**

Leaching Basins
Provided Volumes & TSS Worksheet

Total Storage

Storage Within Basins	Diameter (Ft.)	Height of Stone Section (Ft.)	Volume - Structure (Cu. Ft.)	Volume - Stone (Cu. Ft.)	# Of Structures in System	Total Volume Provided (Cu. Ft.)
5LB	6	4.0	339.3	673.3	3.00	1013

Total Storage Volume Provided: **1,013 CF**

Required Water Quality Volume

	Impervious Area Within Catchment (Sq. Ft.)	Runoff Depth (in.)	Required Volume (Cu. Ft.)	Provided Volume (Cu. Ft.)	Provided > Required?	
5LB	4500	1	**375**	**1,013**	**Okay**	
Total:	**4,500**		**375**	**1,013**		

TSS Removal

Best Management Practice (BMP)	SCM Removal Rate (%)	Remaining TSS (%)	Cumulative Removal Rate (%)
Deep-Sump Catch Basin (Pretreatment)	0%	100%	0%
Leaching Catch Basin	80%	20%	80%

Drawdown Calculations

BMP: **Leaching Basin**

Rv (cu. ft.) =	1,013	Drawdown (hrs) =	**11.8**
K (in/hr) =	2.41		
Bottom Area (sq. ft.) =	429	Less than 72 hrs?	**PASS**

**The hydraulic conductivity rate is based on Rawls Rate for Loamy Sand
*Bottom Area is based on total leaching area across all systems

PROJECT NAME:	**Chauncy Street (Route 106)**	PROJ NO.	**6076**
DESCRIPTION:	**Standards 3 & 4 Worksheet**	DATE	**01/29/25**
CALCULATED BY:	**SLB**	SHEET	**4**

Water Quality Swale
Provided Volumes & TSS Worksheet

Total Storage

Storage Within Basins	Check Dam Elevation (ft)	Volume Below Dam (Ft.)
Behind 1st Check Dam	177.50	108.0
Behind 2nd Check Dam	178.20	115.2

Total Storage Volume Provided: **223 CF**

Required Recharge & Water Quality Volume

	Impervious Area Within Catchment (Sq. Ft.)	Runoff Depth (in.)	Required Volume (Cu. Ft.)
Required Recharge Volume (HSG A)	10900	0.6	**545**
Required Water Quality Volume	10900	1	**908**

TSS Removal

Best Management Practice (BMP)	SCM Removal Rate (%)	Remaining TSS (%)	Cumulative Removal Rate (%)
Water Quality Swale	0% 70%	100% 30%	0% 70%

Drawdown Calculations

BMP: **Water Quality Swale**

Rv (cu. ft.) =	223	Drawdown (hrs) =	**11.1**
K (in/hr) =	2.41		
Bottom Area (sq. ft.)	100	Less than 72 hrs?	**PASS**

Soil Type:245B - Hinckley Loamy Sand - HSG A

PROJECT NAME:	**Chauncy Street (Route 106)**	PROJ NO.	**6076**
DESCRIPTION:	**Standards 3 & 4 Worksheet**	DATE	**01/29/25**
CALCULATED BY:	**SLB**	SHEET	**5**

Total Suspended Solids (TSS)
Provided Treatment Worksheet

Treatment Train	A: Total Removal Rate (%)	B: Total Treatment Area (Sq. Ft.)	C: A x B (Cu. Ft.)
No Treatment (Existing Cbs)	0%	33067	0
Treatment Train 1 - Deep Sump Catch Basins	25%	162918	40729
Treatment Train 2 - Leaching Basins	80%	4500	3600
Treatment Train 3 - Water Quality Swale	70%	10900	7630
Totals:		211,385 SF	51,959 CF

Total Sitewide TSS Removal (C / B) 25%
Total of Column C divided by Total of Column B

Equivalent Area for 80% TSS Removal **64,949 CF**
Total of Column B x total TSS Rate divided by 80%

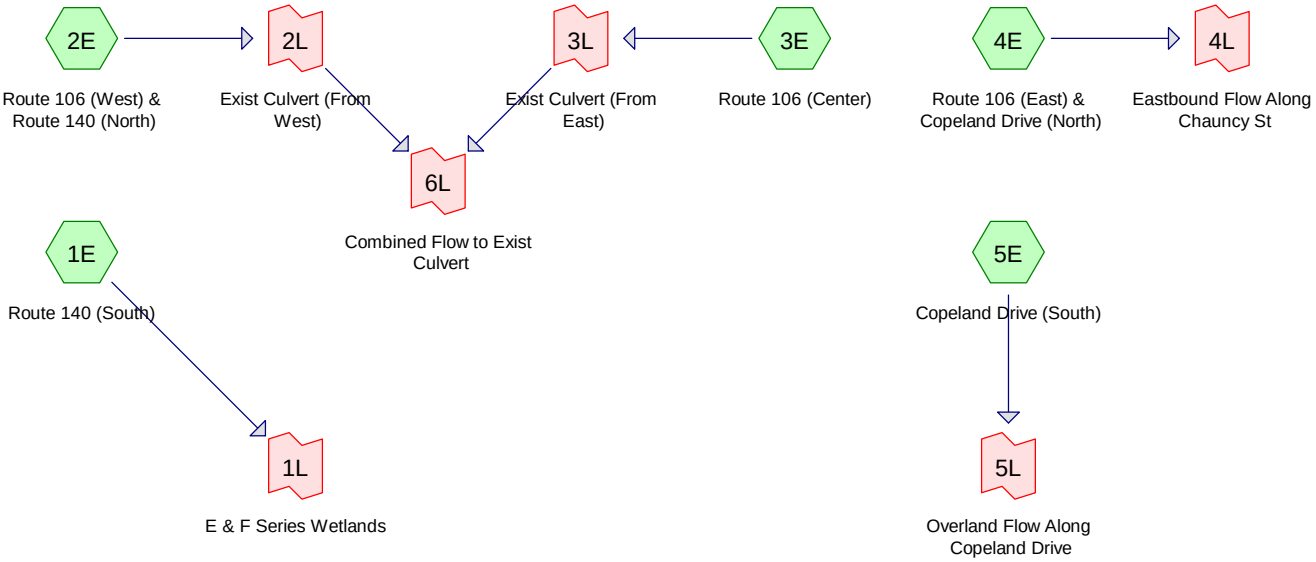
Proposed New Impervious Area: 16,965 SF

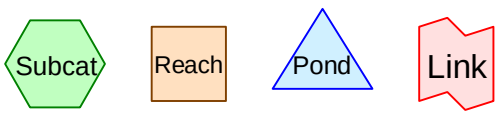
Appendix D: Hydrologic Data

Summary of Modelling Results

Peak Rate of Runoff		Flow (cubic feet per second)							
		1-Year Storm		2 Year Storm		10 Year Storm		100 Year Storm	
Outlet To:		Exist	Prop	Exist	Prop	Exist	Prop	Exist	Prop
1L	E & F Series Wetlands	1.15	1.11	1.51	1.48	2.64	2.67	5.39	5.61
2L	Exist Culvert (From West)	2.91	3.76	4.54	5.49	10.40	11.63	26.64	28.01
3L	Exist Culvert (From East)	1.16	1.50	1.58	1.95	2.96	3.36	6.39	6.77
4L	Chancy St.	1.77	2.24	2.36	2.81	4.26	4.57	8.94	8.78
5L	Copeland Dr.	0.37	0.20	0.50	0.30	0.90	0.69	1.89	2.17
Project Total:		7.36	8.81	10.49	12.03	21.16	22.92	49.25	51.34
6L	Exist Culvert (Combined)	4.07	5.22	6.12	7.43	13.35	14.99	33.03	34.78

Runoff Volume		Volume (acre-feet)							
		1-Year Storm		2 Year Storm		10 Year Storm		100 Year Storm	
Outlet To:		Exist	Prop	Exist	Prop	Exist	Prop	Exist	Prop
1L	E & F Series Wetlands	0.078	0.075	0.103	0.100	0.184	0.184	0.391	0.403
2L	Exist Culvert (From West)	0.213	0.260	0.317	0.375	0.702	0.784	1.822	1.936
3L	Exist Culvert (From East)	0.079	0.102	0.107	0.133	0.202	0.236	0.454	0.495
4L	Chancy St.	0.119	0.156	0.160	0.198	0.294	0.331	0.642	0.658
5L	Copeland Dr.	0.025	0.014	0.034	0.021	0.062	0.072	0.136	0.118
Project Total:		0.514	0.607	0.721	0.827	1.444	1.607	3.445	3.610
6L	Exist Culvert (Combined)	0.291	0.362	0.424	0.508	0.904	1.020	2.276	2.431





Routing Diagram for 6076_ExistingConditions
Prepared by BETA Group Inc, Printed 1/28/2025
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Summary for Subcatchment 1E: Route 140 (South)

Runoff = 1.15 cfs @ 12.09 hrs, Volume= 0.078 af, Depth> 1.40"
Routed to Link 1L : E & F Series Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
5,539	39	>75% Grass cover, Good, HSG A
23,462	98	Paved roads w/curbs & sewers, HSG A
29,000	87	Weighted Average
5,539		19.10% Pervious Area
23,462		80.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	50	0.0070	0.78		**Sheet Flow, Sheet** Smooth surfaces n= 0.011 P2= 3.12"
0.9	125	0.0120	2.22		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
4.0					**Direct Entry, Min TC**
6.0	175	Total			

Summary for Subcatchment 2E: Route 106 (West) & Route 140 (North)

Runoff = 2.91 cfs @ 12.10 hrs, Volume= 0.213 af, Depth> 0.63"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
40,077	39	>75% Grass cover, Good, HSG A
11,224	61	>75% Grass cover, Good, HSG B
86,127	98	Paved roads w/curbs & sewers, HSG A
11,436	98	Paved roads w/curbs & sewers, HSG B
19,504	30	Woods, Good, HSG A
8,550	55	Woods, Good, HSG B
176,918	73	Weighted Average
79,355		44.85% Pervious Area
97,563		55.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.12"
2.8	290	0.0070	1.70		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
2.5					**Direct Entry, Use Min TC**
6.0	340	Total			

Summary for Subcatchment 3E: Route 106 (Center)

Runoff = 1.16 cfs @ 12.10 hrs, Volume= 0.079 af, Depth> 1.14"
Routed to Link 3L : Exist Culvert (From East)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
8,904	39	>75% Grass cover, Good, HSG A
27,121	98	Paved roads w/curbs & sewers, HSG A
36,025	83	Weighted Average
8,904		24.72% Pervious Area
27,121		75.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0130	1.00		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.8	265	0.0140	2.40		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
3.4					**Direct Entry, Use Min TC**
6.0	315	Total			

Summary for Subcatchment 4E: Route 106 (East) & Copeland Drive (North)

Runoff = 1.77 cfs @ 12.09 hrs, Volume= 0.119 af, Depth> 1.27"
Routed to Link 4L : Eastbound Flow Along Chauncy St

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
11,087	39	>75% Grass cover, Good, HSG A
38,109	98	Paved roads w/curbs & sewers, HSG A
49,197	85	Weighted Average
11,087		22.54% Pervious Area
38,109		77.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	140	0.0110	2.13		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.2					**Direct Entry, Use Min TC**
6.0	190	Total			

Summary for Subcatchment 5E: Copeland Drive (South)

Runoff = 0.37 cfs @ 12.09 hrs, Volume= 0.025 af, Depth> 1.27"
Routed to Link 5L : Overland Flow Along Copeland Drive

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
2,261	39	>75% Grass cover, Good, HSG A
8,163	98	Paved roads w/curbs & sewers, HSG A
10,424	85	Weighted Average
2,261		21.69% Pervious Area
8,163		78.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	102	0.0060	1.57		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.0					**Direct Entry, Use Minimum TC**
6.0	152	Total			

Summary for Link 1L: E & F Series Wetlands

Inflow Area = 0.666 ac, 80.90% Impervious, Inflow Depth > 1.40" for 1-year event
Inflow = 1.15 cfs @ 12.09 hrs, Volume= 0.078 af
Primary = 1.15 cfs @ 12.09 hrs, Volume= 0.078 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Exist Culvert (From West)

Inflow Area = 4.061 ac, 55.15% Impervious, Inflow Depth > 0.63" for 1-year event
Inflow = 2.91 cfs @ 12.10 hrs, Volume= 0.213 af
Primary = 2.91 cfs @ 12.10 hrs, Volume= 0.213 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 3L: Exist Culvert (From East)

Inflow Area = 0.827 ac, 75.28% Impervious, Inflow Depth > 1.14" for 1-year event
Inflow = 1.16 cfs @ 12.10 hrs, Volume= 0.079 af
Primary = 1.16 cfs @ 12.10 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 4L: Eastbound Flow Along Chauncy St

Inflow Area = 1.129 ac, 77.46% Impervious, Inflow Depth > 1.27" for 1-year event
Inflow = 1.77 cfs @ 12.09 hrs, Volume= 0.119 af
Primary = 1.77 cfs @ 12.09 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 5L: Overland Flow Along Copeland Drive

Inflow Area = 0.239 ac, 78.31% Impervious, Inflow Depth > 1.27" for 1-year event
Inflow = 0.37 cfs @ 12.09 hrs, Volume= 0.025 af
Primary = 0.37 cfs @ 12.09 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 6L: Combined Flow to Exist Culvert

Inflow Area = 4.888 ac, 58.55% Impervious, Inflow Depth > 0.71" for 1-year event
Inflow = 4.07 cfs @ 12.10 hrs, Volume= 0.291 af
Primary = 4.07 cfs @ 12.10 hrs, Volume= 0.291 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1E: Route 140 (South)

Runoff = 1.51 cfs @ 12.09 hrs, Volume= 0.103 af, Depth> 1.85"
Routed to Link 1L : E & F Series Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
5,539	39	>75% Grass cover, Good, HSG A
23,462	98	Paved roads w/curbs & sewers, HSG A
29,000	87	Weighted Average
5,539		19.10% Pervious Area
23,462		80.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	50	0.0070	0.78		**Sheet Flow, Sheet** Smooth surfaces n= 0.011 P2= 3.12"
0.9	125	0.0120	2.22		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
4.0					**Direct Entry, Min TC**
6.0	175	Total			

Summary for Subcatchment 2E: Route 106 (West) & Route 140 (North)

Runoff = 4.54 cfs @ 12.10 hrs, Volume= 0.317 af, Depth> 0.94"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
40,077	39	>75% Grass cover, Good, HSG A
11,224	61	>75% Grass cover, Good, HSG B
86,127	98	Paved roads w/curbs & sewers, HSG A
11,436	98	Paved roads w/curbs & sewers, HSG B
19,504	30	Woods, Good, HSG A
8,550	55	Woods, Good, HSG B
176,918	73	Weighted Average
79,355		44.85% Pervious Area
97,563		55.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.12"
2.8	290	0.0070	1.70		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
2.5					**Direct Entry, Use Min TC**
6.0	340	Total			

Summary for Subcatchment 3E: Route 106 (Center)

Runoff = 1.58 cfs @ 12.09 hrs, Volume= 0.107 af, Depth> 1.55"
Routed to Link 3L : Exist Culvert (From East)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
8,904	39	>75% Grass cover, Good, HSG A
27,121	98	Paved roads w/curbs & sewers, HSG A
36,025	83	Weighted Average
8,904		24.72% Pervious Area
27,121		75.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0130	1.00		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.8	265	0.0140	2.40		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
3.4					**Direct Entry, Use Min TC**
6.0	315	Total			

Summary for Subcatchment 4E: Route 106 (East) & Copeland Drive (North)

Runoff = 2.36 cfs @ 12.09 hrs, Volume= 0.160 af, Depth> 1.70"
Routed to Link 4L : Eastbound Flow Along Chauncy St

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
11,087	39	>75% Grass cover, Good, HSG A
38,109	98	Paved roads w/curbs & sewers, HSG A
49,197	85	Weighted Average
11,087		22.54% Pervious Area
38,109		77.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	140	0.0110	2.13		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.2					**Direct Entry, Use Min TC**
6.0	190	Total			

Summary for Subcatchment 5E: Copeland Drive (South)

Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.034 af, Depth> 1.70"
Routed to Link 5L : Overland Flow Along Copeland Drive

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
2,261	39	>75% Grass cover, Good, HSG A
8,163	98	Paved roads w/curbs & sewers, HSG A
10,424	85	Weighted Average
2,261		21.69% Pervious Area
8,163		78.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	102	0.0060	1.57		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.0					**Direct Entry, Use Minimum TC**
6.0	152	Total			

Summary for Link 1L: E & F Series Wetlands

Inflow Area = 0.666 ac, 80.90% Impervious, Inflow Depth > 1.85" for 2-year event
Inflow = 1.51 cfs @ 12.09 hrs, Volume= 0.103 af
Primary = 1.51 cfs @ 12.09 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Exist Culvert (From West)

Inflow Area = 4.061 ac, 55.15% Impervious, Inflow Depth > 0.94" for 2-year event
Inflow = 4.54 cfs @ 12.10 hrs, Volume= 0.317 af
Primary = 4.54 cfs @ 12.10 hrs, Volume= 0.317 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 3L: Exist Culvert (From East)

Inflow Area = 0.827 ac, 75.28% Impervious, Inflow Depth > 1.55" for 2-year event
Inflow = 1.58 cfs @ 12.09 hrs, Volume= 0.107 af
Primary = 1.58 cfs @ 12.09 hrs, Volume= 0.107 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 4L: Eastbound Flow Along Chauncy St

Inflow Area = 1.129 ac, 77.46% Impervious, Inflow Depth > 1.70" for 2-year event
Inflow = 2.36 cfs @ 12.09 hrs, Volume= 0.160 af
Primary = 2.36 cfs @ 12.09 hrs, Volume= 0.160 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 5L: Overland Flow Along Copeland Drive

Inflow Area = 0.239 ac, 78.31% Impervious, Inflow Depth > 1.70" for 2-year event
Inflow = 0.50 cfs @ 12.09 hrs, Volume= 0.034 af
Primary = 0.50 cfs @ 12.09 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 6L: Combined Flow to Exist Culvert

Inflow Area = 4.888 ac, 58.55% Impervious, Inflow Depth > 1.04" for 2-year event
Inflow = 6.12 cfs @ 12.10 hrs, Volume= 0.424 af
Primary = 6.12 cfs @ 12.10 hrs, Volume= 0.424 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1E: Route 140 (South)

Runoff = 2.64 cfs @ 12.09 hrs, Volume= 0.184 af, Depth> 3.32"
Routed to Link 1L : E & F Series Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
5,539	39	>75% Grass cover, Good, HSG A
23,462	98	Paved roads w/curbs & sewers, HSG A
29,000	87	Weighted Average
5,539		19.10% Pervious Area
23,462		80.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	50	0.0070	0.78		**Sheet Flow, Sheet** Smooth surfaces n= 0.011 P2= 3.12"
0.9	125	0.0120	2.22		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
4.0					**Direct Entry, Min TC**
6.0	175	Total			

Summary for Subcatchment 2E: Route 106 (West) & Route 140 (North)

Runoff = 10.40 cfs @ 12.10 hrs, Volume= 0.702 af, Depth> 2.07"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
40,077	39	>75% Grass cover, Good, HSG A
11,224	61	>75% Grass cover, Good, HSG B
86,127	98	Paved roads w/curbs & sewers, HSG A
11,436	98	Paved roads w/curbs & sewers, HSG B
19,504	30	Woods, Good, HSG A
8,550	55	Woods, Good, HSG B
176,918	73	Weighted Average
79,355		44.85% Pervious Area
97,563		55.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.12"
2.8	290	0.0070	1.70		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
2.5					**Direct Entry, Use Min TC**
6.0	340	Total			

Summary for Subcatchment 3E: Route 106 (Center)

Runoff = 2.96 cfs @ 12.09 hrs, Volume= 0.202 af, Depth> 2.93"
Routed to Link 3L : Exist Culvert (From East)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
8,904	39	>75% Grass cover, Good, HSG A
27,121	98	Paved roads w/curbs & sewers, HSG A
36,025	83	Weighted Average
8,904		24.72% Pervious Area
27,121		75.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0130	1.00		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.8	265	0.0140	2.40		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
3.4					**Direct Entry, Use Min TC**
6.0	315	Total			

Summary for Subcatchment 4E: Route 106 (East) & Copeland Drive (North)

Runoff = 4.26 cfs @ 12.09 hrs, Volume= 0.294 af, Depth> 3.12"
Routed to Link 4L : Eastbound Flow Along Chauncy St

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
11,087	39	>75% Grass cover, Good, HSG A
38,109	98	Paved roads w/curbs & sewers, HSG A
49,197	85	Weighted Average
11,087		22.54% Pervious Area
38,109		77.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	140	0.0110	2.13		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.2					**Direct Entry, Use Min TC**
6.0	190	Total			

Summary for Subcatchment 5E: Copeland Drive (South)

Runoff = 0.90 cfs @ 12.09 hrs, Volume= 0.062 af, Depth> 3.12"
Routed to Link 5L : Overland Flow Along Copeland Drive

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
2,261	39	>75% Grass cover, Good, HSG A
8,163	98	Paved roads w/curbs & sewers, HSG A
10,424	85	Weighted Average
2,261		21.69% Pervious Area
8,163		78.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	102	0.0060	1.57		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.0					**Direct Entry, Use Minimum TC**
6.0	152	Total			

Summary for Link 1L: E & F Series Wetlands

Inflow Area = 0.666 ac, 80.90% Impervious, Inflow Depth > 3.32" for 10-year event
Inflow = 2.64 cfs @ 12.09 hrs, Volume= 0.184 af
Primary = 2.64 cfs @ 12.09 hrs, Volume= 0.184 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Exist Culvert (From West)

Inflow Area = 4.061 ac, 55.15% Impervious, Inflow Depth > 2.07" for 10-year event
Inflow = 10.40 cfs @ 12.10 hrs, Volume= 0.702 af
Primary = 10.40 cfs @ 12.10 hrs, Volume= 0.702 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 3L: Exist Culvert (From East)

Inflow Area = 0.827 ac, 75.28% Impervious, Inflow Depth > 2.93" for 10-year event
Inflow = 2.96 cfs @ 12.09 hrs, Volume= 0.202 af
Primary = 2.96 cfs @ 12.09 hrs, Volume= 0.202 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 4L: Eastbound Flow Along Chauncy St

Inflow Area = 1.129 ac, 77.46% Impervious, Inflow Depth > 3.12" for 10-year event
Inflow = 4.26 cfs @ 12.09 hrs, Volume= 0.294 af
Primary = 4.26 cfs @ 12.09 hrs, Volume= 0.294 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 5L: Overland Flow Along Copeland Drive

Inflow Area = 0.239 ac, 78.31% Impervious, Inflow Depth > 3.12" for 10-year event
Inflow = 0.90 cfs @ 12.09 hrs, Volume= 0.062 af
Primary = 0.90 cfs @ 12.09 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 6L: Combined Flow to Exist Culvert

Inflow Area = 4.888 ac, 58.55% Impervious, Inflow Depth > 2.22" for 10-year event
Inflow = 13.35 cfs @ 12.09 hrs, Volume= 0.904 af
Primary = 13.35 cfs @ 12.09 hrs, Volume= 0.904 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1E: Route 140 (South)

Runoff = 5.39 cfs @ 12.09 hrs, Volume= 0.391 af, Depth> 7.05"
Routed to Link 1L : E & F Series Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
5,539	39	>75% Grass cover, Good, HSG A
23,462	98	Paved roads w/curbs & sewers, HSG A
29,000	87	Weighted Average
5,539		19.10% Pervious Area
23,462		80.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	50	0.0070	0.78		**Sheet Flow, Sheet** Smooth surfaces n= 0.011 P2= 3.12"
0.9	125	0.0120	2.22		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
4.0					**Direct Entry, Min TC**
6.0	175	Total			

Summary for Subcatchment 2E: Route 106 (West) & Route 140 (North)

Runoff = 26.64 cfs @ 12.09 hrs, Volume= 1.822 af, Depth> 5.38"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
40,077	39	>75% Grass cover, Good, HSG A
11,224	61	>75% Grass cover, Good, HSG B
86,127	98	Paved roads w/curbs & sewers, HSG A
11,436	98	Paved roads w/curbs & sewers, HSG B
19,504	30	Woods, Good, HSG A
8,550	55	Woods, Good, HSG B
176,918	73	Weighted Average
79,355		44.85% Pervious Area
97,563		55.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.12"
2.8	290	0.0070	1.70		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
2.5					**Direct Entry, Use Min TC**
6.0	340	Total			

Summary for Subcatchment 3E: Route 106 (Center)

Runoff = 6.39 cfs @ 12.09 hrs, Volume= 0.454 af, Depth> 6.59"
Routed to Link 3L : Exist Culvert (From East)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
8,904	39	>75% Grass cover, Good, HSG A
27,121	98	Paved roads w/curbs & sewers, HSG A
36,025	83	Weighted Average
8,904		24.72% Pervious Area
27,121		75.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0130	1.00		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.8	265	0.0140	2.40		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
3.4					**Direct Entry, Use Min TC**
6.0	315	Total			

Summary for Subcatchment 4E: Route 106 (East) & Copeland Drive (North)

Runoff = 8.94 cfs @ 12.09 hrs, Volume= 0.642 af, Depth> 6.82"
Routed to Link 4L : Eastbound Flow Along Chauncy St

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
11,087	39	>75% Grass cover, Good, HSG A
38,109	98	Paved roads w/curbs & sewers, HSG A
49,197	85	Weighted Average
11,087		22.54% Pervious Area
38,109		77.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	140	0.0110	2.13		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.2					**Direct Entry, Use Min TC**
6.0	190	Total			

Summary for Subcatchment 5E: Copeland Drive (South)

Runoff = 1.89 cfs @ 12.09 hrs, Volume= 0.136 af, Depth> 6.82"
Routed to Link 5L : Overland Flow Along Copeland Drive

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
2,261	39	>75% Grass cover, Good, HSG A
8,163	98	Paved roads w/curbs & sewers, HSG A
10,424	85	Weighted Average
2,261		21.69% Pervious Area
8,163		78.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	102	0.0060	1.57		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.0					**Direct Entry, Use Minimum TC**
6.0	152	Total			

Summary for Link 1L: E & F Series Wetlands

Inflow Area = 0.666 ac, 80.90% Impervious, Inflow Depth > 7.05" for 100-year event
Inflow = 5.39 cfs @ 12.09 hrs, Volume= 0.391 af
Primary = 5.39 cfs @ 12.09 hrs, Volume= 0.391 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Exist Culvert (From West)

Inflow Area = 4.061 ac, 55.15% Impervious, Inflow Depth > 5.38" for 100-year event
Inflow = 26.64 cfs @ 12.09 hrs, Volume= 1.822 af
Primary = 26.64 cfs @ 12.09 hrs, Volume= 1.822 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 3L: Exist Culvert (From East)

Inflow Area = 0.827 ac, 75.28% Impervious, Inflow Depth > 6.59" for 100-year event
Inflow = 6.39 cfs @ 12.09 hrs, Volume= 0.454 af
Primary = 6.39 cfs @ 12.09 hrs, Volume= 0.454 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 4L: Eastbound Flow Along Chauncy St

Inflow Area = 1.129 ac, 77.46% Impervious, Inflow Depth > 6.82" for 100-year event
Inflow = 8.94 cfs @ 12.09 hrs, Volume= 0.642 af
Primary = 8.94 cfs @ 12.09 hrs, Volume= 0.642 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 5L: Overland Flow Along Copeland Drive

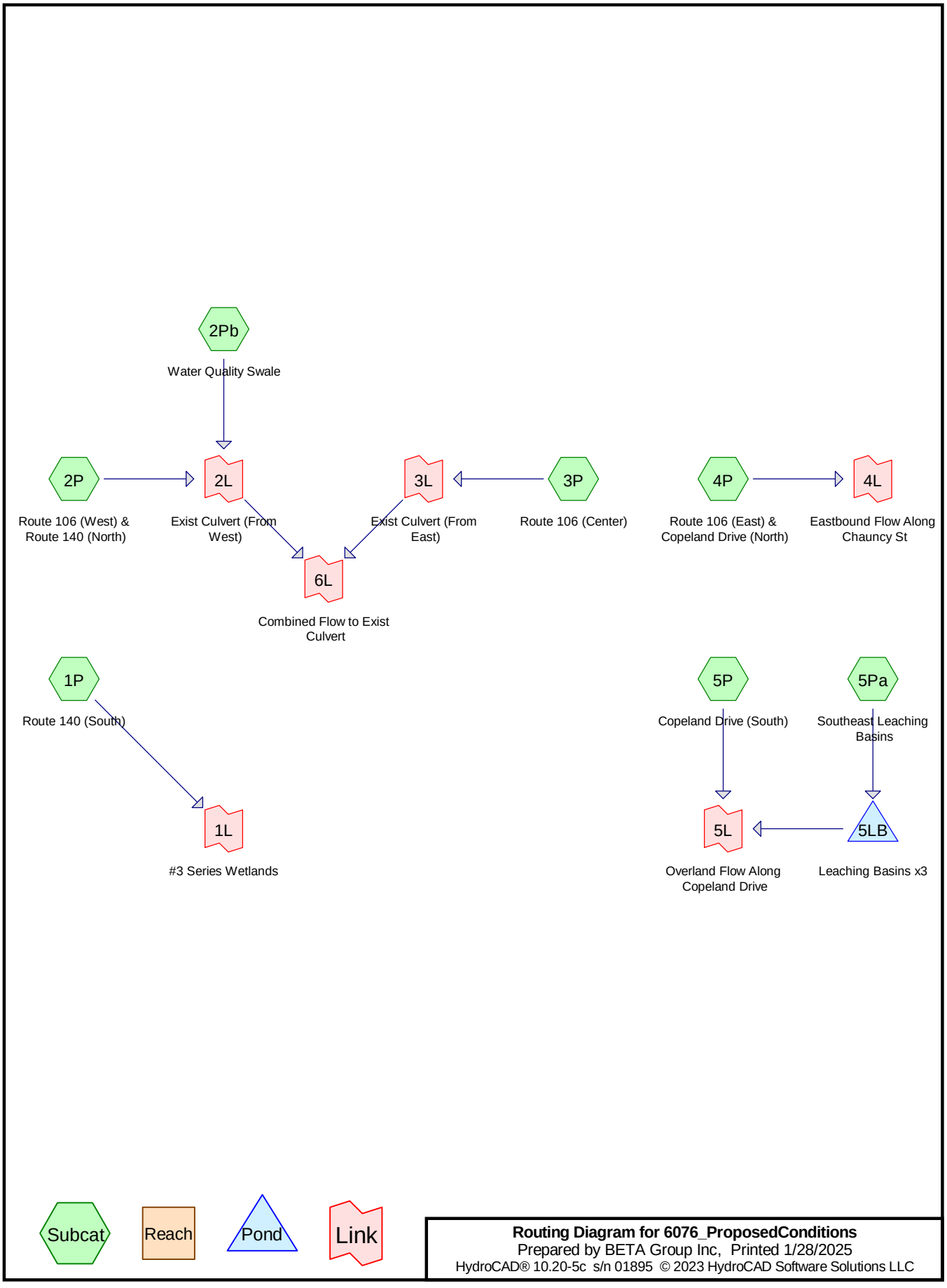
Inflow Area = 0.239 ac, 78.31% Impervious, Inflow Depth > 6.82" for 100-year event
Inflow = 1.89 cfs @ 12.09 hrs, Volume= 0.136 af
Primary = 1.89 cfs @ 12.09 hrs, Volume= 0.136 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 6L: Combined Flow to Exist Culvert

Inflow Area = 4.888 ac, 58.55% Impervious, Inflow Depth > 5.59" for 100-year event
Inflow = 33.03 cfs @ 12.09 hrs, Volume= 2.276 af
Primary = 33.03 cfs @ 12.09 hrs, Volume= 2.276 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs


2Pb
Water Quality Swale
2P
Route 106 (West) & Route 140 (North)
2L
Exist Culvert (From West)
3L
Exist Culvert (From East)
3P
Route 106 (Center)
4P
Route 106 (East) & Copeland Drive (North)
4L
Eastbound Flow Along Chauncy St
6L
Combined Flow to Exist Culvert
1P
Route 140 (South)
1L
#3 Series Wetlands
5P
Copeland Drive (South)
5Pa
Southeast Leaching Basins
5L
Overland Flow Along Copeland Drive
5LB
Leaching Basins x3
Subcat
Reach
Pond
Link
Routing Diagram for 6076_ProposedConditions
Prepared by BETA Group Inc, Printed 1/28/2025
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Summary for Subcatchment 1P: Route 140 (South)

Runoff = 1.11 cfs @ 12.09 hrs, Volume= 0.075 af, Depth> 1.27"
Routed to Link 1L : #3 Series Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
6,926	39	>75% Grass cover, Good, HSG A
23,933	98	Paved roads w/curbs & sewers, HSG A
30,859	85	Weighted Average
6,926		22.44% Pervious Area
23,933		77.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	50	0.0070	0.78		**Sheet Flow, Sheet** Smooth surfaces n= 0.011 P2= 3.12"
0.9	125	0.0120	2.22		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
4.0					**Direct Entry, Min TC**
6.0	175	Total			

Summary for Subcatchment 2P: Route 106 (West) & Route 140 (North)

Runoff = 3.25 cfs @ 12.10 hrs, Volume= 0.228 af, Depth> 0.76"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
29,052	39	>75% Grass cover, Good, HSG A
6,376	61	>75% Grass cover, Good, HSG B
90,221	98	Paved roads w/curbs & sewers, HSG A
5,345	98	Paved roads w/curbs & sewers, HSG B
16,825	30	Woods, Good, HSG A
8,550	55	Woods, Good, HSG B
156,370	76	Weighted Average
60,803		38.88% Pervious Area
95,567		61.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.12"
2.8	290	0.0070	1.70		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
2.5					**Direct Entry, Use Min TC**
6.0	340	Total			

Summary for Subcatchment 2Pb: Water Quality Swale

Runoff = 0.47 cfs @ 12.10 hrs, Volume= 0.032 af, Depth> 0.91"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
3,009	39	>75% Grass cover, Good, HSG A
4,626	61	>75% Grass cover, Good, HSG B
4,587	98	Paved roads w/curbs & sewers, HSG A
6,311	98	Paved roads w/curbs & sewers, HSG B
18,533	79	Weighted Average
7,635		41.20% Pervious Area
10,897		58.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6**

Summary for Subcatchment 3P: Route 106 (Center)

Runoff = 1.50 cfs @ 12.09 hrs, Volume= 0.102 af, Depth> 1.48"
Routed to Link 3L : Exist Culvert (From East)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
6,218	39	>75% Grass cover, Good, HSG A
29,881	98	Paved roads w/curbs & sewers, HSG A
36,099	88	Weighted Average
6,218		17.22% Pervious Area
29,881		82.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0130	1.00		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.8	265	0.0140	2.40		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
3.4					**Direct Entry, Use Min TC**
6.0	315	Total			

Summary for Subcatchment 4P: Route 106 (East) & Copeland Drive (North)

Runoff = 2.24 cfs @ 12.09 hrs, Volume= 0.156 af, Depth> 1.80"
Routed to Link 4L : Eastbound Flow Along Chauncy St

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
4,868	39	>75% Grass cover, Good, HSG A
40,452	98	Paved roads w/curbs & sewers, HSG A
45,320	92	Weighted Average
4,868		10.74% Pervious Area
40,452		89.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	140	0.0110	2.13		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.2					**Direct Entry, Use Min TC**
6.0	190	Total			

Summary for Subcatchment 5P: Copeland Drive (South)

Runoff = 0.20 cfs @ 12.10 hrs, Volume= 0.014 af, Depth> 0.76"
Routed to Link 5L : Overland Flow Along Copeland Drive

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
3,612	39	>75% Grass cover, Good, HSG A
6,155	98	Paved roads w/curbs & sewers, HSG A
9,768	76	Weighted Average
3,612		36.98% Pervious Area
6,155		63.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	102	0.0060	1.57		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.0					**Direct Entry, Use Min TC**
6.0	152	Total			

Summary for Subcatchment 5Pa: Southeast Leaching Basins

Runoff = 0.27 cfs @ 12.09 hrs, Volume= 0.020 af, Depth> 2.34"
Routed to Pond 5LB : Leaching Basins x3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
1	39	>75% Grass cover, Good, HSG A
4,502	98	Paved roads w/curbs & sewers, HSG A
4,502	98	Weighted Average
1		0.01% Pervious Area
4,502		99.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6**

Summary for Pond 5LB: Leaching Basins x3

Inflow Area = 0.103 ac, 99.99% Impervious, Inflow Depth > 2.34" for 1-year event
Inflow = 0.27 cfs @ 12.09 hrs, Volume= 0.020 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link 5L : Overland Flow Along Copeland Drive

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 168.66' @ 20.00 hrs Surf.Area= 514 sf Storage= 878 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	165.30'	339 cf	**6.00'D x 4.00'H Basin Structure** x 3
#2	164.30'	673 cf	**13.00'W x 33.00'L x 5.00'H Crushed Stone Field** 2,145 cf Overall - 462 cf Embedded = 1,683 cf x 40.0% Voids
#3	165.30'	0 cf	**7.00'D x 4.00'H Exclude Structure from Field** x 3 Inside #2 462 cf Overall x 0.0% Voids
		1,013 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	170.10'	**24.0" x 24.0" Horiz. Orifice/Grate** X 3 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=164.30' (Free Discharge)
↑**1=Orifice/Grate** (Controls 0.00 cfs)

Summary for Link 1L: #3 Series Wetlands

Inflow Area = 0.708 ac, 77.56% Impervious, Inflow Depth > 1.27" for 1-year event
Inflow = 1.11 cfs @ 12.09 hrs, Volume= 0.075 af
Primary = 1.11 cfs @ 12.09 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Exist Culvert (From West)

Inflow Area = 4.015 ac, 60.87% Impervious, Inflow Depth > 0.78" for 1-year event
Inflow = 3.72 cfs @ 12.10 hrs, Volume= 0.260 af
Primary = 3.72 cfs @ 12.10 hrs, Volume= 0.260 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 3L: Exist Culvert (From East)

Inflow Area = 0.829 ac, 82.78% Impervious, Inflow Depth > 1.48" for 1-year event
Inflow = 1.50 cfs @ 12.09 hrs, Volume= 0.102 af
Primary = 1.50 cfs @ 12.09 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 4L: Eastbound Flow Along Chauncy St

Inflow Area = 1.040 ac, 89.26% Impervious, Inflow Depth > 1.80" for 1-year event
Inflow = 2.24 cfs @ 12.09 hrs, Volume= 0.156 af
Primary = 2.24 cfs @ 12.09 hrs, Volume= 0.156 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 5L: Overland Flow Along Copeland Drive

Inflow Area = 0.328 ac, 74.68% Impervious, Inflow Depth > 0.52" for 1-year event
Inflow = 0.20 cfs @ 12.10 hrs, Volume= 0.014 af
Primary = 0.20 cfs @ 12.10 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 6L: Combined Flow to Exist Culvert

Inflow Area = 4.844 ac, 64.62% Impervious, Inflow Depth > 0.90" for 1-year event
Inflow = 5.22 cfs @ 12.10 hrs, Volume= 0.362 af
Primary = 5.22 cfs @ 12.10 hrs, Volume= 0.362 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1P: Route 140 (South)

Runoff = 1.48 cfs @ 12.09 hrs, Volume= 0.100 af, Depth> 1.70"
Routed to Link 1L : #3 Series Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
6,926	39	>75% Grass cover, Good, HSG A
23,933	98	Paved roads w/curbs & sewers, HSG A
30,859	85	Weighted Average
6,926		22.44% Pervious Area
23,933		77.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	50	0.0070	0.78		**Sheet Flow, Sheet** Smooth surfaces n= 0.011 P2= 3.12"
0.9	125	0.0120	2.22		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
4.0					**Direct Entry, Min TC**
6.0	175	Total			

Summary for Subcatchment 2P: Route 106 (West) & Route 140 (North)

Runoff = 4.81 cfs @ 12.10 hrs, Volume= 0.329 af, Depth> 1.10"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
29,052	39	>75% Grass cover, Good, HSG A
6,376	61	>75% Grass cover, Good, HSG B
90,221	98	Paved roads w/curbs & sewers, HSG A
5,345	98	Paved roads w/curbs & sewers, HSG B
16,825	30	Woods, Good, HSG A
8,550	55	Woods, Good, HSG B
156,370	76	Weighted Average
60,803		38.88% Pervious Area
95,567		61.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.12"
2.8	290	0.0070	1.70		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
2.5					**Direct Entry, Use Min TC**
6.0	340	Total			

Summary for Subcatchment 2Pb: Water Quality Swale

Runoff = 0.67 cfs @ 12.10 hrs, Volume= 0.045 af, Depth> 1.28"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
3,009	39	>75% Grass cover, Good, HSG A
4,626	61	>75% Grass cover, Good, HSG B
4,587	98	Paved roads w/curbs & sewers, HSG A
6,311	98	Paved roads w/curbs & sewers, HSG B
18,533	79	Weighted Average
7,635		41.20% Pervious Area
10,897		58.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6**

Summary for Subcatchment 3P: Route 106 (Center)

Runoff = 1.95 cfs @ 12.09 hrs, Volume= 0.133 af, Depth> 1.93"
Routed to Link 3L : Exist Culvert (From East)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
6,218	39	>75% Grass cover, Good, HSG A
29,881	98	Paved roads w/curbs & sewers, HSG A
36,099	88	Weighted Average
6,218		17.22% Pervious Area
29,881		82.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0130	1.00		**Sheet Flow, SF**
					Smooth surfaces n= 0.011 P2= 3.12"
1.8	265	0.0140	2.40		**Shallow Concentrated Flow, SCF**
					Paved Kv= 20.3 fps
3.4					**Direct Entry, Use Min TC**
6.0	315	Total			

Summary for Subcatchment 4P: Route 106 (East) & Copeland Drive (North)

Runoff = 2.81 cfs @ 12.09 hrs, Volume= 0.198 af, Depth> 2.28"
Routed to Link 4L : Eastbound Flow Along Chauncy St

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
4,868	39	>75% Grass cover, Good, HSG A
40,452	98	Paved roads w/curbs & sewers, HSG A
45,320	92	Weighted Average
4,868		10.74% Pervious Area
40,452		89.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, SF**
					Smooth surfaces n= 0.011 P2= 3.12"
1.1	140	0.0110	2.13		**Shallow Concentrated Flow, SCF**
					Paved Kv= 20.3 fps
4.2					**Direct Entry, Use Min TC**
6.0	190	Total			

Summary for Subcatchment 5P: Copeland Drive (South)

Runoff = 0.30 cfs @ 12.10 hrs, Volume= 0.021 af, Depth> 1.10"
Routed to Link 5L : Overland Flow Along Copeland Drive

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
3,612	39	>75% Grass cover, Good, HSG A
6,155	98	Paved roads w/curbs & sewers, HSG A
9,768	76	Weighted Average
3,612		36.98% Pervious Area
6,155		63.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		**Sheet Flow, SF**
					Smooth surfaces n= 0.011 P2= 3.12"
1.1	102	0.0060	1.57		**Shallow Concentrated Flow, SCF**
					Paved Kv= 20.3 fps
4.0					**Direct Entry, Use Min TC**
6.0	152	Total			

Summary for Subcatchment 5Pa: Southeast Leaching Basins

Runoff = 0.32 cfs @ 12.09 hrs, Volume= 0.024 af, Depth> 2.84"
Routed to Pond 5LB : Leaching Basins x3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
1	39	>75% Grass cover, Good, HSG A
4,502	98	Paved roads w/curbs & sewers, HSG A
4,502	98	Weighted Average
1		0.01% Pervious Area
4,502		99.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6**

Summary for Pond 5LB: Leaching Basins x3

Inflow Area = 0.103 ac, 99.99% Impervious, Inflow Depth > 2.84" for 2-year event
Inflow = 0.32 cfs @ 12.09 hrs, Volume= 0.024 af
Outflow = 0.00 cfs @ 17.30 hrs, Volume= 0.001 af, Atten= 99%, Lag= 312.8 min
Primary = 0.00 cfs @ 17.30 hrs, Volume= 0.001 af
Routed to Link 5L : Overland Flow Along Copeland Drive

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 170.10' @ 17.30 hrs Surf.Area= 514 sf Storage= 1,013 cf

Plug-Flow detention time= 754.6 min calculated for 0.001 af (2% of inflow)
Center-of-Mass det. time= 368.7 min (1,107.1 - 738.4)

Volume	Invert	Avail.Storage	Storage Description
#1	165.30'	339 cf	**6.00'D x 4.00'H Basin Structure** x 3
#2	164.30'	673 cf	**13.00'W x 33.00'L x 5.00'H Crushed Stone Field**
			2,145 cf Overall - 462 cf Embedded = 1,683 cf x 40.0% Voids
#3	165.30'	0 cf	**7.00'D x 4.00'H Exclude Structure from Field** x 3 Inside #2
			462 cf Overall x 0.0% Voids
		1,013 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	170.10'	**24.0" x 24.0" Horiz. Orifice/Grate** X 3 rows C= 0.600
			Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 17.30 hrs HW=170.10' (Free Discharge)
1=Orifice/Grate (Weir Controls 0.00 cfs @ 0.05 fps)

Summary for Link 1L: #3 Series Wetlands

Inflow Area = 0.708 ac, 77.56% Impervious, Inflow Depth > 1.70" for 2-year event
Inflow = 1.48 cfs @ 12.09 hrs, Volume= 0.100 af
Primary = 1.48 cfs @ 12.09 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Exist Culvert (From West)

Inflow Area = 4.015 ac, 60.87% Impervious, Inflow Depth > 1.12" for 2-year event
Inflow = 5.49 cfs @ 12.10 hrs, Volume= 0.375 af
Primary = 5.49 cfs @ 12.10 hrs, Volume= 0.375 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 3L: Exist Culvert (From East)

Inflow Area = 0.829 ac, 82.78% Impervious, Inflow Depth > 1.93" for 2-year event
Inflow = 1.95 cfs @ 12.09 hrs, Volume= 0.133 af
Primary = 1.95 cfs @ 12.09 hrs, Volume= 0.133 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 4L: Eastbound Flow Along Chauncy St

Inflow Area = 1.040 ac, 89.26% Impervious, Inflow Depth > 2.28" for 2-year event
Inflow = 2.81 cfs @ 12.09 hrs, Volume= 0.198 af
Primary = 2.81 cfs @ 12.09 hrs, Volume= 0.198 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 5L: Overland Flow Along Copeland Drive

Inflow Area = 0.328 ac, 74.68% Impervious, Inflow Depth > 0.77" for 2-year event
Inflow = 0.30 cfs @ 12.10 hrs, Volume= 0.021 af
Primary = 0.30 cfs @ 12.10 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 6L: Combined Flow to Exist Culvert

Inflow Area = 4.844 ac, 64.62% Impervious, Inflow Depth > 1.26" for 2-year event
Inflow = 7.43 cfs @ 12.10 hrs, Volume= 0.508 af
Primary = 7.43 cfs @ 12.10 hrs, Volume= 0.508 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1P: Route 140 (South)

Runoff = 2.67 cfs @ 12.09 hrs, Volume= 0.184 af, Depth> 3.12"
Routed to Link 1L : #3 Series Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
6,926	39	>75% Grass cover, Good, HSG A
23,933	98	Paved roads w/curbs & sewers, HSG A
30,859	85	Weighted Average
6,926		22.44% Pervious Area
23,933		77.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	50	0.0070	0.78		**Sheet Flow, Sheet** Smooth surfaces n= 0.011 P2= 3.12"
0.9	125	0.0120	2.22		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
4.0					**Direct Entry, Min TC**
6.0	175	Total			

Summary for Subcatchment 2P: Route 106 (West) & Route 140 (North)

Runoff = 10.28 cfs @ 12.09 hrs, Volume= 0.693 af, Depth> 2.32"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
29,052	39	>75% Grass cover, Good, HSG A
6,376	61	>75% Grass cover, Good, HSG B
90,221	98	Paved roads w/curbs & sewers, HSG A
5,345	98	Paved roads w/curbs & sewers, HSG B
16,825	30	Woods, Good, HSG A
8,550	55	Woods, Good, HSG B
156,370	76	Weighted Average
60,803		38.88% Pervious Area
95,567		61.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.12"
2.8	290	0.0070	1.70		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
2.5					**Direct Entry, Use Min TC**
6.0	340	Total			

Summary for Subcatchment 2Pb: Water Quality Swale

Runoff = 1.35 cfs @ 12.09 hrs, Volume= 0.091 af, Depth> 2.57"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
3,009	39	>75% Grass cover, Good, HSG A
4,626	61	>75% Grass cover, Good, HSG B
4,587	98	Paved roads w/curbs & sewers, HSG A
6,311	98	Paved roads w/curbs & sewers, HSG B
18,533	79	Weighted Average
7,635		41.20% Pervious Area
10,897		58.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6**

Summary for Subcatchment 3P: Route 106 (Center)

Runoff = 3.36 cfs @ 12.09 hrs, Volume= 0.236 af, Depth> 3.42"
Routed to Link 3L : Exist Culvert (From East)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
6,218	39	>75% Grass cover, Good, HSG A
29,881	98	Paved roads w/curbs & sewers, HSG A
36,099	88	Weighted Average
6,218		17.22% Pervious Area
29,881		82.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0130	1.00		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.8	265	0.0140	2.40		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
3.4					**Direct Entry, Use Min TC**
6.0	315	Total			

Summary for Subcatchment 4P: Route 106 (East) & Copeland Drive (North)

Runoff = 4.57 cfs @ 12.09 hrs, Volume= 0.331 af, Depth> 3.82"
Routed to Link 4L : Eastbound Flow Along Chauncy St

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
4,868	39	>75% Grass cover, Good, HSG A
40,452	98	Paved roads w/curbs & sewers, HSG A
45,320	92	Weighted Average
4,868		10.74% Pervious Area
40,452		89.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	140	0.0110	2.13		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.2					**Direct Entry, Use Min TC**
6.0	190	Total			

Summary for Subcatchment 5P: Copeland Drive (South)

Runoff = 0.64 cfs @ 12.09 hrs, Volume= 0.043 af, Depth> 2.32"
Routed to Link 5L : Overland Flow Along Copeland Drive

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
3,612	39	>75% Grass cover, Good, HSG A
6,155	98	Paved roads w/curbs & sewers, HSG A
9,768	76	Weighted Average
3,612		36.98% Pervious Area
6,155		63.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	102	0.0060	1.57		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.0					**Direct Entry, Use Min TC**
6.0	152	Total			

Summary for Subcatchment 5Pa: Southeast Leaching Basins

Runoff = 0.49 cfs @ 12.09 hrs, Volume= 0.038 af, Depth> 4.37"
Routed to Pond 5LB : Leaching Basins x3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
1	39	>75% Grass cover, Good, HSG A
4,502	98	Paved roads w/curbs & sewers, HSG A
4,502	98	Weighted Average
1		0.01% Pervious Area
4,502		99.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6**

Summary for Pond 5LB: Leaching Basins x3

Inflow Area = 0.103 ac, 99.99% Impervious, Inflow Depth > 4.37" for 10-year event
Inflow = 0.49 cfs @ 12.09 hrs, Volume= 0.038 af
Outflow = 0.41 cfs @ 12.32 hrs, Volume= 0.029 af, Atten= 17%, Lag= 14.1 min
Primary = 0.41 cfs @ 12.32 hrs, Volume= 0.029 af
Routed to Link 5L : Overland Flow Along Copeland Drive

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 170.12' @ 12.30 hrs Surf.Area= 514 sf Storage= 1,013 cf

Plug-Flow detention time= 185.5 min calculated for 0.029 af (77% of inflow)
Center-of-Mass det. time= 126.7 min (861.9 - 735.2)

Volume	Invert	Avail.Storage	Storage Description
#1	165.30'	339 cf	**6.00'D x 4.00'H Basin Structure** x 3
#2	164.30'	673 cf	**13.00'W x 33.00'L x 5.00'H Crushed Stone Field** 2,145 cf Overall - 462 cf Embedded = 1,683 cf x 40.0% Voids
#3	165.30'	0 cf	**7.00'D x 4.00'H Exclude Structure from Field** x 3 Inside #2 462 cf Overall x 0.0% Voids
		1,013 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	170.10'	**24.0" x 24.0" Horiz. Orifice/Grate** X 3 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 12.32 hrs HW=170.12' (Free Discharge)
↑**1=Orifice/Grate** (Weir Controls 0.21 cfs @ 0.45 fps)

Summary for Link 1L: #3 Series Wetlands

Inflow Area = 0.708 ac, 77.56% Impervious, Inflow Depth > 3.12" for 10-year event
Inflow = 2.67 cfs @ 12.09 hrs, Volume= 0.184 af
Primary = 2.67 cfs @ 12.09 hrs, Volume= 0.184 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Exist Culvert (From West)

Inflow Area = 4.015 ac, 60.87% Impervious, Inflow Depth > 2.34" for 10-year event
Inflow = 11.63 cfs @ 12.09 hrs, Volume= 0.784 af
Primary = 11.63 cfs @ 12.09 hrs, Volume= 0.784 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 3L: Exist Culvert (From East)

Inflow Area = 0.829 ac, 82.78% Impervious, Inflow Depth > 3.42" for 10-year event
Inflow = 3.36 cfs @ 12.09 hrs, Volume= 0.236 af
Primary = 3.36 cfs @ 12.09 hrs, Volume= 0.236 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 4L: Eastbound Flow Along Chauncy St

Inflow Area = 1.040 ac, 89.26% Impervious, Inflow Depth > 3.82" for 10-year event
Inflow = 4.57 cfs @ 12.09 hrs, Volume= 0.331 af
Primary = 4.57 cfs @ 12.09 hrs, Volume= 0.331 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 5L: Overland Flow Along Copeland Drive

Inflow Area = 0.328 ac, 74.68% Impervious, Inflow Depth > 2.65" for 10-year event
Inflow = 0.69 cfs @ 12.32 hrs, Volume= 0.072 af
Primary = 0.69 cfs @ 12.32 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 6L: Combined Flow to Exist Culvert

Inflow Area = 4.844 ac, 64.62% Impervious, Inflow Depth > 2.53" for 10-year event
Inflow = 14.99 cfs @ 12.09 hrs, Volume= 1.020 af
Primary = 14.99 cfs @ 12.09 hrs, Volume= 1.020 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1P: Route 140 (South)

Runoff = 5.61 cfs @ 12.09 hrs, Volume= 0.403 af, Depth> 6.82"
Routed to Link 1L : #3 Series Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
6,926	39	>75% Grass cover, Good, HSG A
23,933	98	Paved roads w/curbs & sewers, HSG A
30,859	85	Weighted Average
6,926		22.44% Pervious Area
23,933		77.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	50	0.0070	0.78		**Sheet Flow, Sheet** Smooth surfaces n= 0.011 P2= 3.12"
0.9	125	0.0120	2.22		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
4.0					**Direct Entry, Min TC**
6.0	175	Total			

Summary for Subcatchment 2P: Route 106 (West) & Route 140 (North)

Runoff = 24.91 cfs @ 12.09 hrs, Volume= 1.719 af, Depth> 5.75"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
29,052	39	>75% Grass cover, Good, HSG A
6,376	61	>75% Grass cover, Good, HSG B
90,221	98	Paved roads w/curbs & sewers, HSG A
5,345	98	Paved roads w/curbs & sewers, HSG B
16,825	30	Woods, Good, HSG A
8,550	55	Woods, Good, HSG B
156,370	76	Weighted Average
60,803		38.88% Pervious Area
95,567		61.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.12"
2.8	290	0.0070	1.70		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
2.5					**Direct Entry, Use Min TC**
6.0	340	Total			

Summary for Subcatchment 2Pb: Water Quality Swale

Runoff = 3.10 cfs @ 12.09 hrs, Volume= 0.217 af, Depth> 6.11"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
3,009	39	>75% Grass cover, Good, HSG A
4,626	61	>75% Grass cover, Good, HSG B
4,587	98	Paved roads w/curbs & sewers, HSG A
6,311	98	Paved roads w/curbs & sewers, HSG B
18,533	79	Weighted Average
7,635		41.20% Pervious Area
10,897		58.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6**

Summary for Subcatchment 3P: Route 106 (Center)

Runoff = 6.77 cfs @ 12.09 hrs, Volume= 0.495 af, Depth> 7.17"
Routed to Link 3L : Exist Culvert (From East)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
6,218	39	>75% Grass cover, Good, HSG A
29,881	98	Paved roads w/curbs & sewers, HSG A
36,099	88	Weighted Average
6,218		17.22% Pervious Area
29,881		82.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0130	1.00		**Sheet Flow, SF**
					Smooth surfaces n= 0.011 P2= 3.12"
1.8	265	0.0140	2.40		**Shallow Concentrated Flow, SCF**
					Paved Kv= 20.3 fps
3.4					**Direct Entry, Use Min TC**
6.0	315	Total			

Summary for Subcatchment 4P: Route 106 (East) & Copeland Drive (North)

Runoff = 8.78 cfs @ 12.09 hrs, Volume= 0.658 af, Depth> 7.59"
Routed to Link 4L : Eastbound Flow Along Chauncy St

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
4,868	39	>75% Grass cover, Good, HSG A
40,452	98	Paved roads w/curbs & sewers, HSG A
45,320	92	Weighted Average
4,868		10.74% Pervious Area
40,452		89.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, SF**
					Smooth surfaces n= 0.011 P2= 3.12"
1.1	140	0.0110	2.13		**Shallow Concentrated Flow, SCF**
					Paved Kv= 20.3 fps
4.2					**Direct Entry, Use Min TC**
6.0	190	Total			

Summary for Subcatchment 5P: Copeland Drive (South)

Runoff = 1.56 cfs @ 12.09 hrs, Volume= 0.107 af, Depth> 5.75"
Routed to Link 5L : Overland Flow Along Copeland Drive

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
3,612	39	>75% Grass cover, Good, HSG A
6,155	98	Paved roads w/curbs & sewers, HSG A
9,768	76	Weighted Average
3,612		36.98% Pervious Area
6,155		63.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		**Sheet Flow, SF**
					Smooth surfaces n= 0.011 P2= 3.12"
1.1	102	0.0060	1.57		**Shallow Concentrated Flow, SCF**
					Paved Kv= 20.3 fps
4.0					**Direct Entry, Use Min TC**
6.0	152	Total			

Summary for Subcatchment 5Pa: Southeast Leaching Basins

Runoff = 0.90 cfs @ 12.09 hrs, Volume= 0.070 af, Depth> 8.09"
Routed to Pond 5LB : Leaching Basins x3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
1	39	>75% Grass cover, Good, HSG A
4,502	98	Paved roads w/curbs & sewers, HSG A
4,502	98	Weighted Average
1		0.01% Pervious Area
4,502		99.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6**

Summary for Pond 5LB: Leaching Basins x3

Inflow Area = 0.103 ac, 99.99% Impervious, Inflow Depth > 8.09" for 100-year event
Inflow = 0.90 cfs @ 12.09 hrs, Volume= 0.070 af
Outflow = 0.61 cfs @ 12.09 hrs, Volume= 0.010 af, Atten= 32%, Lag= 0.0 min
Primary = 0.61 cfs @ 12.09 hrs, Volume= 0.010 af
Routed to Link 5L : Overland Flow Along Copeland Drive

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 170.13' @ 12.09 hrs Surf.Area= 514 sf Storage= 1,013 cf

Plug-Flow detention time= 233.7 min calculated for 0.010 af (15% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	165.30'	339 cf	**6.00'D x 4.00'H Basin Structure** x 3
#2	164.30'	673 cf	**13.00'W x 33.00'L x 5.00'H Crushed Stone Field**
			2,145 cf Overall - 462 cf Embedded = 1,683 cf x 40.0% Voids
#3	165.30'	0 cf	**7.00'D x 4.00'H Exclude Structure from Field** x 3 Inside #2
			462 cf Overall x 0.0% Voids
		1,013 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	170.10'	**24.0" x 24.0" Horiz. Orifice/Grate** X 3 rows C= 0.600
			Limited to weir flow at low heads

Primary OutFlow Max=0.43 cfs @ 12.09 hrs HW=170.13' (Free Discharge)
1=Orifice/Grate (Weir Controls 0.43 cfs @ 0.58 fps)

Summary for Link 1L: #3 Series Wetlands

Inflow Area = 0.708 ac, 77.56% Impervious, Inflow Depth > 6.82" for 100-year event
Inflow = 5.61 cfs @ 12.09 hrs, Volume= 0.403 af
Primary = 5.61 cfs @ 12.09 hrs, Volume= 0.403 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Exist Culvert (From West)

Inflow Area = 4.015 ac, 60.87% Impervious, Inflow Depth > 5.79" for 100-year event
Inflow = 28.01 cfs @ 12.09 hrs, Volume= 1.936 af
Primary = 28.01 cfs @ 12.09 hrs, Volume= 1.936 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 3L: Exist Culvert (From East)

Inflow Area = 0.829 ac, 82.78% Impervious, Inflow Depth > 7.17" for 100-year event
Inflow = 6.77 cfs @ 12.09 hrs, Volume= 0.495 af
Primary = 6.77 cfs @ 12.09 hrs, Volume= 0.495 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 4L: Eastbound Flow Along Chauncy St

Inflow Area = 1.040 ac, 89.26% Impervious, Inflow Depth > 7.59" for 100-year event
Inflow = 8.78 cfs @ 12.09 hrs, Volume= 0.658 af
Primary = 8.78 cfs @ 12.09 hrs, Volume= 0.658 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 5L: Overland Flow Along Copeland Drive

Inflow Area = 0.328 ac, 74.68% Impervious, Inflow Depth > 4.32" for 100-year event
Inflow = 2.17 cfs @ 12.09 hrs, Volume= 0.118 af
Primary = 2.17 cfs @ 12.09 hrs, Volume= 0.118 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 6L: Combined Flow to Exist Culvert

Inflow Area = 4.844 ac, 64.62% Impervious, Inflow Depth > 6.02" for 100-year event
Inflow = 34.78 cfs @ 12.09 hrs, Volume= 2.431 af
Primary = 34.78 cfs @ 12.09 hrs, Volume= 2.431 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Appendix E: O&M Plan and LTPPP

Improvements of Chauncy St (Route 106) Route 140 to Copeland Drive (Phase 1)

Stormwater Management System Operation and Maintenance Plan and Long-Term Pollution Prevention Plan Mansfield, Massachusetts

PREPARED FOR

massDOT

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Boston, MA 02116

PREPARED BY

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January 29, 2025

Table of Contents

1 Stormwater Management System Operation and Maintenance (O&M) Plan.....1

1.1 Responsible Party.....1
1.2 Inspection and Maintenance Measures and Record-Keeping.....2
1.3 Erosion and Sediment Control Measures during Maintenance Activities.....5
1.4 O&M Budget.....5

2 Long-Term Pollution Prevention Plan.....6

2.1 Practices for Long-Term Pollution Prevention.....6
2.1.1 Litter Pick-up.....6
2.1.2 Material Storage and Handling.....6
2.1.3 Inspection and Maintenance of Stormwater Assets.....7
2.1.4 Maintenance of Landscaped Areas.....7
2.1.5 Snow and Ice Management.....7
2.1.6 Street Sweeping.....7
2.1.7 Prohibition of Illicit Discharges.....8
2.1.8 Spill Prevention and Response.....8

3 Construction Period Pollution Prevention and Erosion and Sediment Control Plan.....10

1

Stormwater Management System Operation and Maintenance (O&M) Plan

This Stormwater Management System Operation and Maintenance (O&M) Plan describes the approach for inspection and maintenance of drainage infrastructure and structural stormwater control measures (SCMs) to minimize contaminant loading for the proposed closed drainage system located along portions of Chauncy Street (Route 106), Commercial Street (Route 140), Copeland Drive, and Giles Place (the "Project") located in Mansfield, MA. In general, inspection and maintenance activities will be conducted consistent with the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer System (MS4) and MassDOT's anticipated NPDES Transportation Separate Storm Sewer System (TS4) Permit.

This document has been prepared per the requirements of Massachusetts Department of Environmental Protection (MassDEP) Regulations 310 CMR 10.05 (6)(k)(9) and satisfies the requirements of Massachusetts Stormwater Standard 9.

1.1 Responsible Party

In accordance with MassDOT procedures, the MassDOT District 5 office located in Taunton, MA, is responsible for the maintenance of all stormwater management systems on MassDOT roads within the project area, including Commercial Street (Route 140), Copeland Drive, and Chauncy Street (Route 106). Note that MassDOT will be responsible for the Town-owned portion of Chauncy Street located between Station 33+50 and 35+75.

Questions or concerns regarding activities associated with this O&M Plan should be addressed to MassDOT's District 5 office located at 1000 County Street, Taunton, MA 02780, phone (857) 368-5000, during regular weekday hours, or to MassDOT's Highway Operations Center located in South Boston, MA at (800) 227-0608 during all other times and days, including weekends and holidays.

The Town of Mansfield will be responsible for the operation and maintenance of all stormwater management systems within Town-owned portions of the project, including Giles Place. Questions or concerns regarding activities associated with this O&M Plan should be addressed to the Mansfield Department of Public Works located at 130 Center Street, North Mansfield, MA 02356, phone (508) 230-0800.

It shall be the responsibility of the Owner to provide a revised plan to the Conservation Commission indicating any change of ownership or responsible party. The responsible party shall also be responsible for financing maintenance and emergency repairs at the Site.

Project information is summarized in the table below:

Project Name:	Improvement of Chauncy St (Route 106) Route 140 to Copeland Drive (Phase 1)
Project Type:	Transportation
Address:	Chauncy Street (Route 106) from #360 Chouncy St to #200 Chauncy Street approx. 0.33 mi. Commercial Street (Route 140), approximately 500 ft south and 400 feet north of intersection with Chauncy Street, approx. 0.15 mi. Copeland Drive, from 93 Copeland Drive to 131 Copeland Drive, approx. 0.09 mi. Giles Place, from intersection with Route 106 to a distance of apoprixmately 60' north of the intersection.
SWMS Owner (MassDOT):	MassDOT Highway Division District 5 1000 County Street, Taunton, MA
SWMS Owner (Town):	Town of Mansfield 6 Park Row, Mansfield, MA
Responsible Party (MassDOT):	MassDOT Highway Division District 5 1000 County Street, Taunton, MA
Responsible Party (Town):	Town of Mansfield 6 Park Row , Mansfield, MA
Contact (MassDOT):	MassDOT District 5 (857) 368-5000
Contact (Town):	Joshua Reinke, Director of Public Works (508) 261-7335

1.2 Inspection and Maintenance Measures and Record-Keeping

See Appendix F of the Stormwater Management Report for the proposed stormwater system within the project limits. The stormwater management system covered by this O&M Plan consists of the following measures:

- Deep Sump Catch Basins
- Retained Catch Basins
- Outfalls
- Leaching Basins
- Water Quality Swales

MassDOT uses a performance-based inspection and maintenance program for SCMs and catch basins. For SCMs, MassDOT's overall approach is to inspect SCMs, and based on the results of the inspections, perform maintenance to preserve functionality. For catch basins, MassDOT's overall approach is to perform maintenance at an interval that maintains the functionality of the catch basin (e.g., sump is less than 50% full of sediment). Catch basin

inspections, including documentation of sediment accumulation, and maintenance will generally occur simultaneously.

MassDOT's O&M program is data driven. Inspections and maintenance are recorded by personnel using hand-held tablets in the field to document sediment accumulation, maintenance action performed, and follow-up actions needed. Data are recorded in MassDOT's asset management system which is accessible in the field (mobile) or the office (desktop).

The table below summarizes data that is generally collected for each asset type. For all assets, the inspector and inspection date are recorded. Photo documentation of structure condition is taken and attached to the inspection record.

Inspection Form	Applicable Stormwater Assets	Information Collected
Inlets	› Catch basins › Outlet control structures	› Sediment accumulation › Trash/Debris accumulation › Signs of contamination › Frame and grate condition › Overall structure condition
SCMs	Consistent with the MassDOT Stormwater Design Guide (SDG), SCM categories include: › Infiltration SCMs › Stormwater wetland SCMs › Bioretention SCMs › Other SCMs	› SCM accessibility › Presence of standing water › Level of erosion › Sediment accumulation › Trash/Debris accumulation › Vegetation condition › Overall SCM condition
Storm Discharge Points	› Outlets to SCMs	› Presence of flow › Signs of contaminated flow › Sediment accumulation › Level of erosion › Pipe condition › Scour protection condition › Overall structure condition

Inspection and maintenance records can be made available using the asset management system through request with the MassDOT District 5 Environmental Engineer. Records will be kept for at least three years. Representatives of the Town's Conservation Commission(s), MassDEP, and US EPA may obtain access to these records, upon request. Additionally, MassDOT will allow members and agents of MassDEP and the Conservation Commission(s) to enter and inspect the premises, upon request, to evaluate and ensure that the Operation and Maintenance Plan requirements for each SCM are being followed.

Maintenance actions will not occur at any set frequency, but rather will be based on condition and impact to functionality. Maintenance to be performed on the stormwater system includes:

Stormwater Feature	Potential Maintenance Actions	
Surface SCMs	• Remove and properly dispose of accumulated material (e.g., sediment, trash, leaf litter, debris) • Mow vegetated areas and remove and dispose of grass clippings • Regrade areas that show signs of unwanted ponding and channelization • Stabilize or reconstruct eroded areas and reseed • Replace stones/soil and/or replant vegetation	• Remove woody growth • Treat invasive plants according to MassDOT Landscape Design Section • Infiltration and bioretention SCMs only: o Address issues of standing water o Drain and reconstruct SCM • If rehabilitation is not possible, then retrofit to be a wet SCM while considering safety implications
Underground SCMs	• Remove and properly dispose of trash, sediment, debris, and root intrusions • Clean out sumps at an interval to maintain functionality (less than 50% full of sediment) • Jet and repair pipes	• Rehabilitate filtering and infiltration materials (e.g., geotextile fabric, crushed stone) • Stabilize and replace deteriorated structures • Perform evaluations (e.g., test pits) to evaluate subsurface conditions
Inlets and Outlets to SCMs	• Clear inlet and remove and properly dispose of sediment, trash, leaf litter, debris, and vegetation • Regrade areas that show signs of ponding and channelization • Repair or replace structural components • Repair damaged or eroded areas	• Provide or rehabilitate erosion control at the outlet • Regrade and replace the channel materials • Remove woody growth • Stabilize or reconstruct eroded areas • Treat invasive plants according to MassDOT Vegetation Management Plan

Based on the results of the inspection, repairs will be made in accordance with MassDOT standard practices. Maintenance will be prioritized given the urgency of the required maintenance and availability of staff, contracts, etc. Maintenance may require contracting if existing contracts are unavailable to perform the work. More intensive remedial activities may require permitting and/or an engineering solution.

Inspection, maintenance, and record keeping on Town-owned portions of the property with be conducted in accordance with Town Standard Operating Procedures.

1.3 Erosion and Sediment Control Measures during Maintenance Activities

For maintenance activities that could result in discharges of sediments or other contaminants into wetlands, waterways, or other resource areas regulated under 310 CMR 10.00, the responsible maintenance personnel will employ measures to prevent migration of these sediments/contaminants. Such temporary measures may include, but are not necessarily limited to, the use of siltation barriers, catch basin silt sacks/filter bags, pipe plugs, cofferdams deployed within the stormwater structure, turbidity curtains, or other practices designed to prevent such discharges.

Where maintenance occurs in areas that are confined, with no risk of discharge to adjacent water bodies, no special measures may be needed. Examples include, but are not limited to: (1) cleaning of a forebay under dry conditions when the work can be completed and exposed surfaces stabilized prior to placing it back into service; and (2) catch basin cleaning where the activity is limited to removing material from a sump below the elevation of the outlet pipe.

1.4 O&M Budget

MassDOT and the Town of Mansfield perform maintenance for stormwater management systems as part of their routine respective operation and maintenance budget for roadways and bridges. MassDOT Budgets are managed at the district level and vary by fiscal year, depending on funding sources.

2

Long-Term Pollution Prevention Plan

This Long-Term Pollution Prevention Plan (LTPPP) describes the approach for pollution prevention and related maintenance activities for Chauncy Street (Route 106), Commercial Street (Route 140), Copeland Drive, and Giles Place in Mansfield, MA. In general, long-term pollution prevention and related maintenance activities will be conducted consistent with:

- The National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer System (MS4),
- MassDOT's anticipated NPDES Transportation Separate Storm Sewer System (TS4) Permit, and
- Measures outlined in MassDOT's Stormwater Management Plan (SWMP).

This LTPPP satisfies the requirements related to pollution prevention under Massachusetts Stormwater Standards 4, 5, 6, and 10.

2.1 Practices for Long-Term Pollution Prevention

For the facilities covered, long-term pollution prevention includes the following measures.

2.1.1 Litter Pick-up

MassDOT and the Town of Mansfield will conduct litter pick-up from the stormwater management facilities in conjunction with routine road maintenance activities.

2.1.2 Material Storage and Handling

The following storage and handling practices shall be implemented at the Site:

- Avoid stockpiling of soil or materials within 100 feet of wetland resources and wellhead protection areas. If necessary, provide sufficient erosion controls to prevent migration of sediments.
- All materials shall be stored or disposed in accordance with all local, state, and federal regulations.
- All sand piles shall be contained and stabilized to prevent the discharge of sand to wetlands or water bodies and, where feasible, covered.

- Minimize hazardous materials stored on site. All materials stored on site shall be stored in original containers and sealed.
- All solid waste, if encountered, shall be handled and disposed of in accordance with all local, state, and federal regulations.
- No snow shall be stored within waterbodies, resource areas, wellhead protection areas, or associated buffer zones.

2.1.3 Inspection and Maintenance of Stormwater Assets

MassDOT and the Town of Mansfield will conduct inspection and maintenance of drainage infrastructure and the stormwater control measures (SCMs) in accordance with the O&M Plan, as described in Section 1.

2.1.4 Maintenance of Landscaped Areas

Routine mowing will be conducted according to standard MassDOT and Town of Mansfield practices.

Except in rare circumstances, MassDOT does not use fertilizers, herbicides, and pesticides for the maintenance of facilities. Exceptions include using fertilizer to ensure the survival of new plantings and herbicides to control invasive plants. Use of fertilizers and herbicides is reviewed and approved by the MassDOT Landscape Design Section and District 5 Environmental Engineer prior to application. Local Conservation Commission review may also be required.

2.1.5 Snow and Ice Management

Snow and Ice Management will be conducted consistent with the practices outlined in the MassDOT Snow and Ice Control Program Environmental Status and Planning Report (ESPR), formerly known as the Snow and Ice Control Generic Environmental Impact Report (GEIR).

In accordance with the Snow and Ice Control ESPR, no sand is used on MassDOT properties for snow and ice control. The exception to this rule is within reduced salt areas where high sodium levels have been found in drinking water sources.

Operations on Town-owned roadways with be conducted in accordance with Town Snow and Ice Policy and Procedures.

2.1.6 Street Sweeping

Routine highway cleaning, with a brush-type street sweeper, will be conducted in accordance with standard MassDOT practices. Sweeping will occur annually in the Spring.

Operations on Town-owned roadways with be conducted in accordance with Town Standard Operating Procedures.

2.1.7 Prohibition of Illicit Discharges

The MassDEP Stormwater Management Standard 10 prohibits illicit discharges to the stormwater management system. Illicit discharges are discharges that do not consist entirely of stormwater, except for certain specified non-stormwater discharges.

In accordance with the existing MS4 permit and anticipated TS4 permit requirements, examples of discharges from the following sources are not considered illicit discharges:

- Firefighting activities*
- Foundation drains
- Water line flushing
- Footing drains
- Landscape irrigation
- Individual residential car washing
- Uncontaminated groundwater
- Rising groundwater
- Diverted stream flows
- Flows from riparian habitats/wetlands
- Potable water sources
- Dechlorinated swimming pool water
- Street wash waters
- Wash water from residential buildings (no detergents)
- Condensation from air conditioning units
- Run-on from private driveways caused by precipitation
- Lawn watering
- Water from crawl space pumps

*Water from firefighting activities is allowed and need only be addressed where they are identified as significant sources of pollutants to waters of the United States.

Based on plan review and confirmation in the field, there are no known or proposed illicit connections associated with the project within the project limits. Should an interconnection to the stormwater management system be identified, the MassDOT PM will coordinate with the District Permits Engineer or Mansfield DPW to confirm if the connections are authorized. For unauthorized connections, the MassDOT PM and/or MassDOT Environmental Services Section will investigate the connections and if they are determined to be illicit, the connections will be managed through MassDOT's or the Town of Mansfield's Illicit Discharge Detection and Elimination (IDDE) programs and/or through other agencies.

2.1.8 Spill Prevention and Response

The following spill prevention and response measures shall be implemented at the Site:

- Refuel construction equipment off-site.
- Any spills of hazardous materials shall be reported, contained, and removed in accordance with local, State, and Federal regulations.
- Review on-site equipment and activities to ensure no illicit discharges are created.

BMP Inspection and Maintenance Documentation Form

Inspection No.: _____ Date: _____ Weather: _____

Date & Amount of Last Precipitation Event: _____

Inspector Name: _____ Inspection Signature: _____

BMP	Condition/Stability	Comment & Recommendations	Date Corrected
Leaching Basins			
Water Quality Swale			
Catch Basins			
Outfalls			
Other			
Additional Comments			

3

Construction Period Pollution Prevention and Erosion and Sediment Control Plan

Introduction

The project is anticipated to disturb greater than one acre; therefore, filing a Notice of Intent with EPA and developing of a Stormwater Pollution Prevention Plan (SWPPP) is required. The SWPPP will be provided as part of the construction documents and will be submitted to the Town of Mansfield Conservation Commission prior to commencement of construction. The following plan provides general guidance for the prevention of pollution and erosion and sedimentation during construction.

Potential Erosion and Sedimentation

Portions of the project involve soil disturbance in areas upgradient of stormwater collection systems and wetland resources. Site preparation, scheduling, and construction practices need to be carefully planned to prevent construction debris and erosion caused by stormwater runoff over exposed soils from causing degradation of downstream wetland resources. Although it is not always possible to avoid impacts from storm events, the following guidelines shall be followed:

- Minimize land disturbance area and soil exposure to stormwater and wind erosion.
- Minimize time that area is disturbed.
- Avoid routing stormwater runoff or dewatering flows through disturbed areas.
- Inspect and maintain erosion controls until all soils are stabilized.
- Maintain good housekeeping practices.
- Stabilize disturbed soils as soon as possible to limit exposure.

Erosion and Sedimentation Plan

This Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan has been prepared in accordance with the Department of Environmental Protection's Massachusetts Erosion and Sedimentation Guidelines for Urban and Suburban Areas.

Extent of Disturbance

The total area of disturbance is approximately 3.65± acres. The project has been designed to minimize disturbance to existing woodlands and the majority of proposed work is within an existing roadway and its associated right-of-way. The existing Site will be impacted by tree clearing/trimming, grading, roadway widening, sidewalk and shared use path construction, utility installation, and other associated activities. Off-site areas are not proposed to be directly altered but may be impacted by erosion and sedimentation if the controls described in this plan are not followed. No off-site land disturbance is proposed.

Refer to construction drawings for locations of all proposed erosion and sedimentation controls and the proposed area of disturbance.

Pre-Construction and Site Preparation

- Install all erosion control barrier in accordance with the construction documents prior to commencing any land disturbance activity.
- Inspect and maintain erosion controls until all soils are stabilized.
- Monitor weather reports daily and stabilize/prepare site if storm event in excess of the 2-year storm is expected.
- Maintain an inspection logbook on-site at all times. The specific location of the logbook shall be conveyed to the Town.

Soil Description

Soils in the project area are generally mapped as HSG A (Refer to Appendix B). HSG A soils are considered to be well-draining. As a result, a substantial surface wetness problem is not anticipated.

PLANNED EROSION AND SEDIMENTATION CONTROL PRACTICES

Catch Basin Inlet Protection

Inlet protection is proposed at all existing and proposed drain inlets within the project area. Inlet protection shall also be provided at off-site drain inlets located immediately downgradient of the area of disturbance, pending coordination with the Town and/or abutting property owners.

The purpose of inlet protection is to intercept and capture sediment that would otherwise enter the drainage system. Inlet protection shall consist of manufactured polyproplylene fabric consistent with the construction details.

Inspection and maintenance shall consist of checking for sediment accumulation and removing sediment when the protection device is at least one-half full.

Erosion Control Barrier

Erosion control barrier is proposed along the downgradient limit of work, as depicted on the construction plans. Additional erosion control barrier may be required at other locations as needed.

The purpose of erosion control barrier is to intercept and capture sediment that would otherwise migrate off-site. Erosion control barrier shall consist of compost filter tubes, straw wattles, and silt fence.

Inspection and maintenance:

- Check for sedimentation accumulation and removing sediments when they reach excessive volumes (approximately 1/3 the height of the barrier).
- Remove sediments when runoff ponds for 24 or more hours to prevent potential mosquito breeding habitat. Restake/replace controls as necessary to maintain their effectiveness.

Control of Water

Control of water is proposed along the existing stream upstream of the proposed culvert extension.

The purpose of control of water is redirect flows around the work area to prevent sedimentation transport downstream. The means and methods of the controls shall be the responsibility of contractor and will be based on their construction operations and the conditions at the site .

Inspection and maintenance, as applicable:

- Check for sediment accumulation, plant growth, or debris behind the control.
- Check for stability at anchoring points and identify any breaks in the control.
- Identify any areas where turbid water is passing through the control.
- Repair as necessary to maintain effectiveness.

Tree Protection

Tree protection is proposed at existing trees to remain near to the area of disturbance, as noted on the construction plans.

The purpose of tree protection is to minimize risk of damage to trees designated to remain. Tree protection shall consist of armoring, pruning, and/or fencing consistent with the construction details.

ADDITIONAL CONTROL MEASURES

Good Housekeeping

- Minimize hazardous materials stored on site. All materials stored on site shall be stored in original containers and sealed.
- Refuel construction equipment off-site.
- Any spills of hazardous materials shall be reported, contained, and removed in accordance with local, State, and Federal regulations.

Material Stockpiling

All construction materials shall be stored in designated stockpile areas to be coordinated with the Conservation Commission. Stockpiles shall be surrounded with silt fence, straw wattles, and/or compost filter tubes to mitigate erosion potential. All waste materials shall be removed from the Site or placed in approved receptacles at the conclusion of each workday. Disposal of waste materials shall be in accordance with relevant local, state, and federal regulations.

No excavated soil material shall be stockpiled within one hundred (100) feet of rivers, streams, ponds, or reservoirs.

Potential Construction Site Pollutants

Pollutant-Generating Activity	Pollutants or Pollutant Constituents	Location on Site
Equipment Re-fueling	Diesel Fuel, Gasoline	Laydown Area
Leaking or Broken Hydraulic Lines	Hydraulic Oil	Building Work Areas and Laydown Area
Minor Equipment Maintenance	Diesel Fuel, Gasoline, Hydraulic Oil, Motor Oil, Anti-Freeze	Laydown Area
Applying Fertilizer	Nitrogen, Phosphorous	Newly Seeded Areas
Portable Sanitary Toilets	Bacteria, Parasites and Viruses	Laydown Area
Vehicle Accident	Diesel Fuel, Gasoline	Entire Site
Trash Containers/Dumpsters	Paper, Plastic, and Food Waste	Laydown Area

Refer to Long-Term Pollution Prevention Plan, included as Section 2, for measures to be implemented to minimize pollutant discharges.

Construction Period BMP Inspection and Maintenance Documentation Form

Inspection No.: Date: _____ Weather:

Date & Amount of Last Precipitation Event:

Inspector Name: _____ Inspection Signature:

BMP	Condition/Stability	Comment & Recommendations	Date Corrected
Catch Basin Inlet Protection			
Erosion Control Barrier			
Control of Water			
Tree Protection			
Other			
Additional Comments			

SCALE: 1" = 80'

0 80 200

ROUTE 106 (CHAUNCY ST.)

ROUTE 140 (COMMERCIAL ST)

SOUTHBOUND

NORTHBOUND

PROP WATER QUALITY SWALE

PROP VEGETATED CHECK DAM (TYP.)

PROP DRAIN MANHOLE (TYP.)

PROP DEEP-SUMP CATCH BASIN (TYP.)

NAD 83

N

COPELAND DRIVE

PROP EASTERN LEACHING BASIN AREA THREE LEACHING BASINS IN SERIES

MANSFIELD
ROUTE 106

OPERATION AND MAINTENANCE MAP

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		1	1
PROJECT FILE NO.	613052		

608944_HD(6076_WATERSHED_O&M).DWG Plotted on 4-Feb-2025 2:18 PM

Appendix F: Watershed Plans

MANSFIELD
ROUTE 106

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		3	4
PROJECT FILE NO.	613052		

POST-DEVELOPMENT WATERSHED PLAN

Proposal No. 613052-131228

Plotted on 31-Jan-2025 12:29 PM

608944_HD\6076_WATERSHED_PROP).DWG

A00830 - 189

N

NAD 83

652
UDORTHENTS, REFUSE
SUBSTRATUM
UNRATED, USE HSG A

52A
SWANSEA MUCK
HSG B/D

PROP WATER
QUALITY SWALE

SUBCATCHMENT 2Pb
WATER QUALITY SWALE

APPROX.
FLOWPATH (TYP.)

SOIL GROUP
BOUNDARY (TYP.)

SUBCATCHMENT 2P
ROUTE 106 (WEST) &
ROUTE 140 (NORTH)

NORTHBOUND

SOUTHBOUND

ROUTE 140
(COMMERCIAL ST)

ROUTE 106
(CHAUNCY ST.)

178

175

170

ROUTE 106
(CHAUNCY ST.)

CONTINUED ON
SHEET NO.4

DP 2:
FLOW TO CULVERT
(FROM WEST)

APPROX. WATERSHED
BOUNDARY (TYP.)

DP 1:
#3 SERIES
WETLANDS

245B
HINCKLEY
LOAMY SAND
HSG A

ROUTE 140
(COMMERCIAL ST)

51A
SWANSEA MUCK
HSG B/D

SUBCATCHMENT 1P
ROUTE 140 (SOUTH)

0 80 200

SCALE: 1" = 80'

LEGEND

- APPROX. WATERSHED BOUNDARY
- SOIL GROUP BOUNDARY
- APPROX. FLOWPATH

MANSFIELD
ROUTE 106

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		4	4
PROJECT FILE NO.	613052		

POST-DEVELOPMENT WATERSHED PLAN

608944_HD\6076_WATERSHED_PROP).DWG Plotted on 31-Jan-2025 12:29 PM

N

NAD 83

260A
SUDBURY FINE
SANDY LOAM
HSG A

SOIL GROUP
BOUNDARY (TYP.)

COPELAND
DRIVE

APPROX.
FLOWPATH (TYP.)

DP 4:
EASTBOUND
FLOW ALONG
CHAUNCY ST

ROUTE 106
(CHAUNCY ST.)

SUBCATCHMENT 3P
ROUTE 106 (CENTRAL)

SUBCATCHMENT 4P
ROUTE 106 (EAST) &
COPELAND DRIVE (NORTH)

CONTINUED ON
SHEET NO. 3

ROUTE 106
(CHAUNCY ST.)

172

170

174

DP 2:
FLOW TO CULVERT
(FROM WEST)

DP 3:
FLOW TO CULVERT
(FROM EAST)

APPROX. WATERSHED
BOUNDARY (TYP.)

SUBCATCHMENT 5Pa
SOUTHEAST LEACHING
BASINS

PROP EASTERN
LEACHING BASIN AREA

TP-1

SUBCATCHMENT 5P
COPELAND DRIVE (SOUTH)

DP 5:
COPELAND DRIVE
SOUTH

245B
HINCKLEY
LOAMY SAND
HSG A

0 80 200

SCALE: 1" = 80'

LEGEND

- APPROX. WATERSHED BOUNDARY
- SOIL GROUP BOUNDARY
- APPROX. FLOWPATH

MANSFIELD
ROUTE 106

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		3	4
PROJECT FILE NO.	613052		

POST-DEVELOPMENT WATERSHED PLAN

Plotted on 31-Jan-2025 12:29 PM

608944_HD\6076_WATERSHED_PROP).DWG

Proposal No. 613052-131228

A00830 - 191

N

NAD 83

652
UDORTHENTS, REFUSE
SUBSTRATUM
UNRATED, USE HSG A

52A
SWANSEA MUCK
HSG B/D

PROP WATER
QUALITY SWALE

SUBCATCHMENT 2Pb
WATER QUALITY SWALE

APPROX.
FLOWPATH (TYP.)

SOUTHBOUND

NORTHBOUND

ROUTE 140
(COMMERCIAL ST)

SOIL GROUP
BOUNDARY (TYP.)

SUBCATCHMENT 2P
ROUTE 106 (WEST) &
ROUTE 140 (NORTH)

ROUTE 106
(CHAUNCY ST.)

178

175

170

ROUTE 106
(CHAUNCY ST.)

CONTINUED ON SHEET NO. 4

DP 2:
FLOW TO CULVERT
(FROM WEST)

APPROX. WATERSHED
BOUNDARY (TYP.)

DP 1:
#3 SERIES
WETLANDS

245B
HINCKLEY
LOAMY SAND
HSG A

ROUTE 140
(COMMERCIAL ST)

51A
SWANSEA MUCK
HSG B/D

SUBCATCHMENT 1P
ROUTE 140 (SOUTH)

0 80 200

SCALE: 1" = 80'

LEGEND

- APPROX. WATERSHED BOUNDARY
- SOIL GROUP BOUNDARY
- APPROX. FLOWPATH

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		4	4
PROJECT FILE NO.	613052		

POST-DEVELOPMENT WATERSHED PLAN

Plotted on 31-Jan-2025 12:29 PM
608944_HD\6076_WATERSHED_PROP).DWG

Proposal No. 613052-131228

N

NAD 83

260A
SUDBURY FINE
SANDY LOAM
HSG A

SOIL GROUP
BOUNDARY (TYP.)

COPELAND
DRIVE

APPROX.
FLOWPATH (TYP.)

DP 4:
EASTBOUND
FLOW ALONG
CHAUNCY ST

ROUTE 106
(CHAUNCY ST.)

SUBCATCHMENT 3P
ROUTE 106 (CENTRAL)

SUBCATCHMENT 4P
ROUTE 106 (EAST) &
COPELAND DRIVE (NORTH)

CONTINUED ON
SHEET NO. 3

ROUTE 106
(CHAUNCY ST.)

172

170

174

DP 2:
FLOW TO CULVERT
(FROM WEST)

DP 3:
FLOW TO CULVERT
(FROM EAST)

APPROX. WATERSHED
BOUNDARY (TYP.)

SUBCATCHMENT 5Pa
SOUTHEAST LEACHING
BASINS

245B
HINCKLEY
LOAMY SAND
HSG A

PROP EASTERN
LEACHING BASIN AREA

TP-1

SUBCATCHMENT 5P
COPELAND DRIVE (SOUTH)

DP 5:
COPELAND DRIVE
SOUTH

COPELAND
DRIVE

0 80 200

SCALE: 1" = 80'

LEGEND

- APPROX. WATERSHED BOUNDARY
- SOIL GROUP BOUNDARY
- APPROX. FLOWPATH

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APPENDIX I

- **Project Plans**

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	1	10
PROJECT FILE NO.	613052		

TITLE SHEET & INDEX

PLAN AND PROFILE OF

IMPROVEMENTS OF CHAUNCY STREET (ROUTE 106)
ROUTE 140 TO COPELAND DRIVE (PHASE 1)

IN THE TOWN OF

MANSFIELD

BRISTOL COUNTY

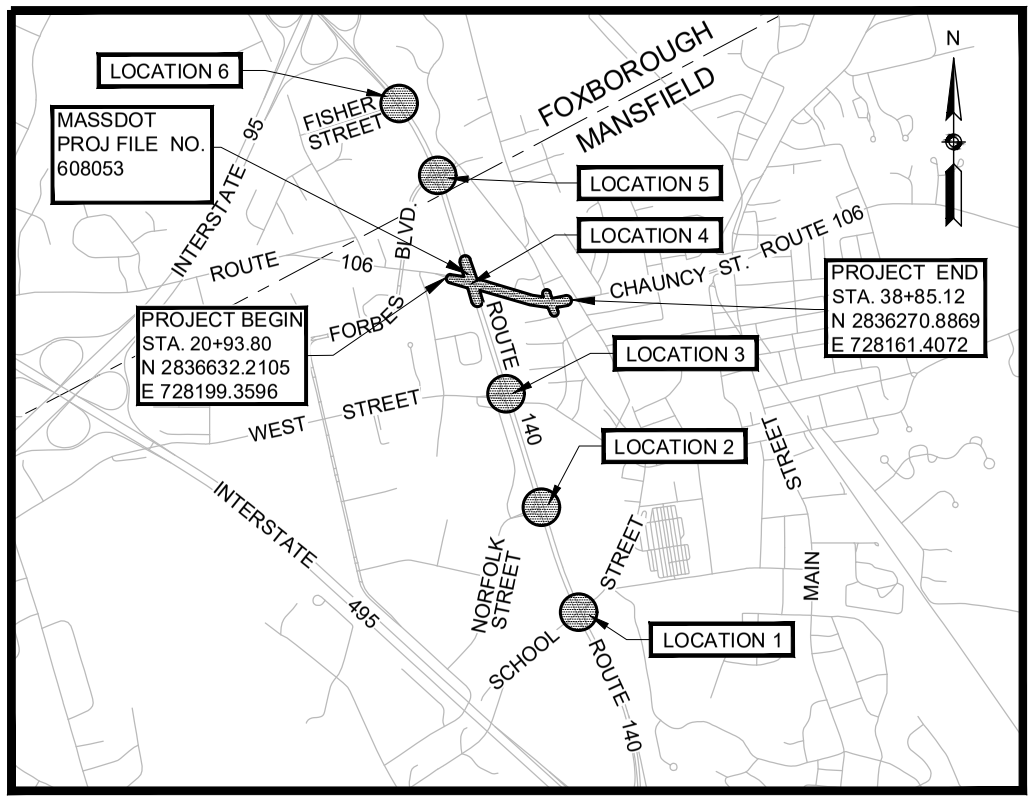
FEDERAL AID PROJECT NO.

100% SUBMITTAL

THE 2023 MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, THE 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS WITH MASSACHUSETTS AMENDMENTS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, WILL GOVERN.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
2	LEGEND & ABBREVIATIONS
3	KEY PLAN
4	CONSTRUCTION DETAILS
5-8	CONSTRUCTION PLAN
9	DRAINAGE & UTILITY PLAN
10	IMPACT PLAN



LENGTH OF PROJECT (CHAUNCY STREET) = 1,240 FEET = 0.23 MILES

DESIGN DESIGNATION - CHAUNCY STREET (ROUTE 106)

DESIGN SPEED	40 MPH
ADT (2020)	13,900
ADT (2030)	20,655
K	6.0%
D	55% (WB)
T (PEAK HOUR)	10.1%
T (AVERAGE DAY)	6.0%
DHV	1,240
DDHV	685
FUNCTIONAL CLASSIFICATION	URBAN PRINCIPAL ARTERIAL

DESIGN DESIGNATION - COPELAND DRIVE

DESIGN SPEED	40 MPH
ADT (2020)	9,365
ADT (2030)	13,915
K	9.0%
D	64% (SB)
T (PEAK HOUR)	4.3%
T (AVERAGE DAY)	1.7%
DHV	1,255
DDHV	800
FUNCTIONAL CLASSIFICATION	URBAN MINOR ARTERIAL

USACE PERMIT SET

DATE	DESCRIPTION	REV #
02/10/2025	100% SUBMISSION	REV 2
01/26/2024	75% SUBMISSION	REV 1
03/18/2021	25% SUBMISSION	REV 0

PREPARED BY:

BETA
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massDOT
Massachusetts Department of Transportation
Highway Division

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER DATE

Proposal No. 613052-131228

A00830 - 195

608944_HD(6076 TITLE).DWG Plotted on 10-Mar-2025 1:54 PM

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
JB	JB	JERSEY BARRIER
CB	CB	CATCH BASIN
		CATCH BASIN CURB INLET
		GUTTER INLET
FP	FP	FLAG POLE
GP	GP	GAS PUMP
MB	MB	MAIL BOX
		POST SQUARE
		POST CIRCULAR
WELL	WELL	WELL
EHH	EHH	ELECTRIC HANDHOLE
		FENCE GATE POST
GG	GG	GAS GATE
BHL #	BHL #	BORING HOLE
MW #	MW #	MONITORING WELL
TP #	TP #	TEST PIT
		HYDRANT
		LIGHT POLE
CO.BD.		COUNTY BOUND
		GPS POINT
C	C	CABLE MANHOLE
D	D	DRAINAGE MANHOLE OR CB WITH FRAME AND COVER
	D	DRAINAGE MANHOLE (5' DIA)
E	E	ELECTRIC MANHOLE
G	G	GAS MANHOLE
M	M	MISC MANHOLE
S	S	SEWER MANHOLE
T	T	TELEPHONE MANHOLE
W	W	WATER MANHOLE
MHB	MHB	MASSACHUSETTS HIGHWAY BOUND
MON		MONUMENT
SB		STONE BOUND
TB		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
TPL or GUY	TPL or GUY	TROLLEY POLE OR GUY POLE
HTP		TRANSMISSION POLE
UFB	UFB	UTILITY POLE W/ FIREBOX
UPDL	UPDL	UTILITY POLE WITH DOUBLE LIGHT
ULT	ULT	UTILITY POLE W / 1 LIGHT
UPL	UPL	UTILITY POLE
		BUSH
SIZE & TYPE		TREE
		STUMP
		SWAMP / MARSH
WG	WG	WATER GATE
PM	PM	PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
99		CONTOURS (ON-THE-GROUND SURVEY DATA)
99		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
x	x	CHAIN LINK OR METAL FENCE
		WOOD FENCE
	SCB	SEDIMENT CONTROL BARRIER
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
℄		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT

TRAFFIC SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
1	1	CONTROLLER PHASE ACTUATED
		TRAFFIC SIGNAL HEAD (SIZE AS NOTED)
		WIRE LOOP DETECTOR (6' x 6' TYP UNLESS OTHERWISE SPECIFIED)
		VIDEO DETECTION CAMERA
		MICROWAVE DETECTOR
		PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE
	*	EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED
		FLASHING BEACON
		PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
RRSG	RRSG	RAILROAD SIGNAL
OR		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
	20'	MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
	20'	MAST ARM WITH LUMINAIRE
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		CONTROL CABINET, POLE MOUNTED
		FLASHING BEACON CONTROL AND METER PEDESTAL
		LOAD CENTER ASSEMBLY
		PULL BOX 12"x12" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
		TRAFFIC SIGNAL CONDUIT

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
ONLY	ONLY	LEGEND "ONLY" - WHITE
	SL	STOP LINE - 12" WHITE LINE 4' BEHIND CW (TYP)
	CW	CROSSWALK, 2 - 12" WHITE LINES (WIDTH VARIES)
	SWL	SOLID WHITE LINE - 6"
	SWGL	SOLID WHITE GORE LINE - 12" @ 45° (SPACING NOTED)
	SWCHL	SOLID WHITE CHANNELIZING LINE - 12" (SPACING NOTED)
	SYL	SOLID YELLOW LINE - 6"
	SYGL	SOLID YELLOW GORE LINE - 12" @ 45° (SPACING NOTED)
	BWL	BROKEN WHITE LINE - 6" (10' LINE, 30' GAP)
	BYL	BROKEN YELLOW LINE - 6" (10' LINE, 30' GAP)
	DWLEx	DOTTED WHITE LINE EXTENSION - 6" LINE (2' LINE, 6' GAP)
	DBYL	DOUBLE YELLOW LINE - 2 - 6" LINES

ABBREVIATIONS

GENERAL

AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWP	DETECTABLE WARNING PANEL
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GICI	GUTTER INLET WITH CURB INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LP	LIGHT POLE
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
O.C.	ON CENTER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PCR	PEDESTRIAN CURB RAMP
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	2	10
PROJECT FILE NO.	613052		

LEGEND & ABBREVIATIONS

ABBREVIATIONS (cont.)

GENERAL

PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PWW	PAVED WATER WAY
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SGE	SLOPED GRANITE EDGING
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
T.S.	TRAFFIC SIGNAL
TYP	TYPICAL
UP	UTILITY POLE
VAR	VARIES
VERT	VERTICAL
VC	VERTICAL CURVE
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN
X-SECT	CROSS SECTION

TRAFFIC SIGNAL ABBREVIATIONS

CAB	CABINET
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
DW	STEADY UPRAISED HAND
FDW	FLASHING UPRAISED HAND
FR	FLASHING CIRCULAR RED
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR YELLOW
FYL	FLASHING YELLOW LEFT ARROW
FYR	FLASHING YELLOW RIGHT ARROW
G	STEADY CIRCULAR GREEN
GL	STEADY GREEN LEFT ARROW
GR	STEADY GREEN RIGHT ARROW
GSL	STEADY GREEN SLASH LEFT ARROW
GSR	STEADY GREEN SLASH RIGHT ARROW
GV	STEADY GREEN VERTICAL ARROW
OL	OVERLAP
PED	PEDESTRIAN
PTZ	PAN, TILT, ZOOM
R	STEADY CIRCULAR RED
RL	STEADY RED LEFT ARROW
RR	STEADY RED RIGHT ARROW
TR SIG	TRAFFIC SIGNAL
TSC	TRAFFIC SIGNAL CONDUIT
W	STEADY WALKING PERSON
Y	STEADY CIRCULAR YELLOW
YL	STEADY YELLOW LEFT ARROW

Proposal No. 613052-131228

A00830 - 196

Plotted on: 30-Dec-2024 9:41 AM
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MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	3	10
PROJECT FILE NO.	613052		

KEY PLAN

Proposal No. 613052-131228

A00830 - 197

608944_HD(6076 KEY).DWG Plotted on 10-Mar-2025 2:00 PM

N

NORFOLK STREET

SCHOOL STREET

WEST STREET

ROUTE 106 CHAUNCY STREET

FORBES BLVD

FISHER STREET

ROUTE 140

COMMERCIAL STREET

144+00 150 155 160 165 170 173+50.54

LIMIT OF WORK
STA 21+30.00
N 2836622.8035
E 728234.3075
MEET EXISTING

LIMIT OF WORK
STA 154+95.00
N 2836177.9337
E 728617.4903
MEET EXISTING

LIMIT OF WORK
STA 162+75.00
N 2836922.6118
E 728385.4245
MEET EXISTING

233+73.67

18+00

LOCATION 1

LOCATION 2

LOCATION 3

LOCATION 4

LOCATION 5

LOCATION 6

REFER TO SHEET 19
FOR DETAIL AND
DESCRIPTION OF
WETLAND IMPACTS

FOXBORO BLVD

GILES PLACE

COPELAND DRIVE

SPRING STREET

CENTRAL STREET

67+00 70 75 77+00

39+50

LOCATION 4A

LIMIT OF WORK
STA 38+85.12
N 2836270.8869
E 728161.4072
MEET EXISTING

CHAUNCY STREET

ROUTE 106

SHEET NUMBER LEGEND

XX CONSTRUCTION PLAN

XX DRAINAGE & UTILITY PLAN

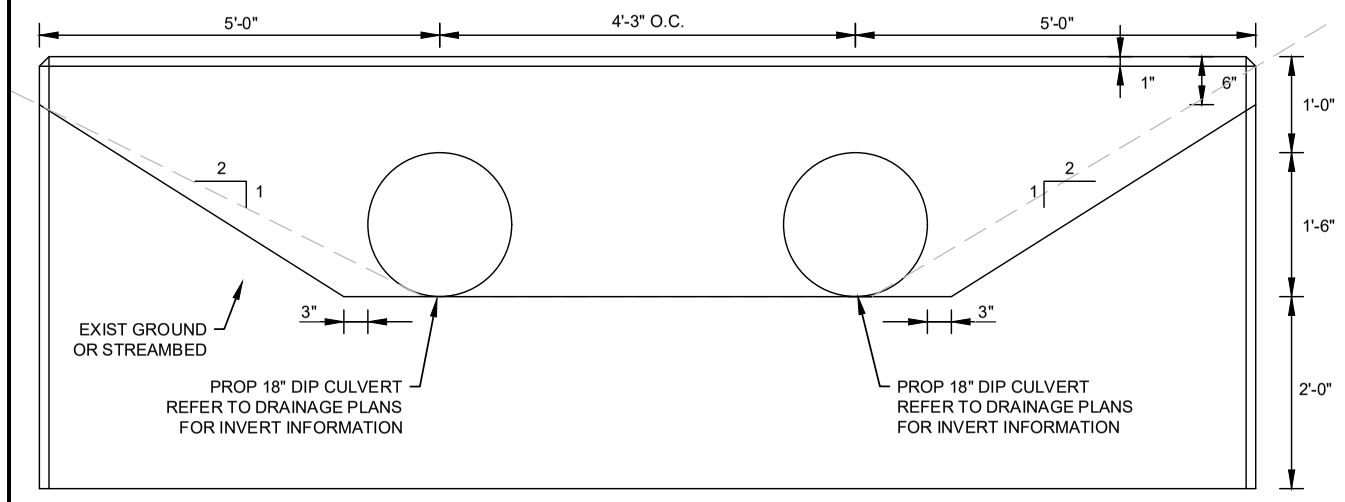
0 300 600 900 1200

SCALE: 1" = 600'

Plotted on 10-Mar-2025 1:58 PM
608944_HD(6076 DETAILS).DWG

Proposal No. 613052-131228

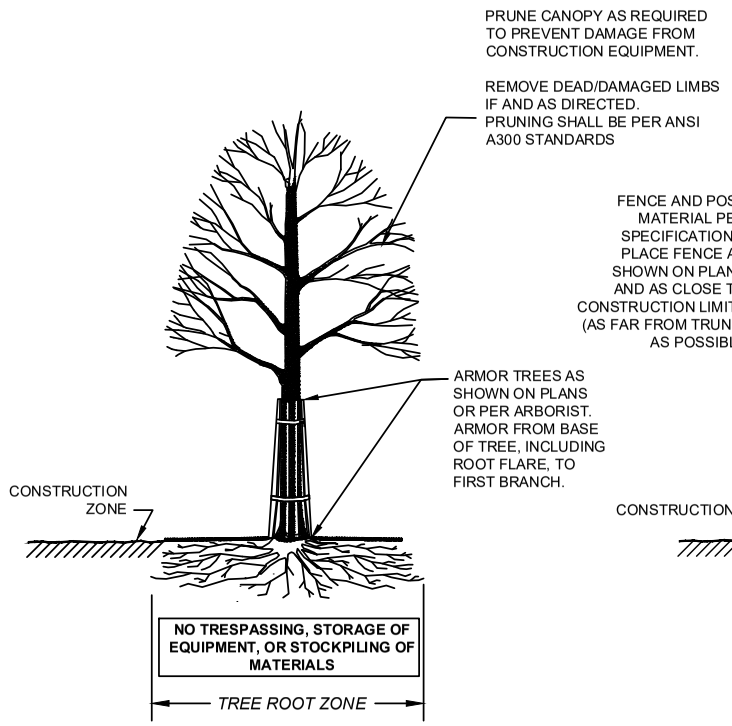
A00830 - 198



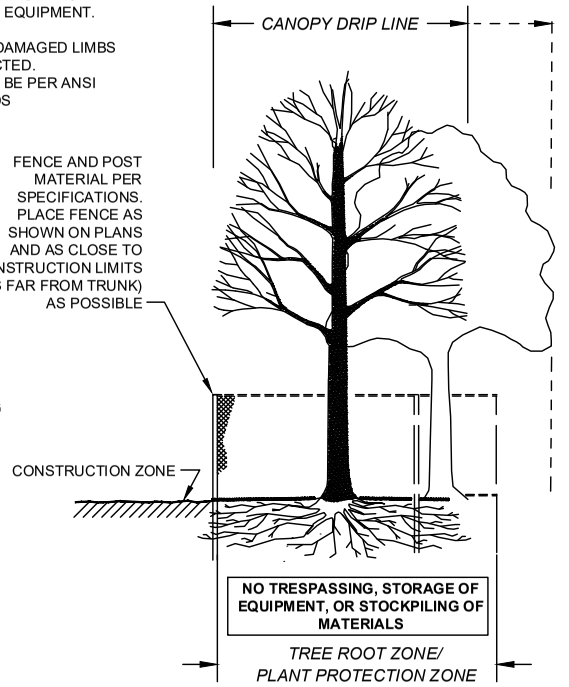
FRONT VIEW

NOTES:
1. CONCRETE MASONRY PIPE END SHALL BE CONSTRUCTED IN ACCORDANCE WITH MASSDOT STD DETAIL E 206.5.0, DESIGN NO. 12, EXCEPT FOR MODIFIED DIMENSIONS AS NOTED.
2. PROVIDE DAMP PROOFING (ITEM 970) ON ALL WALL SURFACES TO BE CONSTRUCTED BELOW GRADE

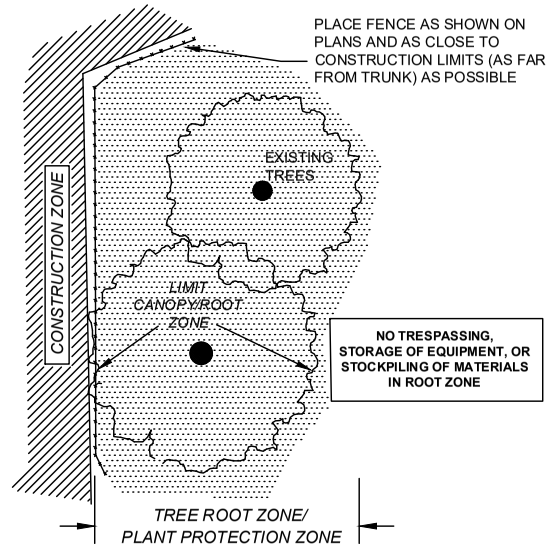
CONCRETE MASONRY PIPE END
NOT TO SCALE



SECTION - TRUNK ARMORING & PRUNING

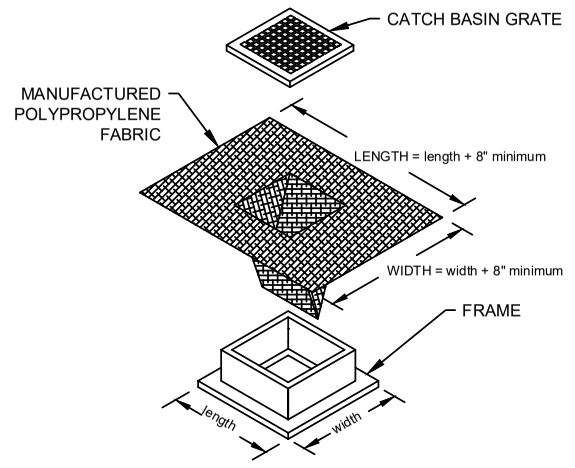


SECTION - FENCE PROTECTION OF ROOT ZONE



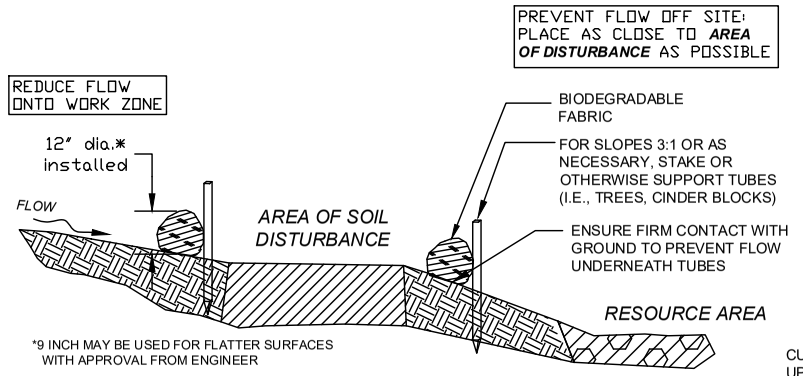
PLAN VIEW - FENCE PROTECTION OF ROOT ZONE

TREE PROTECTION DETAILS
NOT TO SCALE

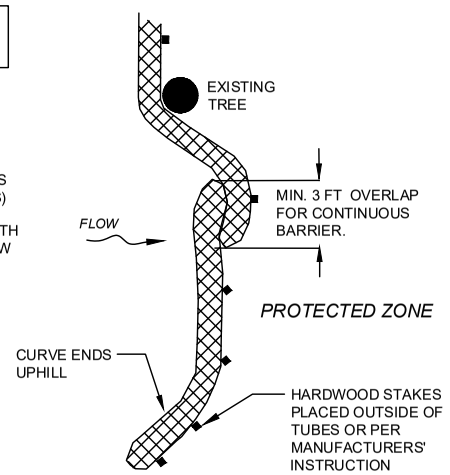


NOTES
1. LENGTH AND WIDTH OF POLYPROPYLENE FABRIC MUST EXCEED EXISTING CATCH BASIN FRAME DIMENSIONS BY A MINIMUM OF 8".
2. REMOVE CATCH BASIN GRATE AND INSTALL POLYPROPYLENE FABRIC OVER CATCH BASIN FRAME. REPLACE CATCH BASIN GRATE TO SECURE POLYPROPYLENE FABRIC IN PLACE.

CATCH BASIN EROSION CONTROL PROTECTION (TYP)
NOT TO SCALE



SECTION



PLACE TUBE ALONG CONTOURS AND PERPENDICULAR TO FLOW.

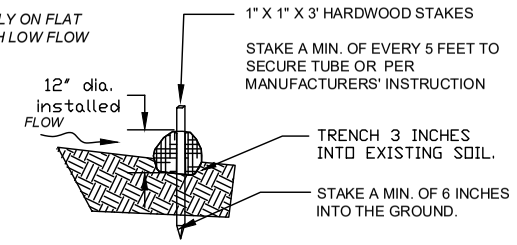
ADJUST LOCATION AS REQUIRED FOR OPTIMUM EFFECTIVENESS. DO NOT INSTALL IN WATERWAYS.

PLACE STAKES AS NEEDED TO SECURE TUBES IN PLACE.

PLAN VIEW

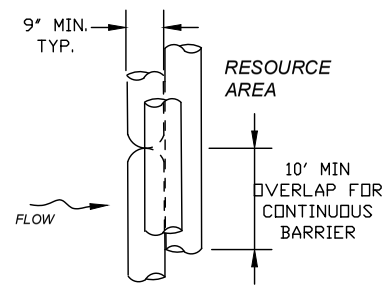
12 INCH STRAW WATTLE

TO BE USED ONLY ON FLAT SURFACES WITH LOW FLOW

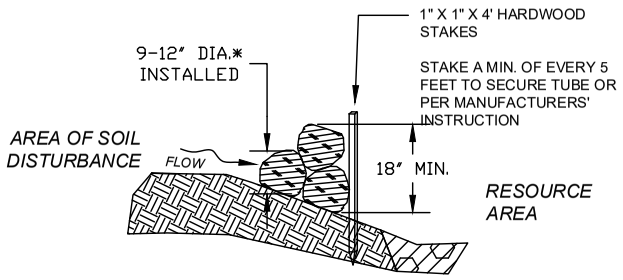


SECTION

SEDIMENT BARRIERS - COMPOST FILTER TUBES & STRAW WATTLES
NOT TO SCALE

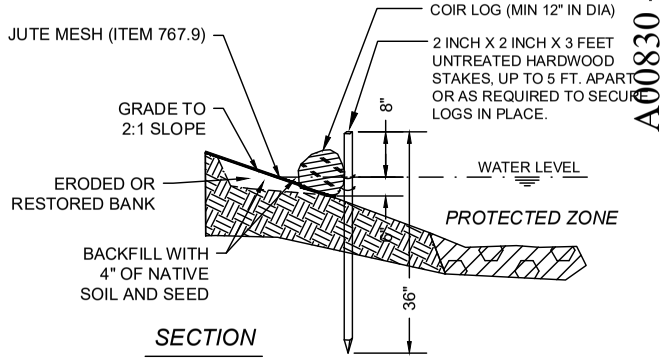


PLAN VIEW



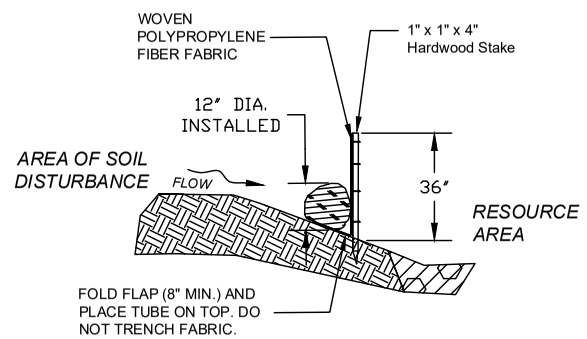
SECTION

COMPOST FILTER TUBE BERM (SLOPES 2:1 OR STEEPER)
NOT TO SCALE



SECTION

COIR LOG DETAIL
NOT TO SCALE



SECTION

COMPOST FILTER TUBE & SILT FENCE
NOT TO SCALE

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	5	10
PROJECT FILE NO.	613052		

CONSTRUCTION PLAN

Proposal No. 613052-131228

SECTION I BLOCK

SHEET No. 5

A01(1)(10)

Plotted on 10-Mar-2025 2:14 PM

608944_HDI(6076 CONST).DWG

N

N/F
BBK MANSFIELD LLC
377 CHAUNCY ST
ASSESS. MAP 17 – PARCEL ID: 17–23
DEED BK 26384 / PAGE 38

BEGINING OF PROJECT
STA. 20+93.80
N 2836632.2105
E 728199.3596
MEET EXISTING

CHAUNCY STREET (ROUTE 106)

COMMERCIAL STREET (ROUTE 140)

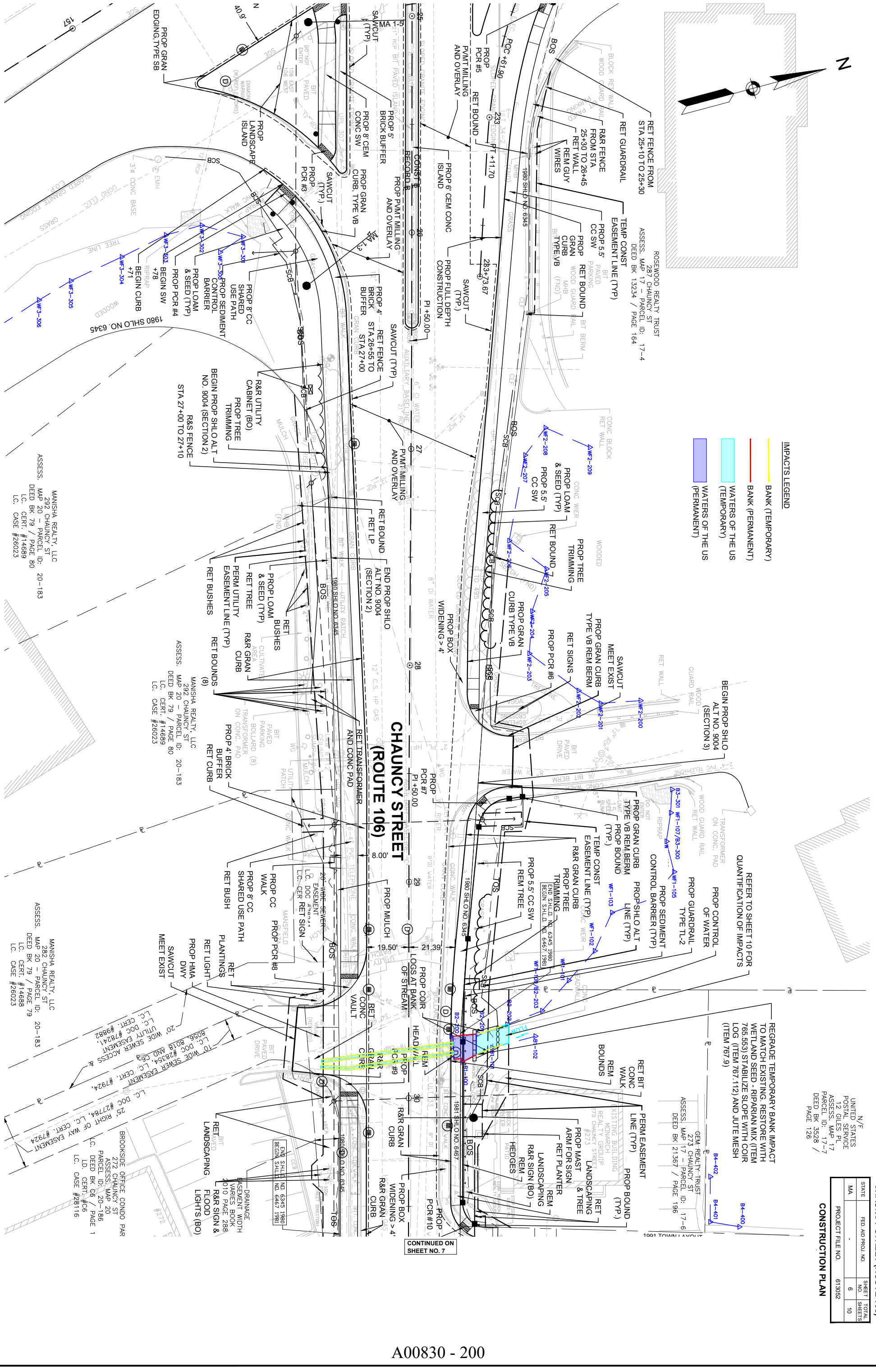
ROSEWOOD REALTY TRUST
287 CHAUNCY ST
ASSESS. MAP 17 – PARCEL ID: 17–4
DEED BK 13234 / PAGE 164

JAMES LESTER EPSTEIN
360 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–149
DEED BK 19124 / PAGE 31

ESTATE OF LESTER S. EPSTEIN – 1/2 INTEREST
ESTATE OF JAMES M. EPSTEIN

24+06.44 ROUTE 106 (CHAUNCY STREET)=
158+85.71 ROUTE 140 (COMMERCIAL ST)

SCALE: 1" = 40'



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	6	10
PROJECT FILE NO.	613052		

608944_HD(6076 CONST).DWG Plotted on 10-Mar-2025 2:15 PM

Proposal No. 613052-131228

A00830 - 201

608944_HDI\6076 CONST).DWG Plotted on 10-Mar-2025 2:15 PM

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	7	10
PROJECT FILE NO.	613052		

CONSTRUCTION PLAN

N

N/F
UNITED STATES
POSTAL SERVICE
12 GILES PL
ASSESS. MAP 17
PARCEL ID: 17-7
DEED BK 3528 /
PAGE 126

GEM REALTY TRUST
273 CHAUNCY ST
ASSESS. MAP 17 – PARCEL ID: 17-6
DEED BK 21367 / PAGE 196

30+78.51 ROUTE 106 (CHAUNCY STREET)=
100+00.00 GILES PLACE

GILES PLACE

1991 TOWN LAYOUT

1946 TOWN LAYOUT

B4-400
B4-402
B4-401

101+85

5' WIDE SEWER AND SIDEWALK EASEMENT

DRAINAGE EASEMENT PLAN BOOK 281 PAGE 28

5' WIDE SEWER AND SIDEWALK EASEMENT PLAN BOOK 281 PAGE 28

10' WIDE SEWER EASEMENT

EXISTING BUILDING
"CVS PHARMACY"
261 CHAUNCY STREET

EXISTING BUILDING
"WALGREENS"
243 CHAUNCY STREET

EXISTING BUILDING
MONARCH
REALTY GROUP
273 CHAUNCY STREET
#273

WEC 99J-40 LLC
261 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20-200
DEED BK 8616 / PAGE 254

A&E BROTHERS LLC
243 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20-199
DEED BK 18852 / PAGE 49

A&E BROTHERS, LLC
243 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20-199
DEED BK 18852 / PAGE 49

RET HEDGE
RET TREE
RET LANDSCAPING
PERM EASEMENT LINE
PERM EASEMENT LINE (TYP)
PROP BOUND (TYP.)
RET LANDSCAPING & TREE
PROP MAST ARM FOR SIGN
RET PLANTER
REM LANDSCAPING
R&R SIGN (BO)
REM HEDGES
RET STONE SWALE
LIMIT OF WORK MEET EXIST
RET LANDSCAPING
RET LANDSCAPING
BEGIN CURB
RET CB
PROP MULCH
REM TREE
R&R SIGN (BO)
REM TREE & SHRUBS
PROP LOAM & SEED (TYP)
PROP GRAN CURB TYPE VA2 AT BSW
R&R GRAN CURB
PROP 5.5' CC SW
RET LIGHT
TEMP CONST EASEMENT LINE (TYP)
PROP SHLO ALT LINE (TYP)
END CURB
REM TREE & LANDSCAPING
R&R GRAN CURB
SAWCUT MEET EXIST
PROP HMA DWY
RET SHRUBS
PROP MULCH
PROP TREE PROTECTION (TYP)
PROP GRAN CURB TYPE VB
RET SHRUB
R&R SIGN
SAWCUT MEET EXIST
PROP HMA DWY
RET SIGN & SHRUBS
RET CURB
PROP HMA WALK
RET LIGHT POLE
RET WALL
RET TREES
R&R HYDRANT
PROP 5.5' CC SW
RET WALL
RET TREE
RET LIGHT POLE
R&R GRAN CURB
RET TREE
RET BUSH
REM HEDGE
PROP BOUND (TYP.)
RET SIGN
RET BUSHES
RET TREE
RET BUSHES
PROP BOX WIDENING > 4'
PROP BOUND (TYP.)
REM BOULDER
PROP MULCH
REM PVMT & BERM
PROP HMA CURB TYPE 2
TEMP CONST EASEMENT LINE (TYP)
RET BOULDER AND SHRUBS
PROP MAST ARM FOR HIGHWAY SIGN
PERM EASEMENT LINE (TYP)
PROP HMA DWY APRON
PROP CC DWY
PROP HMA DWY
SAWCUT MEET EXIST
END CURB
RET SHRUBS
PROP SAWCUT
R&R GRAN CURB
PROP 4' BRICK BUFFER
PROP 8' CC SHARED USE PATH
PROP HMA CURB TYPE 2
RET SIGN
PROP GRAN CURB TYPE VB AT BSW
REM SHRUBS (STA 33+10 RT TO STA 33+85 RT)
BEGIN CURB
R&S CONC BLOCK WALL AND TREES/ PLANTERS ON WALL
RET FENCE & LANDSCAPING
RET TRANSFORMER
PROP MULCH
PROP BOUND (TYP.)
PERM UTILITY EASEMENT LINE (TYP)
PROP SHLO ALT LINE (TYP)
PROP PCR #11
PROP PCR#10
PROP BOX WIDENING > 4'
R&R GRAN CURB
RET SHRUBS
BEGIN PROP SHLO ALT NO. 9004 (SECTION 5)
PROP BOX WIDENING > 4'
REM LANDSCAPING
PROP PVMT MILLING & OVERLAY
PC +41.81
PT +62.63
PROP SAWCUT (TYP)
RET LANDSCAPING
DRAINAGE EASEMENT WIDTH VARIES BOOK 2010 PAGE 288
R&R SIGN & FLOOD LIGHTS (BO)
RET CB
RETAIN BERM
PROP MULCH
PROP GRAN CURB TYPE VB AT BSW
PROP HMA CURB TYPE 2
PROP 8' CC SHARED USE PATH
PROP LOAM AND SEED
PROP 4' BRICK BUFFER
R&D CURB
RET LIGHT
RET SHRUBS
RET TRANSFORMER
TEMP. EASEMENT LINE
PROP HMA DWY APRON
PROP CC DWY
PROP HMA DWY
SAWCUT MEET EXIST
PROP MULCH
PROP BOUND (TYP.)
PERM UTILITY EASEMENT LINE (TYP)
PROP SHLO ALT LINE (TYP)

CONST ℄
℄
RECORD ℄

1981 S.H.L.O. NO. 6467
1980 S.H.L.O. NO. 6345
END S.H.L.O. NO. 6345 1980
BEGIN S.H.L.O. NO. 6467 1981
END S.H.L.O. NO. 6467 1981

DWY - 1 44.38'
DWY - 2 28.00'
DWY - 3 35.00'
DWY - 4 53.20'

CHAUNCY STREET (ROUTE 106)

CONTINUED ON SHEET NO. 6
CONTINUED ON SHEET NO. 8

BROOKSIDE OFFICE CONDO PARK
272 CHAUNCY ST
ASSESS. MAP 20
PARCEL ID: 20-186
L.C. DEED BK C6 / PAGE 1
LD. CERT. #C6
LC. CASE #28116

25' RIGHT OF WAY EASEMENT L.C. DOC #2784, L.C. CERT. #7924

#272 EXISTING BUILDING "BROOKSIDE OFFICE CONDOS" 272 CHAUNCY STREET

#260
EXISTING PLAZA BUILDING
260 CHAUNCY STREET

DANGELO, INC.
260 CHAUNCY ST
ASSESS. MAP 20
PARCEL ID: 20-154
DEED BK 37 / PAGE 152
LC. CERT. #7909
LC. CASE #25856

254 CHAUNCY STREET, LLC
254 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20-156
DEED BK 22278 / PAGE 179

EXISTING RESTURANT BUILDING "CIBO MATTO CAFFE" 254 CHAUNCY STREET

LARMONT REALTY TRUST
242 CHAUNCY ST
ASSESS. MAP 20 –
PARCEL ID: 20-136
DEED BK 2338 / PAGE 347

0 20 50 100
SCALE: 1" = 40'

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	8	10
PROJECT FILE NO.	613052		

CONSTRUCTION PLAN

Proposal No. 613052-131228

A00830 - 202

608944_HDI(6076 CONST).DWG Plotted on 10-Mar-2025 2:16 PM

CONTINUED ON SHEET 7

RET HEDGE
LIMIT OF MILL & OVERLAY MEET EXIST +07
RET TREE
LIMIT OF SW MEET EXIST
REM SHRUB
PROP CC SW
REM SHRUB
RET LIGHT
ASSESS. MAP 20 – PARCEL ID: 20–181
LIMIT OF SW MEET EXIST
DEED BK 16322 / PAGE 3
PROP CC SW
PROP CC DWY
PROP HMA DWY
PROP CC SW
R&R GRAN CURB
RET CONC. CURB
PROP CC DWY
RET CONC. CURB
PROP CC SW
R&R GRAN CURB
COPELAND DRIVE
1954 SHLO NO. 4230
DWY - 9
DWY - 6
DWY -10
24.00'
32.00'
22.00'
5.50'
BOS
TOS
RET SIGN
RET LIGHT (SEE NOTE 1)
RET TREE
R&R GRAN CURB
RET LIGHT (SEE NOTE 1)
PROP PVMT MILLING & OVERLAY
RET LANDSCAPING
PROP CC SW
PROP CC WALK
PROP FULL DEPTH CONSTRUCTION
PROP CC CUT THROUGH (PCR #CT12)
PROP PCR #12
PROP BOUND (TYP.)
BEGIN S.H.L.O. NO. 4230 1954
R&R MEMORIAL & SIGN
RET LIGHT POST
PROP 3'-9" CC WALK
PROP CC SW
1945 TOWN LAYOUT
RET TREE PROTECTION (TYP)
END PROP SHLO ALT NO. 9004 (SECTION 3)
PROP BOX WIDENING > 4'
R&R GRAN CURB
PROP PCR #14
1954 SHLO NO. 4230
BEGIN S.H.L.O. NO. 4230 1954
END 1946 TOWN LAYOUT
PROP MULCH
REM PVMT & BERM
PROP HMA CURB TYPE 2
PROP MULCH
TEMP CONST EASEMENT LINE (TYP)
20' WIDE SEWER EASEMENT BOOK 2195 PAGE 49
RET SIGN
END MULCH BEGIN LOAM & SEED
TRIM TREES AS REQUIRED FOR PROP OHW
BEGIN R&R CURB AT BSW
PROP 4' BRICK BUFFER
REM PLANTER & SHRUBS
PROP LOAM & SEED
PROP SHLO ALT LINE (TYP)
PROP 8' CC SHARED USE PATH
PROP LOAM & SEED
REM LANDSCAPE WITHIN GRADING LIMITS
RET LIGHT
PROP PEDESTRIAN SIGNAL (TYP)
PROP LOAM & SEED
REM EXIST PAVEMENT
PROP CC WALKWAY
PROP BOUND (TYP.)
PROP SAWCUT
PROP GRAN EDGING TYPE SB
END R&R CURB AT BSW
1954 SHLO ALT. NO. 4230
R&R CURB
END PROP SHLO ALT NO. 9004 (SECTION 5)
BEGIN PROP SHLO ALT NO. 9004 (SECTION 6)
PROP BOUND (TYP.)
REM BOUNDS
REM CONC PAD
BEGIN GRAN CURB TYPE VB
END PROP SHLO ALT NO. 9004 (SECTION 6)
PROP HMA DWY AT BACK OF SW
PROP CC SW
SAWCUT MEET EXIST
PROP HMA DWY
PROP CC DWY
RET SHRUB
RET SIGN
LIMIT OF SW MEET EXIST
END GRAN CURB
R&D SHRUBS
1956 SHLO ALT. NO. 4737
30.22'
DWY - 7
END S.H.L.O. NO. 4230 1954
BEGIN S.H.L.O. ALTERNATION NO. 4737 1958
LIMIT OF MILL & OVERLAY. MEET EXIST +58
PROP PCR #21
1954 SHLO NO. 4230
PROP PCR #19
PROP PCR #18
PROP PCR #15
PROP TEMP TREE PROTECTION FENCE
PROP PCR #20
END GRAN CURB
END GRAN CURB, CC SW, MEET EXISTING
PROP BOX WIDEN > 4'
PROP BOX WIDENING > 4'
PROP PCR #16
PROP CC ISLAND
PROP MA (TYP)
PROP GRAN CURB TYPE VB
PROP PCR #17
PT +45.36
PC +13.70
PI +54.68
36+74.26 ROUTE 106 (CHAUNCY STREET)= 71+95.52 COPELAND DRIVE
COBBLE HILL DEVELOPMENT, LLC, LOGAN ATWOOD, LLC, AND MANSFIELD III, LLC
205–215 CHAUNCY ST, 234 CENTRAL ST
ASSESS. MAP 20 – PARCEL ID: 20–177
DEED BK 27897 / PAGE 106
END S.H.L.O. NO. 4230 1954
END 1946 TOWN LAYOUT
PERM EASEMENT LINE
PROP SHLO ALT LINE
BEGIN PROP SHLO ALT NO. 9004 (SECTION 6)
PROP BOUND (TYP.)
RET "CHASE" SIGN & LANDSCAPING
REM TREE
PROP LOAM AND SEED
TOS
PROP 8' CC SW
1946 TOWN LAYOUT
CONST ℄
PROP PVMT MILLING & OVERLAY
DWY - 8
DWY - 5
20.00'
28.00'
25.00'
36.73'
R&R GRAN CURB
PROP CC DWY
PROP HMA DWY
SAWCUT MEET EXIST
END GRAN CURB TYPE VB AT BSW
PROP GRAN CURB TYPE VB
PROP HMA DWY AT BACK OF SIDEWALK
PROP CC SIDEWALK
R&R GRAN CURB TYPE VB
PROP CC SW
SAWCUT MEET EXIST
PROP HMA DWY
PROP CC DWY
PROP CC SW
20.11'
R&R GRAN CURB
PROP HMA DWY
PROP CC DWY
PROP OH SERVICE CONNECTION
PROP BOUND (TYP.)
TEMPORARY EASEMENT LINE (TYP)
PROP BOUND (TYP.)
R&R GRAN CURB
PROP 4' BRICK BUFFER
LIMIT OF SW MEET EXIST
RET SHRUB
RET CURB
RET BIT CURB
RECORD ℄
CHAUNCY STREET (ROUTE 106)
RET TREE
END OF PROJECT
STA. 40+32.78
N 2836297.5019
E 730083.8662
MEET EXISTING
END OF MILL & OVERLAY
LIMIT OF SW MEET EXIST
RET TREE
PROP CC DWY
PROP HMA DWY
PROP OH SERVICE CONNECTION
PROP BOUND (TYP.)
39+50
39
CHAUNCY COURT CONDOMINIUM
200 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–176
DEED BK 3980 / PAGE 149
EXISTING OFFICE BUILDING
200 CHAUNCY STREET
TOKEN ENTERPRISES, INC
93 COPELAND DR
ASSESS. MAP 20 – PARCEL ID: 20–193
DEED BK 1662 / PAGE 251
BRI, INC
99 COPELAND DR
ASSESS. MAP 20 – PARCEL ID: 20–175
DEED BK 2897 / PAGE 217
EXISTING BUILDING
"HONEY DEW DONUTS"
99 COPELAND DRIVE
EXISTING BUILDING
"CAR WASH"
93 COPELAND DRIVE
WOOD AVE (PRIVATE)
COPELAND DRIVE
JT BUILDING & DEVELOPMENT, LLC
235 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–165
DEED BK 12238 / PAGE 334
&E BROTHERS LLC
243 CHAUNCY ST
SS. MAP 20 – PARCEL
ID: 20–199
BK 18852 / PAGE 49
COPELAND SQUARE PROFESSIONAL BUILDING CONDOMINIUM
100 COPELAND DR
ASSESS. MAP 20 – PARCEL ID: 20–139
DEED BK 3232 / PAGE 85
LARMONT REALTY TRUST
242 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–136
DEED BK 2338 / PAGE 347
CHASE BANK
215 CHAUNCY STREET
EXISTING BUILDING
"DOMINO'S"
235 CHAUNCY STREET
EXISTING OFFICE BUILDING
100 COPELAND

N

0 20 50 100
SCALE: 1" = 40'

NOTES:

1. EXISTING LIGHTS SHALL BE REMOVED AND RESET (BY OTHERS) IF NECESSARY FOR INSTALLATION OF OVERHEAD WIRE OR AS DIRECTED BY ENGINEER.

Proposal No. 613052-131228

A00830 - 203

608944_HD(6076 DRAIN UTILITY).DWG Plotted on 10-Mar-2025 2:05 PM

NOTES:
1. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY OWNER TO PROVIDE TEMPORARY UTILITY SUPPORT, AS NEEDED. COSTS ASSOCIATED WITH TEMPORARY UTILITY SUPPORT SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS CONTRACT ITEMS.

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
CB-28-B	29+49.9 18.5' RT	168.43		I=164.05' (EX-DMH-28)	LOW POINT
CBCI-27	26+97.7 26.3' RT	171.50		I=168.30' (EX-DMH-27)	FLAT TOP 1 COURSE BRICK
CBCI-28-A	29+22.1 18.5' RT	168.47		I=164.00' (DMH-28)	FLAT TOP
CBCI-29-A	29+49.6 -19.1' LT	168.42		I=164.90' (DMH-29)	LOW POINT FLAT TOP
CBCI-29-B	29+68.2 -18.5' LT	168.45		I=164.90' (DMH-29)	
DMH-28	29+21.9 0.7' RT	168.83	I = 163.8' ± (EXIST) I=163.90' (CBCI-28-A)	I=163.80' (EX-DMH-28)	BUILD ON EXIST
DMH-29	29+59.9 -17.1' LT	168.46	I=164.80' (CBCI-29-A) I=164.80' (CBCI-29-B)	I=164.70' (EX-DMH-28)	FLAT TOP

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
EX-DMH-27	27+09.5 3.0' RT	171.70	I = 166.1' ± (EXIST) I = 166.4' ± (EXIST) I=168.10' (CBCI-27)	I = 166.0' ± (EXIST)	
EX-DMH-28	29+59.8 0.1' RT	168.80	I=163.30' (DMH-28) I=163.50' (DMH-29) I=163.70' (CB-28-B)	I = 163.1' ± (EXIST)	

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	9	10
PROJECT FILE NO.	613052		

DRAINAGE & UTILITY PLAN

N/F UNITED STATES POSTAL SERVICE 12 GILES PL ASSESS. MAP 17 PARCEL ID: 17-7 DEED BK 3528 / PAGE 126

ROSEWOOD REALTY TRUST 287 CHAUNCY ST ASSESS. MAP 17 – PARCEL ID: 17-4 DEED BK 13234 / PAGE 164

GEM REALTY TRUST 273 CHAUNCY ST ASSESS. MAP 17 – PARCEL ID: 17-6 DEED BK 21367 / PAGE 196

EXISTING BUILDING MONARCH REALTY GROUP 273 CHAUNCY STREET #273

MANISHA REALTY, LLC 282 CHAUNCY ST ASSESS. MAP 20 – PARCEL ID: 20-183 DEED BK 79 / PAGE 79 LC. CERT. #14688 LC. CASE #26023

BROOKSIDE OFFICE CONDO PAR 272 CHAUNCY ST ASSESS. MAP 20 PARCEL ID: 20-186 LC. DEED BK C6 / PAGE 1 LD. CERT. #C6 LC. CASE #28116

REFER TO SHEET 10 FOR QUANTIFICATION OF IMPACTS

PROP 1-3P PRIMARY ELEC SERVICE RELOCATION: 6" RGS RISER & SWEEP, 155' - 6" PVC CONC ENCASED CONDUIT, CONNECT TO EXIST PAD TRANSFORMER (BO)

PROP CONC MASONRY PIPE END SEE DETAIL

REMOVE CB REM F&G, PROP F&C LOCATE GRATE ON CURB LINE PROP CURB INLET

REM UP #34-1 (BO)

REM UP #34-2 & GUY WIRES (BO)

R&R 45' UP #309S PROP 15' GUY (BO)

REM UP #34 (BO)

REM UP #33 (BO) 101 LF - 18" RCP (REM EXIST)

CONNECT 5 LF - 12" RCP TO EXIST RCP AT JOINT

11 LF - 12" RCP
17 LF - 12" RCP
CBCI-29-A (LP)
REM CB
38 LF - 24" DI (REM EXIST)

8 LF - 12" RCP

DMH-300
CBCI-29-B
DMH-29
CBCI-31
CBCI-30
REM CB & PIPE
DMH-30-A
34 LF - 12" RCP
REM DMH & PIPES
TEST PIT TO CONFIRM EXIST INVERT
DRAINAGE EASEMENT WIDTH VARIES 800K 2010 PAGE 288
19 LF - 12" DI
DMH-30-B

ADJ EX-DMH-27
26 LF - 12" DI
CBCI-27
ABAN
REM CB
ADJ (BO)
ADJ TMH (BO)
ADJ WG
RET
RET CB
CB-157
CIT-157
14 LF - 12" RCP
R&R 55' UP #307 PROP 2-20' GUYS (BO)
ADJ CB
R&R 55' UP #308 (BO)
CONNECT TO EXIST DUCT BANK (BO)
PROP 6-4" PVC (BO)
R&R TEL CABINET (BO)
REM UP #35/1S (BO)
RELOCATE UG 1-3P PRIMARY ELEC SERVICE (BO)
R&R 55' UP #309 PROP 12' GUY (BO)
DMH-28
18 LF - 10" DI
21 LF - 12" RCP (REM EXIST)
CBCI-28-A
CB-28-B (LP)
ADJ EX-DMH-28
PROP 72 LF - 18" DIP REM EXIST
R&R 55' UP #312 (BO) SEE NOTE 1
DMH-30
20 LF - 12" RCP
ADJ EX-DMH-30
CBCI-30
REM CB & PIPE
DMH-30-A
34 LF - 12" RCP
REM DMH & PIPES
TEST PIT TO CONFIRM EXIST INVERT
DRAINAGE EASEMENT WIDTH VARIES 800K 2010 PAGE 288
19 LF - 12" DI
DMH-30-B

CHAUNCY STREET (ROUTE 106)

COMMERCIAL STREET (ROUTE 140)

1980 SHLO NO. 6345

1981 SHLO NO. 6467

20' WIDE SEWER EASEMENT L.C. DOC #78241, L.C. CERT. #9882

70' WIDE SEWER EASEMENT L.C. DOC #2554, L.C. CERT. #7924, 8556, 8018 AND C&A

20' WIDE SEWER ACCESS & UTILITY EASEMENT L.C. DOC #78241, L.C. CERT. #9882

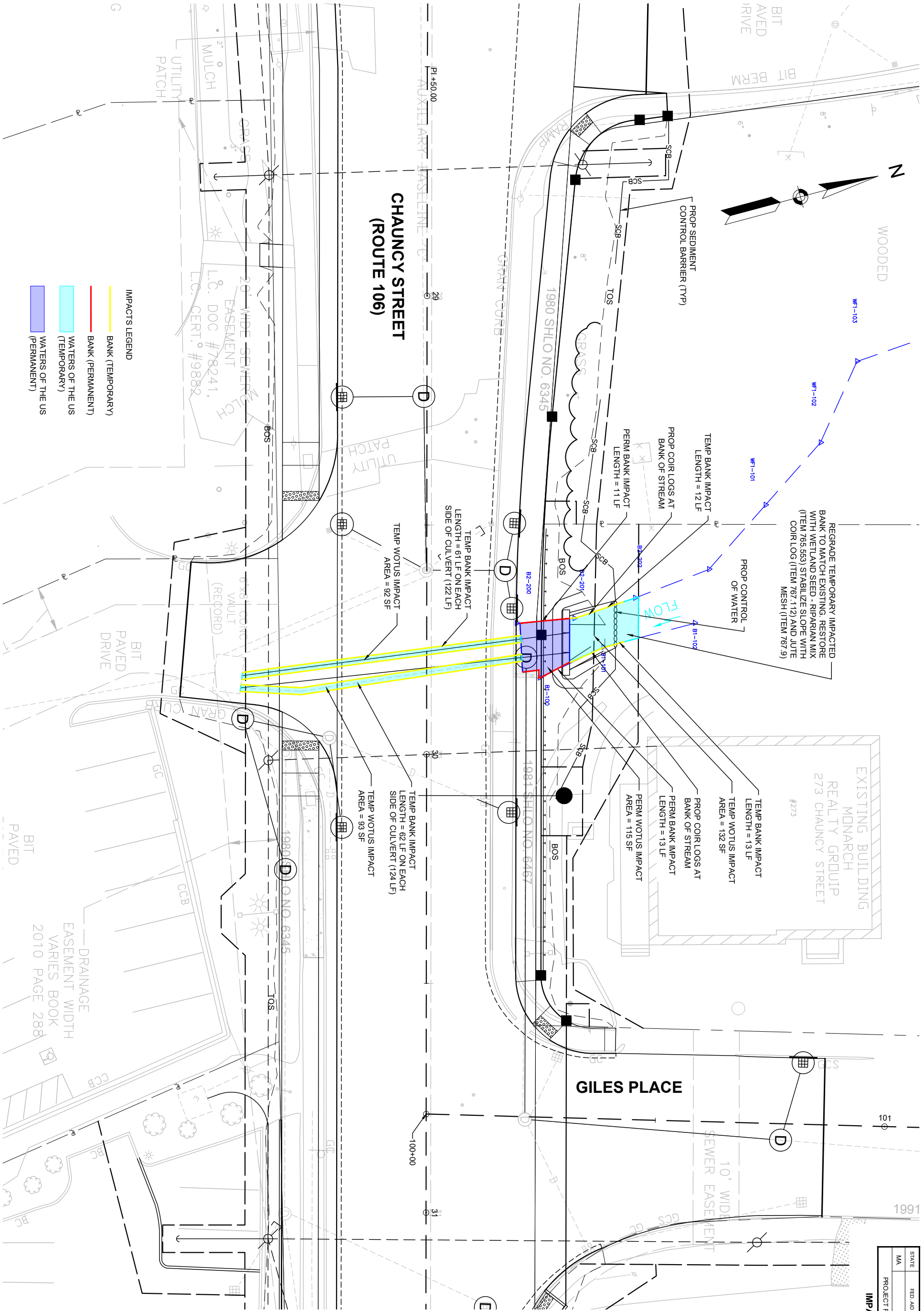
25' RIGHT OF WAY EASEMENT L.C. DOC #2784, L.C. CERT. #7924

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
CBCI-30	30+16 18.5' RT	168.66		I=164.70' (EX-DMH-30)	
CBCI-31	30+12.7 -17.9' LT	168.65		I=164.70' (EX-DMH-30)	FLAT TOP OFFSET COVER
DMH-30-A	30+25.2 30.7' RT	169.37	I = 164.2' ± (EXIST)	I=164.10' (DMH-30-B)	BUILD ON EXIST
DMH-30-B	29+92.3 40.1' RT	169.11	I=163.70' (DMH-30-A) I=163.70' (EX-DMH-30)	I = 163.6' ± (EXIST)	BUILD ON EXIST
DMH-300	29+78.8 -21.7' LT	169.00	I = 164.3' ± MATCH PROP CULVERT	MATCH PROP CULVERT	
EX-DMH-30	29+96.4 21.2' RT	168.53	I = 164.3' ± (EXIST) I=164.50' (CBCI-30)	I=164.00' (DMH-30-B)	

IMPACTS LEGEND
- BANK (TEMPORARY)
- BANK (PERMANENT)
- WATERS OF THE US (TEMPORARY)
- WATERS OF THE US (PERMANENT)

0 20 50 100
SCALE: 1" = 40'



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	10	10
PROJECT FILE NO.	613052		

MANSFIELD
CHAUNCY STREET (ROUTE 106)
IMPACT PLAN

608944_HD(6076 IMPACT_CULVERT).DWG Plotted on 10-Mar-2025 2:07 PM

DOCUMENT A00831

ARMY CORPS OF ENGINEERS

GENERAL PERMIT

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DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT OFFICE
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

March 28, 2025

Regulatory Division
Transportation & Utility Section
File Number: NAE-2025-00467

Erica Larner
MassDOT – Highway Division
10 Park Plaza
Boston, Massachusetts 02116
Via Email: erica.n.larner@dot.state.ma.us

Dear Ms. Larner:

This letter is in response to the application you submitted to the U.S. Army Corps of Engineers (USACE), New England District, on March 13, 2025, for a Department of the Army general permit verification to make improvements to two existing culverts conveying an unnamed intermittent stream under Chauncy Road (Route 106) in Mansfield, Massachusetts (42.0305 °N, -71.2296 °W). We have assigned this project file number NAE-2025-00467, which you should reference in all correspondence with this office.

The project includes the permanent discharge of fill material within 115 square feet below the Ordinary Water Mark (OHWM) of an unnamed intermittent stream associated with the extension of twin culverts. The project also includes temporary discharge of fill within 317 square feet below the OHWM of the unnamed intermittent stream associated with dewatering and installation of erosion controls. The work is shown on the enclosed plans titled “MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION PLAN AND PROFILE OF IMPROVEMENTS OF CHAUNCY STREET (ROUTE 106) ROUTE 140 TO COPELAND DRIVE (PHASE 1) IN THE TOWN OF MANSFIELD BRISTOL COUNTY,” on ten sheets dated February 10, 2025.

Based on the information you have provided, we verify that the activity is authorized under General Permit 23 (Linear Transportation and Wetland/Stream Crossings) of the June 2, 2023, federal permit known as the Massachusetts General Permits (GPs). If the extent of the project area and/or nature of the authorized impacts to waters are modified, a revised application must be submitted to this office for written approval before work is initiated. You can find a copy of these permits at: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/.

Any deviation from the terms and conditions of the permit, or your submitted plans, may subject the permittee to the enforcement provisions of our regulations. Therefore, in the event changes to this project are contemplated, it is recommended you

coordinate with this office prior to proceeding with the work. This office must approve any changes before you undertake them. You must perform this work in compliance with the terms and conditions of the GPs listed above and the following special conditions:

Project Specific Special Conditions:

1. The permittee shall complete and return the enclosed Work-Start Notification Form to this office at least two weeks prior to the anticipated construction start date.

2. The permittee shall complete and return the enclosed Completion Certification Form to this office at least one month following the completion of the authorized work.

3. All construction shall be completed in accordance with the limits of construction and construction sequences detailed on the enclosed plans titled "MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION PLAN AND PROFILE OF IMPROVEMENTS OF CHAUNCY STREET (ROUTE 106) ROUTE 140 TO COPELAND DRIVE (PHASE 1) IN THE TOWN OF MANSFIELD BRISTOL COUNTY," on ten sheets dated February 10, 2025. If there are changes to the plans or construction methods for work within or adjacent to waters of the U.S., the permittee shall contact USACE to discuss modification of this authorization. USACE must approve any changes before they are undertaken.

This verification is valid until June 1, 2028. You must commence or be under contract to commence the work authorized herein by June 1, 2028, and complete the work by June 1, 2029. If not, you must contact this office to determine the need for further authorization before beginning or continuing the activity. It is recommended that you contact this office before this authorization expires to discuss if permit reissuance is a possibility.

This general permit verification and any associated authorizations does not preclude the necessity to obtain any other federal, state, or local permits, licenses, and/or certifications, which may be required.

Any deviation from the terms and conditions of the If you have any questions related to this verification or have issues accessing documents referenced in this letter, please contact Kevin Newton, at (978)-318-8044, or by email at kevin.m.newton@usace.army.mil.

This agency continually strives to improve our customer service. To better serve you, please complete the Customer Service Survey located at: https://regulatory.ops.usace.army.mil/customer-service-survey/.

Sincerely,

Stephen Rochette
Acting Chief, Technical Support Branch
Regulatory Division

Enclosures

cc (w/enclosures):
Ed Reiner, U.S. EPA, Region 1 (via reiner.ed@epa.gov)
Heidi Davis, MassDEP (via heidi.davis@mass.gov)
Tyler Lewis, MassDEP (via tyler.lewis@mass.gov)
Ryan Hale, MassDEP (via ryan.hale@mass.gov)
Kevin Thompson, MassDOT (via kevin.s.thompson@dot.state.ma.us)
Laura Krause, BETA Group, Inc. (via lkrause@beta-inc.com)

Work-Start Notification Form

File Number: NAE-2025-00467 State: Massachusetts County: Bristol

Permittee: MassDOT – Highway Division, Erica Larner
Date Verification Issued: 3/28/2025
Project Manager: Kevin Newton

At least two weeks prior to commencing the activity authorized by this permit, sign this certification and return it to the following address:

US ARMY CORPS OF ENGINEERS
New England District
Attn: Kevin Newton
696 Virginia Road
Concord, MA 01742
or
kevin.m.newton@usace.army.mil and cenae-r-ma@usace.army.mil
(978)-318-8044

Please note that your permitted activity is subject to a compliance inspection by a U. S. Army Corps of Engineers (USACE) representative. Failure to comply with any terms or conditions of this authorization may result in the USACE suspending, modifying or revoking the authorization and/or issuing a Class I administrative penalty, or initiating other appropriate legal action.

The people (e.g. contractor) listed below will do the work, and they understand the permit's conditions and limitations.

Contractor Name/Contractor Firm: _____
Business Address: _____
_____
Contractor Phone and Email: _____

Proposed Construction Dates: Start: _____ Finish: _____

_____ _____
Signature of Permittee Date

U.S. Army Corps of Engineers (USACE)

CERTIFICATION OF COMPLIANCE WITH DEPARTMENT OF THE ARMY PERMIT

For use of this form, see Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act of 1899, and Section 103 of the Marine Protection, Research, and Sanctuaries Act; the proponent agency is CECW-COR.

Form Approved - OMB No. 0710-0003 Expires 2027-10-31

The Agency Disclosure Notice (ADN)

The Public reporting burden for this collection of information, 0710-0003, is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PURPOSE: This form is used by recipients of U.S. Army Corps of Engineer Regulatory permits to certify compliance with the permit terms and conditions.

Your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with this permit, you are subject to permit suspension, modification, or revocation.

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the U.S. Army Corps of Engineers, New England District Office.

The certification can be submitted by email at dll-cenae-r-ma@usace.army.mil or by mail at the below address:

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the U.S. Army Corps of Engineers, New England District Office.

U.S. Army Corps of Engineers
New England District
Regulatory Division
696 Virginia Road
Concord, MA 01742-2751

COMPLETED BY THE CORPS

Corps Action Number:	NAE-2025-00467
Permit Type:	MA Regional General Permit
General Permit Number and Name (*if applicable*):	MA Regional General Permit 23
Name of Permittee:	Massachusetts Department of Transportation
Project Name:	NAE-2025-00467 Mansfield
Project Location (*physical address*):	Route 106, 42.0305 °N, -71.2296 °W, Mansfield, MA

PERMITTEE'S CERTIFICATION

Date Work Started: _____

Date Work Completed: _____

Enclose photographs showing the completed project (*if available*).

I _____ hereby certify that the work authorized by the above referenced permit has been completed in accordance with all of the permit terms and conditions, and that any required compensatory mitigation has been completed in accordance with the permit conditions.

Name	Date	Signature

ENG FORM 6285, DEC 2024 PREVIOUS EDITIONS ARE OBSOLETE.

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	1	10
PROJECT FILE NO.	613052		

TITLE SHEET & INDEX

PLAN AND PROFILE OF

IMPROVEMENTS OF CHAUNCY STREET (ROUTE 106)
ROUTE 140 TO COPELAND DRIVE (PHASE 1)

IN THE TOWN OF

MANSFIELD

BRISTOL COUNTY

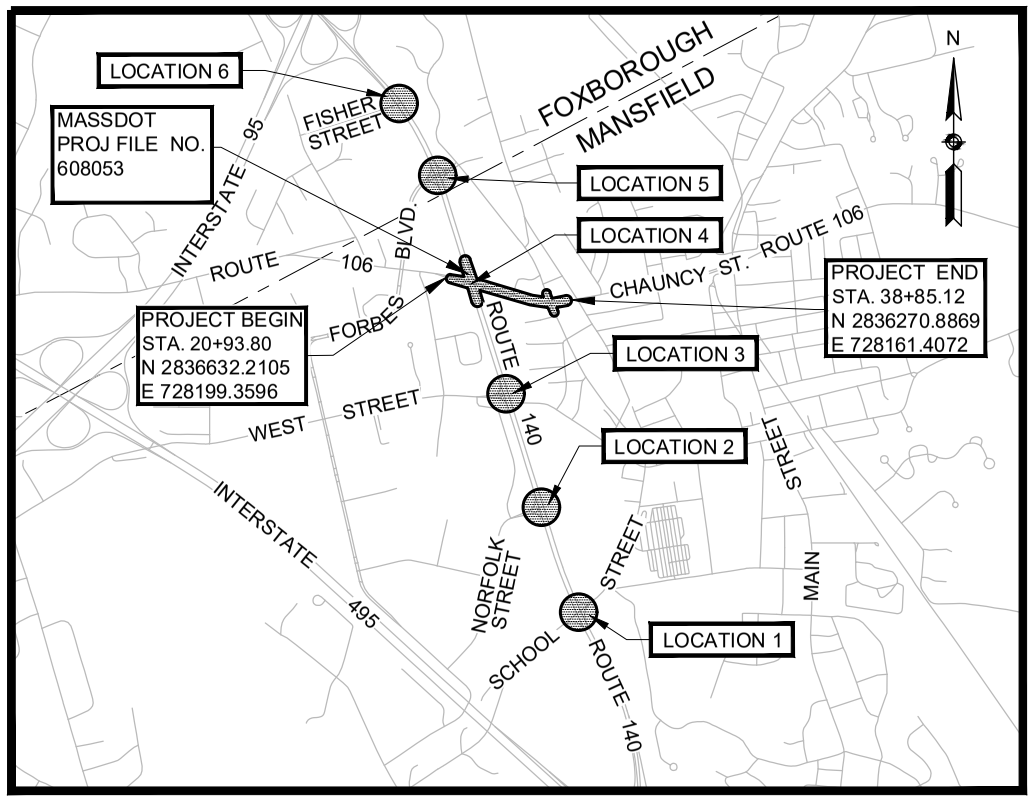
FEDERAL AID PROJECT NO.

100% SUBMITTAL

THE 2023 MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, THE 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS WITH MASSACHUSETTS AMENDMENTS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, WILL GOVERN.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
2	LEGEND & ABBREVIATIONS
3	KEY PLAN
4	CONSTRUCTION DETAILS
5-8	CONSTRUCTION PLAN
9	DRAINAGE & UTILITY PLAN
10	IMPACT PLAN



LENGTH OF PROJECT (CHAUNCY STREET) = 1,240 FEET = 0.23 MILES

DESIGN DESIGNATION - CHAUNCY STREET (ROUTE 106)

DESIGN SPEED	40 MPH
ADT (2020)	13,900
ADT (2030)	20,655
K	6.0%
D	55% (WB)
T (PEAK HOUR)	10.1%
T (AVERAGE DAY)	6.0%
DHV	1,240
DDHV	685
FUNCTIONAL CLASSIFICATION	URBAN PRINCIPAL ARTERIAL

DESIGN DESIGNATION - COPELAND DRIVE

DESIGN SPEED	40 MPH
ADT (2020)	9,365
ADT (2030)	13,915
K	9.0%
D	64% (SB)
T (PEAK HOUR)	4.3%
T (AVERAGE DAY)	1.7%
DHV	1,255
DDHV	800
FUNCTIONAL CLASSIFICATION	URBAN MINOR ARTERIAL

USACE PERMIT SET

DATE	DESCRIPTION	REV #
02/10/2025	100% SUBMISSION	REV 2
01/26/2024	75% SUBMISSION	REV 1
03/18/2021	25% SUBMISSION	REV 0

PREPARED BY:

BETA
www.BETA-Inc.com

massDOT
Massachusetts Department of Transportation
Highway Division

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER DATE

Proposal No. 613205-131228

A00831 - 8

608944_HD(6076 TITLE).DWG Plotted on 10-Mar-2025 1:54 PM

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
JB	JB	JERSEY BARRIER
CB	CB	CATCH BASIN
		CATCH BASIN CURB INLET
		GUTTER INLET
FP	FP	FLAG POLE
GP	GP	GAS PUMP
MB	MB	MAIL BOX
		POST SQUARE
		POST CIRCULAR
WELL	WELL	WELL
EHH	EHH	ELECTRIC HANDHOLE
		FENCE GATE POST
GG	GG	GAS GATE
BHL #	BHL #	BORING HOLE
MW #	MW #	MONITORING WELL
TP #	TP #	TEST PIT
		HYDRANT
		LIGHT POLE
CO.BD.		COUNTY BOUND
		GPS POINT
C	C	CABLE MANHOLE
D	D	DRAINAGE MANHOLE OR CB WITH FRAME AND COVER
	D	DRAINAGE MANHOLE (5' DIA)
E	E	ELECTRIC MANHOLE
G	G	GAS MANHOLE
M	M	MISC MANHOLE
S	S	SEWER MANHOLE
T	T	TELEPHONE MANHOLE
W	W	WATER MANHOLE
MHB	MHB	MASSACHUSETTS HIGHWAY BOUND
MON		MONUMENT
SB		STONE BOUND
TB		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
TPL or GUY	TPL or GUY	TROLLEY POLE OR GUY POLE
HTP		TRANSMISSION POLE
UFB	UFB	UTILITY POLE W/ FIREBOX
UPDL	UPDL	UTILITY POLE WITH DOUBLE LIGHT
ULT	ULT	UTILITY POLE W / 1 LIGHT
UPL	UPL	UTILITY POLE
		BUSH
SIZE & TYPE		TREE
		STUMP
		SWAMP / MARSH
WG	WG	WATER GATE
PM	PM	PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
99		CONTOURS (ON-THE-GROUND SURVEY DATA)
99		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
x	x	CHAIN LINK OR METAL FENCE
		WOOD FENCE
	SCB	SEDIMENT CONTROL BARRIER
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT

TRAFFIC SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
1	1	CONTROLLER PHASE ACTUATED
		TRAFFIC SIGNAL HEAD (SIZE AS NOTED)
		WIRE LOOP DETECTOR (6' x 6' TYP UNLESS OTHERWISE SPECIFIED)
		VIDEO DETECTION CAMERA
		MICROWAVE DETECTOR
		PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE
	*	EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED
		FLASHING BEACON
		PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
RRSG	RRSG	RAILROAD SIGNAL
OR		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
	20'	MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
	20'	MAST ARM WITH LUMINAIRE
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		CONTROL CABINET, POLE MOUNTED
		FLASHING BEACON CONTROL AND METER PEDESTAL
		LOAD CENTER ASSEMBLY
		PULL BOX 12"x12" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
		TRAFFIC SIGNAL CONDUIT

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
ONLY	ONLY	LEGEND "ONLY" - WHITE
	SL	STOP LINE - 12" WHITE LINE 4' BEHIND CW (TYP)
	CW	CROSSWALK, 2 - 12" WHITE LINES (WIDTH VARIES)
	SWL	SOLID WHITE LINE - 6"
	SWGL	SOLID WHITE GORE LINE - 12" @ 45° (SPACING NOTED)
	SWCHL	SOLID WHITE CHANNELIZING LINE - 12" (SPACING NOTED)
	SYL	SOLID YELLOW LINE - 6"
	SYGL	SOLID YELLOW GORE LINE - 12" @ 45° (SPACING NOTED)
	BWL	BROKEN WHITE LINE - 6" (10' LINE, 30' GAP)
	BYL	BROKEN YELLOW LINE - 6" (10' LINE, 30' GAP)
	DWLEx	DOTTED WHITE LINE EXTENSION - 6" LINE (2' LINE, 6' GAP)
	DBYL	DOUBLE YELLOW LINE - 2 - 6" LINES

ABBREVIATIONS

GENERAL

AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWP	DETECTABLE WARNING PANEL
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GICI	GUTTER INLET WITH CURB INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LP	LIGHT POLE
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
O.C.	ON CENTER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PCR	PEDESTRIAN CURB RAMP
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	2	10
PROJECT FILE NO.	613052		

LEGEND & ABBREVIATIONS

ABBREVIATIONS (cont.)

GENERAL

PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PWW	PAVED WATER WAY
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SGE	SLOPED GRANITE EDGING
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
T.S.	TRAFFIC SIGNAL
TYP	TYPICAL
UP	UTILITY POLE
VAR	VARIES
VERT	VERTICAL
VC	VERTICAL CURVE
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN
X-SECT	CROSS SECTION

TRAFFIC SIGNAL ABBREVIATIONS

CAB	CABINET
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
DW	STEADY UPRAISED HAND
FDW	FLASHING UPRAISED HAND
FR	FLASHING CIRCULAR RED
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR YELLOW
FYL	FLASHING YELLOW LEFT ARROW
FYR	FLASHING YELLOW RIGHT ARROW
G	STEADY CIRCULAR GREEN
GL	STEADY GREEN LEFT ARROW
GR	STEADY GREEN RIGHT ARROW
GSL	STEADY GREEN SLASH LEFT ARROW
GSR	STEADY GREEN SLASH RIGHT ARROW
GV	STEADY GREEN VERTICAL ARROW
OL	OVERLAP
PED	PEDESTRIAN
PTZ	PAN, TILT, ZOOM
R	STEADY CIRCULAR RED
RL	STEADY RED LEFT ARROW
RR	STEADY RED RIGHT ARROW
TR SIG	TRAFFIC SIGNAL
TSC	TRAFFIC SIGNAL CONDUIT
W	STEADY WALKING PERSON
Y	STEADY CIRCULAR YELLOW
YL	STEADY YELLOW LEFT ARROW

Proposal No. 613205-131228

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MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	3	10
PROJECT FILE NO.	613052		

KEY PLAN

Proposal No. 6132052-131228

608944_HD(6076 KEY).DWG Plotted on 10-Mar-2025 2:00 PM

A00831 - 10

N

SCHOOL STREET

NORFOLK STREET

WEST STREET

ROUTE 106 CHAUNCY STREET

FORBES BLVD

FISHER STREET

ROUTE 140

COMMERCIAL STREET

144+00 150 155 160 165 170 173+50.54

LIMIT OF WORK
STA 21+30.00
N 2836622.8035
E 728234.3075
MEET EXISTING

LIMIT OF WORK
STA 154+95.00
N 2836177.9337
E 728617.4903
MEET EXISTING

LIMIT OF WORK
STA 162+75.00
N 2836922.6118
E 728385.4245
MEET EXISTING

LOCATION 1

LOCATION 2

LOCATION 3

LOCATION 4

LOCATION 5

LOCATION 6

LOCATION 4A

REFER TO SHEET 19
FOR DETAIL AND
DESCRIPTION OF
WETLAND IMPACTS

LIMIT OF WORK
STA 38+85.12
N 2836270.8869
E 728161.4072
MEET EXISTING

18+00

230+00

233+73.67

38+01

39+50

67+00 70 75 77+00

FOXBORO BLVD

GILES PLACE

COPELAND DRIVE

SPRING STREET

CENTRAL STREET

CHAUNCY STREET

ROUTE 106

SHEET NUMBER LEGEND

XX CONSTRUCTION PLAN

XX DRAINAGE & UTILITY PLAN

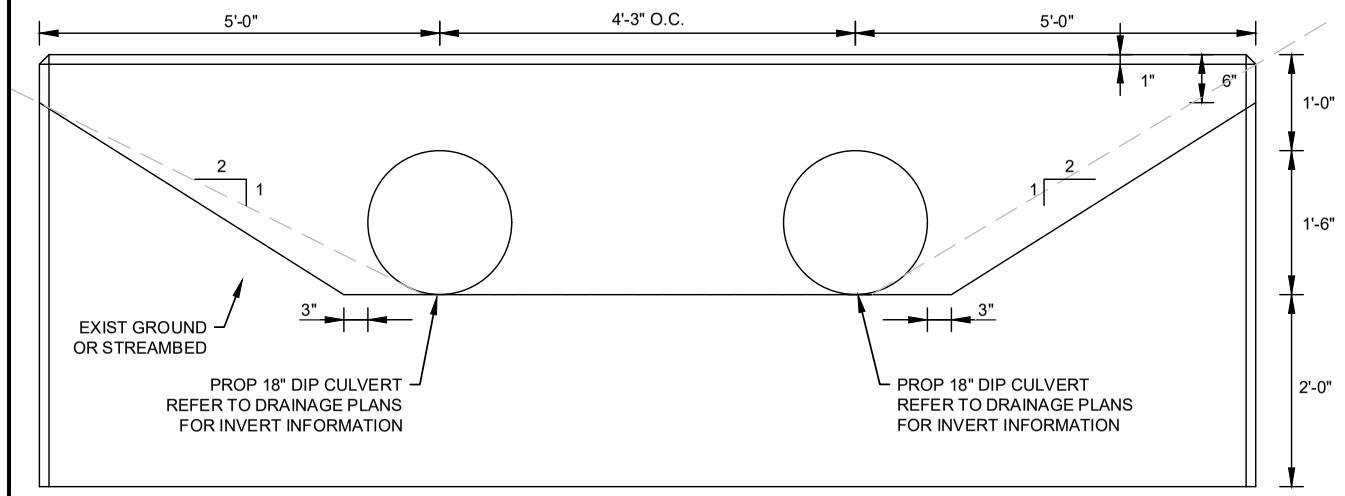
0 300 600 900 1200

SCALE: 1" = 600'

Plotted on 10-Mar-2025 1:58 PM
608944_HD(6076 DETAILS).DWG

Proposal No. 613052-131228

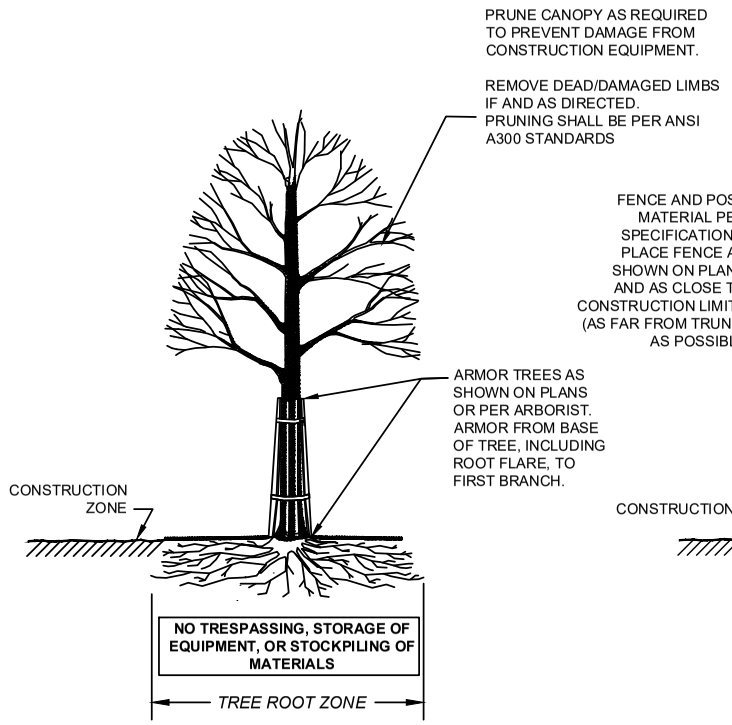
A00831 - 11



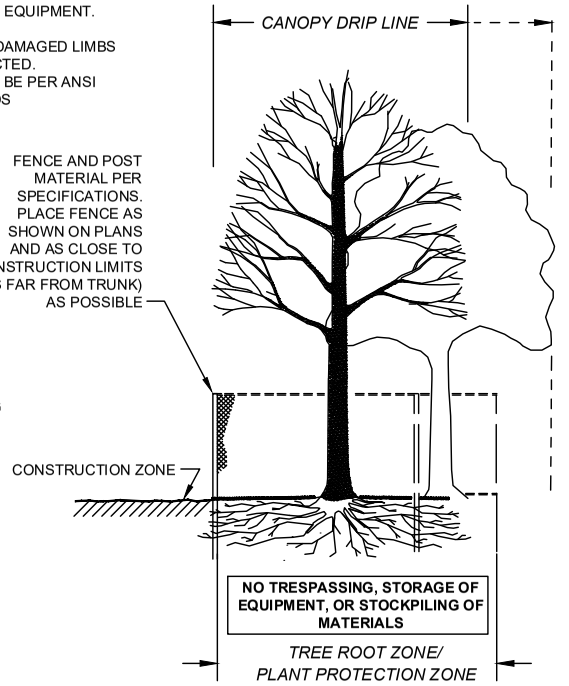
FRONT VIEW

NOTES:
1. CONCRETE MASONRY PIPE END SHALL BE CONSTRUCTED IN ACCORDANCE WITH MASSDOT STD DETAIL E 206.5.0, DESIGN NO. 12, EXCEPT FOR MODIFIED DIMENSIONS AS NOTED.
2. PROVIDE DAMP PROOFING (ITEM 970) ON ALL WALL SURFACES TO BE CONSTRUCTED BELOW GRADE

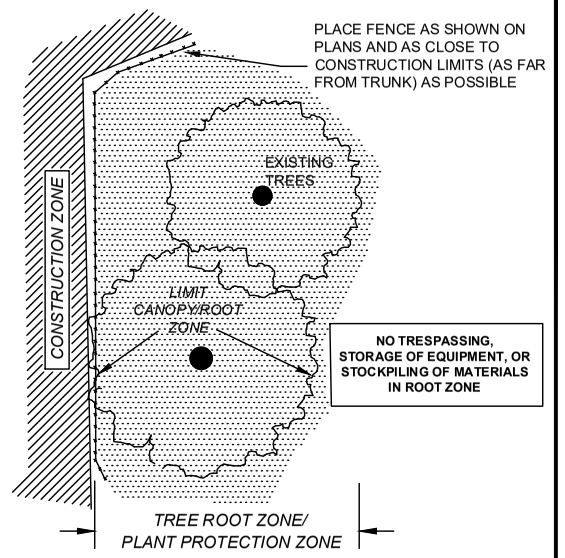
CONCRETE MASONRY PIPE END
NOT TO SCALE



SECTION - TRUNK ARMORING & PRUNING

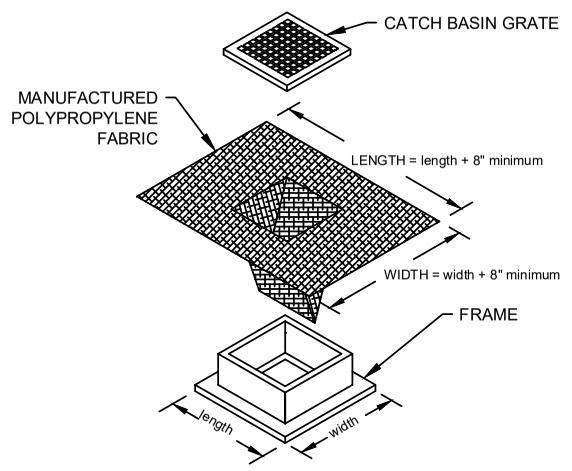


SECTION - FENCE PROTECTION OF ROOT ZONE



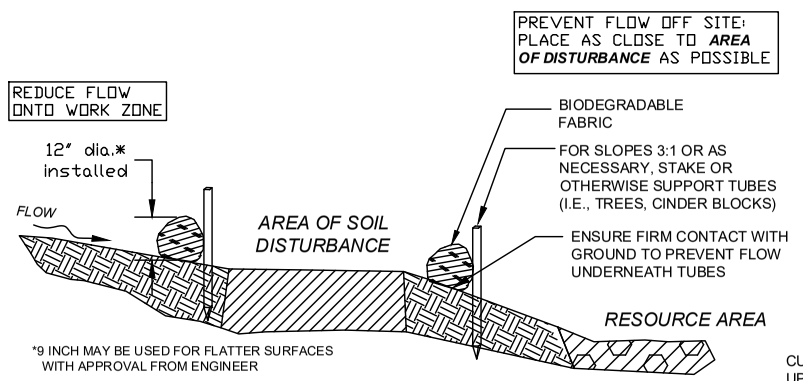
PLAN VIEW - FENCE PROTECTION OF ROOT ZONE

TREE PROTECTION DETAILS
NOT TO SCALE



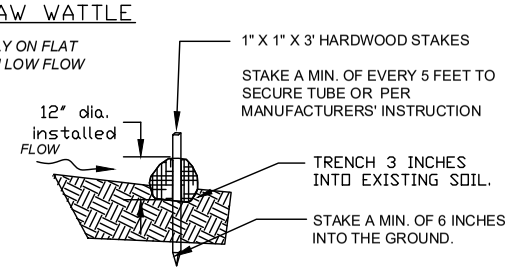
NOTES
1. LENGTH AND WIDTH OF POLYPROPYLENE FABRIC MUST EXCEED EXISTING CATCH BASIN FRAME DIMENSIONS BY A MINIMUM OF 8".
2. REMOVE CATCH BASIN GRATE AND INSTALL POLYPROPYLENE FABRIC OVER CATCH BASIN FRAME. REPLACE CATCH BASIN GRATE TO SECURE POLYPROPYLENE FABRIC IN PLACE.

CATCH BASIN EROSION CONTROL PROTECTION (TYP)
NOT TO SCALE

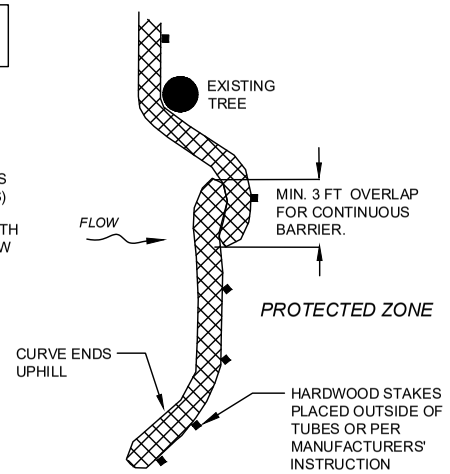


12 INCH STRAW WATTLE

TO BE USED ONLY ON FLAT SURFACES WITH LOW FLOW



SECTION



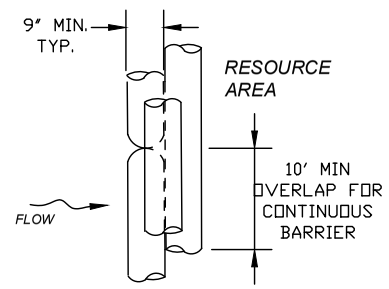
PLACE TUBE ALONG CONTOURS AND PERPENDICULAR TO FLOW.

ADJUST LOCATION AS REQUIRED FOR OPTIMUM EFFECTIVENESS. DO NOT INSTALL IN WATERWAYS.

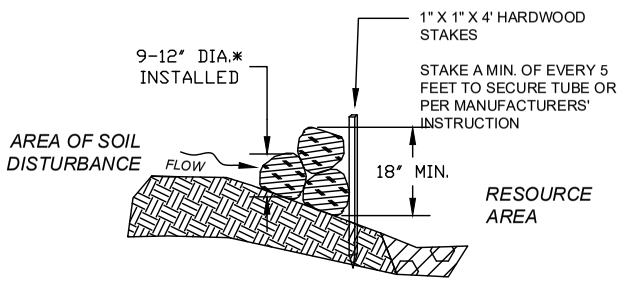
PLACE STAKES AS NEEDED TO SECURE TUBES IN PLACE.

PLAN VIEW

SEDIMENT BARRIERS - COMPOST FILTER TUBES & STRAW WATTLES
NOT TO SCALE



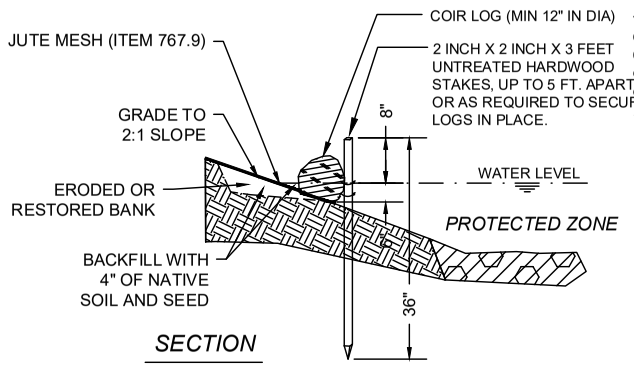
PLAN VIEW



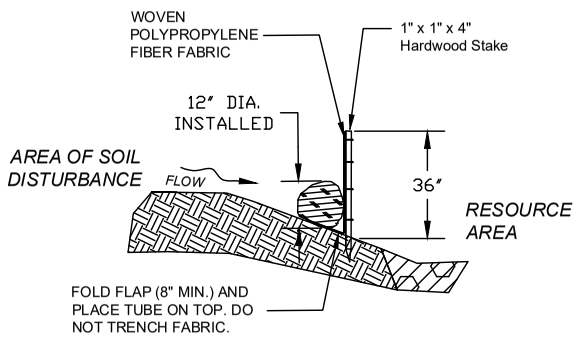
SECTION

COMPOST FILTER TUBE BERM (SLOPES 2:1 OR STEEPER)
NOT TO SCALE

CAPTURE SEDIMENT AND PREVENT FLOW OFF SITE



COIR LOG DETAIL
NOT TO SCALE



SECTION

COMPOST FILTER TUBE & SILT FENCE
NOT TO SCALE

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	5	10
PROJECT FILE NO.	613052		

CONSTRUCTION PLAN

Proposal No. 605205-131228

608944_HDI(6076 CONST).DWG Plotted on 10-Mar-2025 2:14 PM

N

1980 SHLO NO 6345

N/F
BBK MANSFIELD LLC
377 CHAUNCY ST
ASSESS. MAP 17 – PARCEL ID: 17–23
DEED BK 26384 / PAGE 38

BEGINING OF PROJECT
STA. 20+93.80
N 2836632.2105
E 728199.3596
MEET EXISTING

BEGIN GRAN EDGING +94

LIMIT OF PVMT MILLING & OVERLAY MEET EXIST

END GRAN EDGING +12

PROP GRAN EDGING, TYPE SB

PROP LOAM & SEED (TYP)

1980 SHLO NO. 6345

CHAUNCY STREET (ROUTE 106)

SAWCUT (TYP)

PVMT MILLING AND OVERLAY

PROP GRAN EDGING, TYPE SB

SAWCUT (TYP)

COMMERCIAL STREET (ROUTE 140)

PVMT MILLING AND OVERLAY

PROP VEGETAGED CHECK DAM

RET EDGING

PVMT MILLING AND OVERLAY

PROP GRAN EDGING, TYPE SB

SAWCUT (TYP)

RET EDGING

40.5'

RET EDGING

PROP GRAN EDGING, TYPE SB

PROP LANDSCAPE ISLAND

PROP GRAN EDGING, TYPE SB

MAST ARM (TYP)

PROP GRAN EDGING, TYPE SB

SAWCUT (TYP.)

PROP 6' CEM CONC ISLAND

PROP GRAN EDGING, TYPE SB

PROP BOUND (TYP.)
RET EXIST CURB

BEGIN SW MEET EXIST +09

BEGIN PROP CURB R&D EXIST CURB

SAWCUT (TYP.)

PROP BRICK BUFFER

REM TRAFFIC SIGNAL CABINET

PROP BOX WIDENING >4'

R&R ELEC HANDHOLE

PVMT MILLING AND OVERLAY

END PROP SHLO ALT NO. 9004 (SECTION 1)

SAWCUT (TYP)

PROP 4' BRICK BUFFER

1980 SHLO NO. 6345

RET MB

RET WALL

JAMES LESTER EPSTEIN
360 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–149
DEED BK 19124 / PAGE 31

RET BOUND

BEGIN PROP SHLO ALT NO. 9004 (SECTION 1)

ESTATE OF LESTER S. EPSTEIN – 1/2 INTEREST
ESTATE OF JAMES M. EPSTEIN

PROP BIKE RAMP REFER TO DETAIL

R&R CLF

PROP TREE TRIMMING

PROP 8' CC SHARED USE PATH

RELOCATE LIGHTING CABINET (BO)

PROP GRAN CURB TYPE VB

PROP LOAM & SEED (TYP)

24+06.44 ROUTE 106 (CHAUNCY STREET)=
158+85.71 ROUTE 140 (COMMERCIAL ST)

RET LIGHT & EHH

END SW +85

END GRAN CURB +00

PROP LANDSCAPE ISLAND

PROP LOAM & SEED

PROP FULL DEPTH CONSTRUCTION

PC +54.84

MA 1-6

MA 1-2

PROP PROP GRAN EDGING TYPE SB

PROP 8' CUT-THROUGH (PCR #CT5)

PROP PCR #5

PCC +61.90

PT +11.70

283+73.67

RET BOUND

PVMT MILLING AND OVERLAY

PROP 6' CEM CONC ISLAND

PROP FULL DEPTH CONSTRUCTION

PI +50.00

PROP GRAN EDGING, TYPE SB

PROP 8' CUT-THROUGH (PCR #CT2)

PROP 8' CC CUT-THRU (PCR #CT1)

PROP PCR #1

PROP GRAN CURB TYPE VB

46.1'

PROP LOAM & SEED

LIMIT OF PVMT MILLING & OVERLAY MEET EXIST

PROP PCR #2

PROP PCR #3

PROP LANDSCAPE ISLAND

END GRAN EDGING +00

40.9'

PROP GRAN EDGING,TYPE SB

COMMERCIAL STREET (ROUTE 140)

1980 SHLO NO. 6345

PROP PVMT MILLING AND OVERLAY

PROP 5' BRICK BUFFER

PROP 8' CEM CONC SW

PROP GRAN CURB, TYPE VB

PROP BRICK STRIP

PROP 4' BRICK BUFFER

PROP 8' CC SHARED USE PATH

PROP SEDIMENT CONTROL BARRIER

PROP LOAM & SEED (TYP)

PROP PCR #4

BEGIN SW +78

BEGIN CURB +71

WF3–301
WF3–302
WF3–303
WF3–304
WF3–305
WF3–306
WF3–307

ROSEWOOD REALTY TRUST
287 CHAUNCY ST
ASSESS. MAP 17 – PARCEL ID: 17–4
DEED BK 13234 / PAGE 164

RET FENCE FROM STA 25+10 TO 25+30

RET GUARDRAIL

TEMP CONST EASEMENT LINE (TYP)

R&R FENCE FROM STA 25+30 TO 26+45

RET WALL

REM GUY WIRES

PROP GRAN CURB TYPE VB

RET BOUND

PROP 4' BRICK BUFFER

RET FEN STA 26+55 STA 27+

PROP 8' CC SHARED USE PATH

PROP SEDIMENT CONTROL BARRIER

PROP LOAM & SEED (TYP)

PROP PCR #4

BEGIN SW +78

BEGIN CURB +71

1980 SHLO NO. 6345

CONTINUED ON SHEET NO. 6

CONTINUED ON SHEET NO. 12

CONTINUED ABOVE

0 20 50 100
SCALE: 1" = 40'

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	6	10
PROJECT FILE NO.		613052	

CONSTRUCTION PLAN

Proposal No. 613052-131228

A00831 - 13

608944_HDI6076 CONST).DWG Plotted on 10-Mar-2025 2:15 PM

IMPACTS LEGEND
- BANK (TEMPORARY)
- BANK (PERMANENT)
- WATERS OF THE US (TEMPORARY)
- WATERS OF THE US (PERMANENT)

N/F UNITED STATES POSTAL SERVICE 12 GILES PL ASSESS. MAP 17 PARCEL ID: 17-7 DEED BK 3528 / PAGE 126

ROSEWOOD REALTY TRUST 287 CHAUNCY ST ASSESS. MAP 17 – PARCEL ID: 17-4 DEED BK 13234 / PAGE 164

GEM REALTY TRUST 273 CHAUNCY ST ASSESS. MAP 17 – PARCEL ID: 17-6 DEED BK 21367 / PAGE 196

MANISHA REALTY, LLC 292 CHAUNCY ST ASSESS. MAP 20 – PARCEL ID: 20-183 DEED BK 79 / PAGE 80 LC. CERT. #14689 LC. CASE #26023

MANISHA REALTY, LLC 282 CHAUNCY ST ASSESS. MAP 20 – PARCEL ID: 20-183 DEED BK 79 / PAGE 79 LC. CERT. #14688 LC. CASE #26023

BROOKSIDE OFFICE CONDO PAR 272 CHAUNCY ST ASSESS. MAP 20 PARCEL ID: 20-186 LC. DEED BK C6 / PAGE 1 LD. CERT. #C6 LC. CASE #28116

REFER TO SHEET 10 FOR QUANTIFICATION OF IMPACTS

REGRADE TEMPORARY BANK IMPACT TO MATCH EXISTING. RESTORE WITH WETLAND SEED - RIPARIAN MIX (ITEM 765.553) STABILIZE SLOPE WITH COIR LOG (ITEM 767.112) AND JUTE MESH (ITEM 767.9)

BEGIN PROP SHLO ALT NO. 9004 (SECTION 3)

END PROP SHLO ALT NO. 9004 (SECTION 2)

BEGIN PROP SHLO ALT NO. 9004 (SECTION 2)

CONTINUED ON SHEET NO. 5

CONTINUED ON SHEET NO. 7

SCALE: 1" = 40'

Proposal No. 613205Z-131228

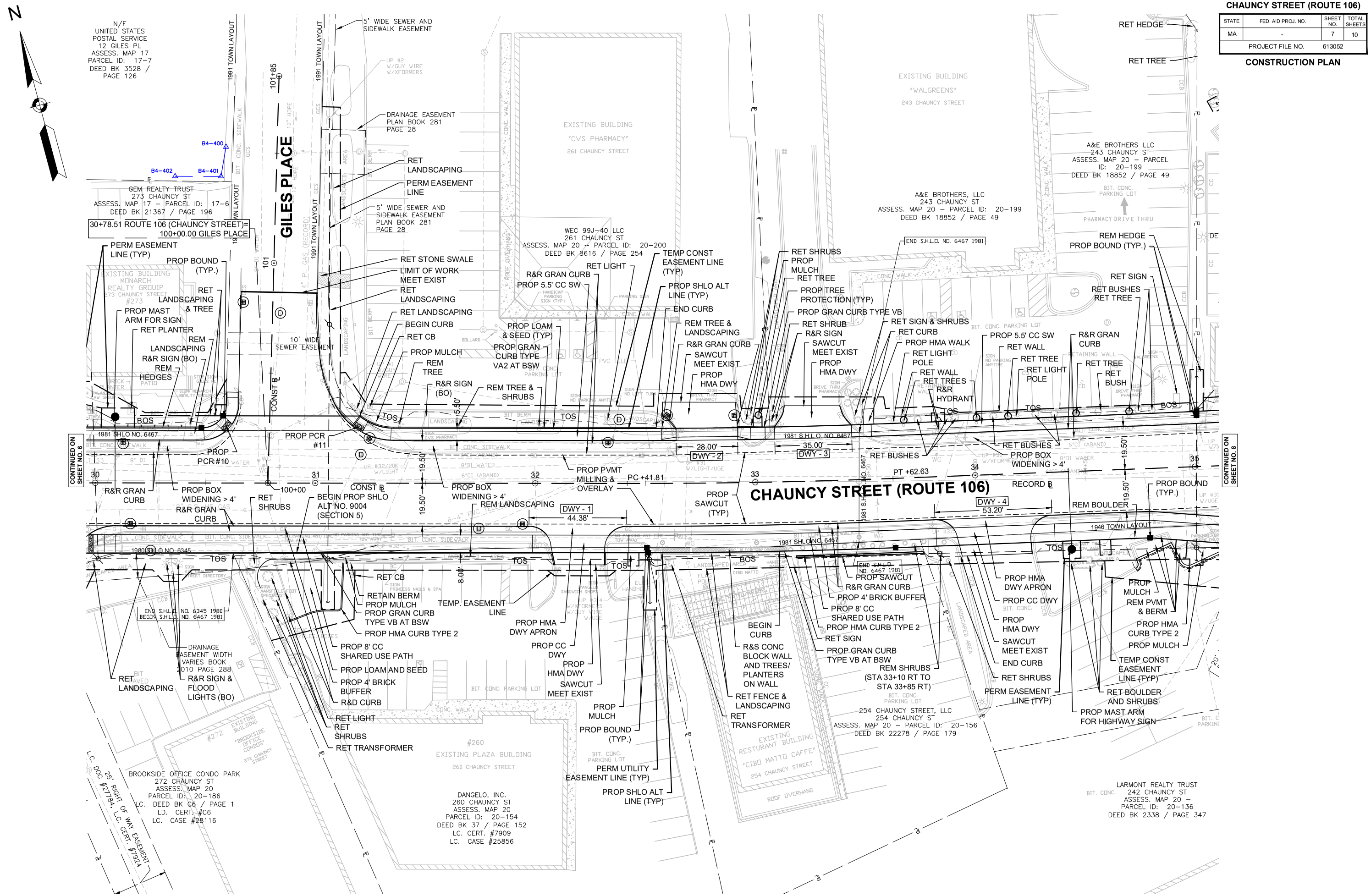
A00831 - 14

608944_HDI6076 CONST).DWG Plotted on 10-Mar-2025 2:15 PM

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	7	10
PROJECT FILE NO.	613052		

CONSTRUCTION PLAN



MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	8	10
PROJECT FILE NO.	613052		

CONSTRUCTION PLAN

608944_HDI(6076 CONST).DWG Plotted on 10-Mar-2025 2:16 PM

A00831 - 15

Proposal No. 132052-131228

CONTINUED ON SHEET NO. 2

RET HEDGE
LIMIT OF MILL & OVERLAY MEET EXIST +07
RET TREE
LIMIT OF SW MEET EXIST
REM SHRUB
PROP CC SW
REM SHRUB
RET LIGHT
ASSESS. MAP 20 – PARCEL ID: 20–181
LIMIT OF SW DEED BK 16322 / PAGE 3 MEET EXIST
PROP CC SW
PROP CC DWY
PROP HMA DWY
PROP CC SW
R&R GRAN CURB
RET CONC. CURB
PROP CC DWY
RET CONC. CURB
PROP CC SW
R&R GRAN CURB
RET SIGN
RET LIGHT (SEE NOTE 1)
RET TREE
R&R GRAN CURB
RET LIGHT (SEE NOTE 1)
PROP PVMT MILLING & OVERLAY
RET LANDSCAPING
PROP CC SW
PROP CC WALK
PROP FULL DEPTH CONSTRUCTION
PROP CC CUT THROUGH (PCR #CT12)
PROP PCR #12
PROP BOUND (TYP.)
R&R GRAN CURB
PROP PCR #16
PROP CC ISLAND
PROP MA (TYP)
PROP GRAN CURB TYPE VB
PROP BOX WIDENING > 4'
PROP BOX WIDEN > 4'
PROP PCR #17
PROP PCR #19
PROP PCR #18
PROP PCR #15
PROP BOUND (TYP.)
END PROP SHLO ALT NO. 9004 (SECTION 5)
R&R CURB
END R&R CURB AT BSW
R&R GRAN CURB TYPE VB
PROP CC SW
PROP TEMP TREE PROTECTION FENCE
END GRAN CURB
PROP PCR #20
PROP PCR #21
END GRAN CURB, CC SW, MEET EXISTING
LIMIT OF MILL & OVERLAY. MEET EXIST +58
PROP BOUND (TYP.)
PROP GRAN EDGING TYPE SB
PROP SAWCUT
PROP PCR #14
PROP BOUND (TYP.)
REM HEDGE
BOUND (TYP.)
RET SIGN
RET BUSHES
RET BOLLARD
PROP BOUND (TYP.)
BOULDER
PROP MULCH
REM PVMT & BERM
PROP HMA CURB TYPE 2
PROP MULCH
TEMP CONST EASEMENT LINE (TYP)
RET SIGN
END MULCH BEGIN LOAM & SEED
PROP SHLO ALT LINE (TYP)
PROP LOAM & SEED
REM PLANTER & SHRUBS
PROP 4' BRICK BUFFER
BEGIN R&R CURB AT BSW
PROP OHW
TRIM TREES AS REQUIRED FOR
PROP 8' CC SHARED USE PATH
PROP LOAM & SEED
REM LANDSCAPE WITHIN GRADING LIMITS
PROP PEDESTRIAN SIGNAL (TYP)
PROP LOAM & SEED
REM EXIST PAVEMENT
PROP CC WALKWAY
RET LIGHT
RET SIGN
RET TREE PROTECTION (TYP)
PROP TREE
RET TREE
PROP 5'-0" HMA DWY
PROP CC DWY
RET SIGN
PROP 3'-9" CC WALK
PROP CC SW
R&R MEMORIAL & SIGN
BEGIN S.H.L.D. NO. 4230 1954
235 CHAUNCY STREET
EXISTING BUILDING "DOMINO'S"
END PROP SHLO ALT NO. 9004 (SECTION 3)
PI +54.68
PC +13.70
R&R GRAN CURB
PROP BOX WIDENING > 4'
PROP BOUND (TYP.)
1946 TOWN LAYOUT
1945 TOWN LAYOUT
1954 SHLO NO. 4230
1964 SHLO NO. 4230
BOS
TOS
END 1946 TOWN LAYOUT
BEGIN S.H.L.D. NO. 4230 1954
END S.H.L.D. NO. 4230 1954
END 1946 TOWN LAYOUT
BEGIN PROP SHLO ALT NO. 9004 (SECTION 6)
PROP BOUND (TYP.)
RET "CHASE" SIGN & LANDSCAPING
REM TREE
PROP LOAM AND SEED
PERM EASEMENT LINE
PROP SHLO ALT LINE
TEMPORARY EASEMENT LINE (TYP)
PROP BOUND (TYP.)
R&R GRAN CURB
PROP 4' BRICK BUFFER
LIMIT OF SW MEET EXIST
PROP 8' CC SW
1946 TOWN LAYOUT
CONST ℄
PROP PVMT MILLING & OVERLAY
R&R GRAN CURB
PT +45.36
1946 TOWN LAYOUT
END S.H.L.D. NO. 4230 1954 END 1946 TOWN LAYOUT
BEGIN S.H.L.D. ALTERNATION NO. 4737 1958
1958 SHLO ALT NO. 4737
PROP CC DWY
PROP HMA DWY
SAWCUT MEET EXIST
END GRAN CURB TYPE VB AT BSW
PROP GRAN CURB TYPE VB
PROP HMA DWY AT BACK OF SIDEWALK
PROP CC SIDEWALK
REM BOUNDS
REM CONC PAD
BEGIN GRAN CURB TYPE VB
END PROP SHLO ALT NO. 9004 (SECTION 6)
PROP HMA DWY AT BACK OF SW
PROP CC SW
SAWCUT MEET EXIST
PROP HMA DWY
PROP CC DWY
RET SHRUB
LIMIT OF SW MEET EXIST
END GRAN CURB
R&D SHRUBS
END S.H.L.D. NO. 4230 1954
BEGIN S.H.L.D. ALTERNATION NO. 4737 1958
PROP CC DWY
PROP HMA DWY
PROP OH SERVICE CONNECTION
PROP BOUND (TYP.)
END OF MILL & OVERLAY
LIMIT OF SW MEET EXIST
RET TREE
RET SHRUB
RET CURB
RET BIT CURB
RECORD ℄
RET TREE
END OF PROJECT
STA. 40+32.78
N 2836297.5019
E 730083.8662
MEET EXISTING
N

COPELAND DRIVE
CHAUNCY STREET (ROUTE 106)
WOOD AVE (PRIVATE)
COPELAND DRIVE

COBBLE HILL DEVELOPMENT, LLC, LOGAN ATWOOD, LLC, AND MANSFIELD III, LLC
205–215 CHAUNCY ST, 234 CENTRAL ST
ASSESS. MAP 20 – PARCEL ID: 20–177
DEED BK 27897 / PAGE 106

&E BROTHERS LLC
243 CHAUNCY ST
SS. MAP 20 – PARCEL ID: 20–199
BK 18852 / PAGE 49

JT BUILDING & DEVELOPMENT, LLC
235 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–165
DEED BK 12238 / PAGE 334

CHASE BANK
215 CHAUNCY STREET

CHAUNCY COURT CONDOMINIUM
200 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–176
DEED BK 3980 / PAGE 149

TOKEN ENTERPRISES, INC
ASSESS. MAP 20 – PARCEL ID: 20–193
DEED BK 1662 / PAGE 251

BRI, INC
99 COPELAND DR
ASSESS. MAP 20 – PARCEL ID: 20–176
DEED BK 2897 / PAGE 217

TOKEN ENTERPRISES, INC
93 COPELAND DR
ASSESS. MAP 20 – PARCEL ID: 20–193
DEED BK 1662 / PAGE 251

LARMONT REALTY TRUST
242 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–136
DEED BK 2338 / PAGE 347

COPELAND SQUARE PROFESSIONAL BUILDING CONDOMINIUM
100 COPELAND DR
ASSESS. MAP 20 – PARCEL ID: 20–139
DEED BK 3232 / PAGE 85

36+74.26 ROUTE 106 (CHAUNCY STREET)= 71+95.52 COPELAND DRIVE

EXISTING OFFICE BUILDING
200 CHAUNCY STREET

EXISTING BUILDING
"KINDEY DEW DONUTS"
99 COPELAND DRIVE

EXISTING BUILDING
"CAR WASH"
93 COPELAND DRIVE

0 20 50 100
SCALE: 1" = 40'

NOTES:

1. EXISTING LIGHTS SHALL BE REMOVED AND RESET (BY OTHERS) IF NECESSARY FOR INSTALLATION OF OVERHEAD WIRE OR AS DIRECTED BY ENGINEER.

608944_HD(6076 DRAIN UTILITY).DWG Plotted on 10-Mar-2025 2:05 PM

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	9	10
PROJECT FILE NO.		613052	

DRAINAGE & UTILITY PLAN

NOTES:
1. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY OWNER TO PROVIDE TEMPORARY UTILITY SUPPORT, AS NEEDED. COSTS ASSOCIATED WITH TEMPORARY UTILITY SUPPORT SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS CONTRACT ITEMS.

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
CB-28-B	29+49.9 18.5' RT	168.43		I=164.05' (EX-DMH-28)	LOW POINT
CBCI-27	26+97.7 26.3' RT	171.50		I=168.30' (EX-DMH-27)	FLAT TOP 1 COURSE BRICK
CBCI-28-A	29+22.1 18.5' RT	168.47		I=164.00' (DMH-28)	FLAT TOP
CBCI-29-A	29+49.6 -19.1' LT	168.42		I=164.90' (DMH-29)	LOW POINT FLAT TOP
CBCI-29-B	29+68.2 -18.5' LT	168.45		I=164.90' (DMH-29)	
DMH-28	29+21.9 0.7' RT	168.83	I = 163.8' ± (EXIST) I=163.90' (CBCI-28-A)	I=163.80' (EX-DMH-28)	BUILD ON EXIST
DMH-29	29+59.9 -17.1' LT	168.46	I=164.80' (CBCI-29-A) I=164.80' (CBCI-29-B)	I=164.70' (EX-DMH-28)	FLAT TOP

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
EX-DMH-27	27+09.5 3.0' RT	171.70	I = 166.1' ± (EXIST) I = 166.4' ± (EXIST) I=168.10' (CBCI-27)	I = 166.0' ± (EXIST)	
EX-DMH-28	29+59.8 0.1' RT	168.80	I=163.30' (DMH-28) I=163.50' (DMH-29) I=163.70' (CB-28-B)	I = 163.1' ± (EXIST)	

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
CBCI-30	30+16 18.5' RT	168.66		I=164.70' (EX-DMH-30)	
CBCI-31	30+12.7 -17.9' LT	168.65		I=164.70' (EX-DMH-30)	FLAT TOP OFFSET COVER
DMH-30-A	30+25.2 30.7' RT	169.37	I = 164.2' ± (EXIST)	I=164.10' (DMH-30-B)	BUILD ON EXIST
DMH-30-B	29+92.3 40.1' RT	169.11	I=163.70' (DMH-30-A) I=163.70' (EX-DMH-30)	I = 163.6' ± (EXIST)	BUILD ON EXIST
DMH-300	29+78.8 -21.7' LT	169.00	I = 164.3' ± MATCH PROP CULVERT	MATCH PROP CULVERT	
EX-DMH-30	29+96.4 21.2' RT	168.53	I = 164.3' ± (EXIST) I=164.50' (CBCI-30)	I=164.00' (DMH-30-B)	

REM UP #34-2 & GUY WIRES (BO)
REMODEL CB REM F&G, PROP F&C LOCATE GRATE ON CURB LINE PROP CURB INLET
REM UP #34-1 (BO)
PROP 1-3P PRIMARY ELEC SERVICE RELOCATION: 6" RGS RISER & SWEEP, 155' - 6" PVC CONC ENCASED CONDUIT, CONNECT TO EXIST PAD TRANSFORMER (BO)
REFER TO SHEET 10 FOR QUANTIFICATION OF IMPACTS
PROP CONC MASONRY PIPE END SEE DETAIL
R&R 45' UP #309S PROP 15' GUY (BO)
REM UP #33 (BO) 101 LF - 18" RCP (REM EXIST)
CONNECT 5 LF - 12" RCP TO EXIST RCP AT JOINT
REM UP #35/1S (BO)
R&R 55' UP #308 (BO)
CONNECT TO EXIST DUCT BANK (BO)
PROP 6-4" PVC (BO)
R&R TEL CABINET (BO)
RELOCATE UG 1-3P PRIMARY ELEC SERVICE (BO)
R&R 55' UP #309 PROP 12' GUY (BO)
ADJ TMH (BO)
R&R 55' UP #307 PROP 2-20' GUYS (BO)
R&R 55' UP #312 (BO) SEE NOTE 1
CIT-157
14 LF - 12" RCP
CB-157
26 LF - 12" DI
CBCI-27
REM CB
11 LF - 12" RCP
17 LF - 12" RCP
CBCI-29-A (LP)
38 LF - 24" DI (REM EXIST)
8 LF - 12" RCP
DMH-29
DMH-300
CBCI-29-B
18 LF - 10" DI
21 LF - 12" RCP (REM EXIST)
DMH-28
ADJ EX-DMH-27
ADJ EX-DMH-30
20 LF - 12" RCP
CBCI-30
REM CB & PIPE
CBCI-31
34 LF - 12" RCP
DMH-30-A
19 LF - 12" DI
DMH-30-B
CBCI-28-A
CB-28-B (LP)
ADJ EX-DMH-28
PROP 72 LF - 18" DIP REM EXIST
REM DMH & PIPES
TEST PIT TO CONFIRM EXIST INVERT
DRAINAGE EASEMENT WIDTH VARIES BOOK 2010 PAGE 288
PROP F&C
ADJ (BO)
REM CB

CHAUNCY STREET (ROUTE 106)
COMMERCIAL STREET (ROUTE 140)

ROSEWOOD REALTY TRUST
287 CHAUNCY ST
ASSESS. MAP 17 – PARCEL ID: 17–4
DEED BK 13234 / PAGE 164

N/F
UNITED STATES POSTAL SERVICE
12 GILES PL
ASSESS. MAP 17 PARCEL ID: 17–7
DEED BK 3528 / PAGE 126

GEM REALTY TRUST
273 CHAUNCY ST
ASSESS. MAP 17 – PARCEL ID: 17–6
DEED BK 21367 / PAGE 196

EXISTING BUILDING
MONARCH REALTY GROUP
273 CHAUNCY STREET #273

MANISHA REALTY, LLC
282 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–183
DEED BK 79 / PAGE 79
LC. CERT. #14688
LC. CASE #26023

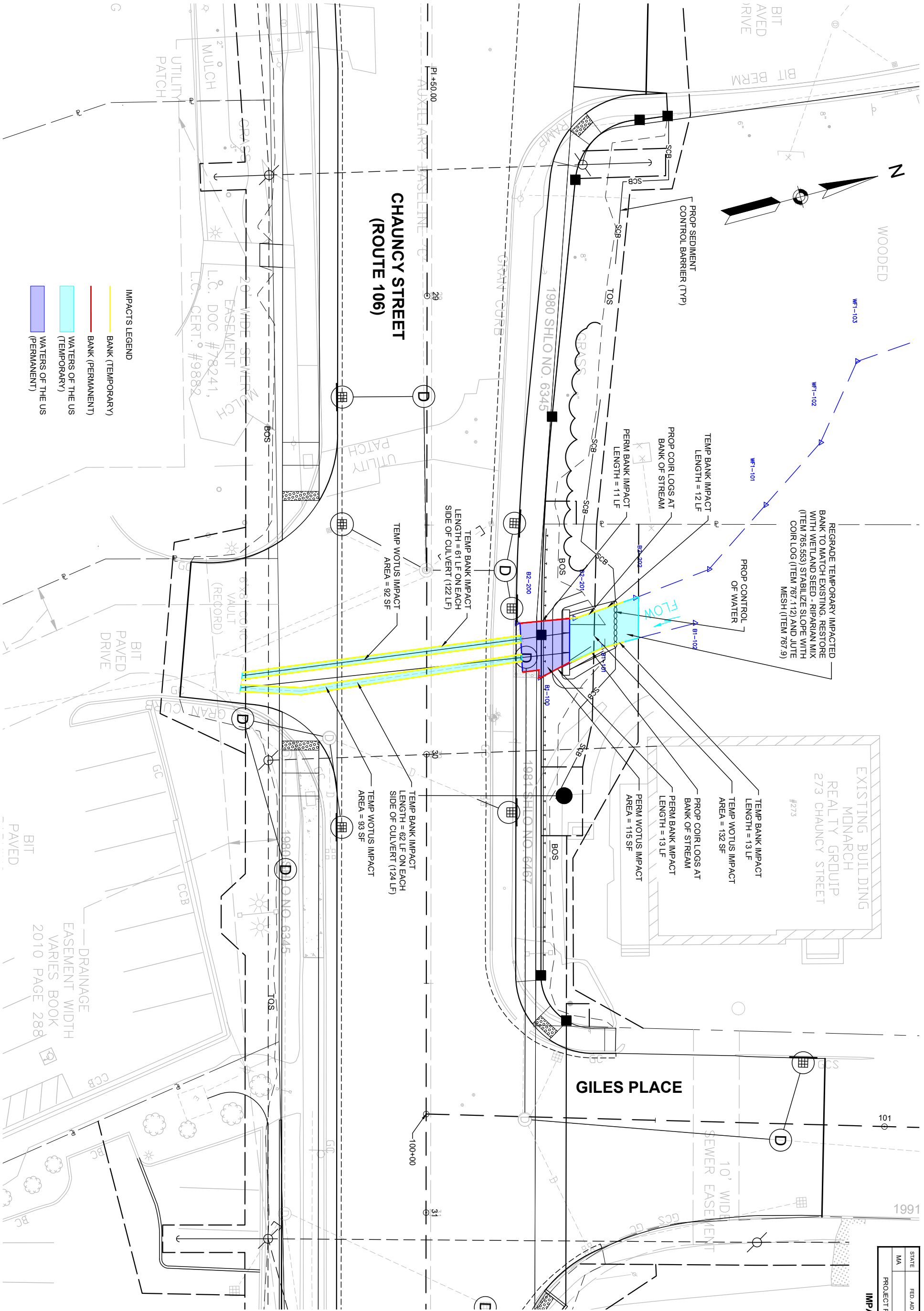
BROOKSIDE OFFICE CONDO PAR
272 CHAUNCY ST
ASSESS. MAP 20
PARCEL ID: 20–186
LC. DEED BK 65 / PAGE 1
LD. CERT. #C6
LC. CASE #28116

20' WIDE SEWER EASEMENT L.C. DOC #78241, L.C. CERT. #9882
70' WIDE SEWER EASEMENT L.C. DOC #26554, L.C. CERT. #7924, 8556, 8018 AND C&a
20' WIDE SEWER ACCESS & UTILITY EASEMENT L.C. DOC #78241, L.C. CERT. #9882
25' RIGHT OF WAY EASEMENT L.C. DOC #27784, L.C. CERT. #7924

1980 SHLO NO. 6345
1980 SHLO NO. 6467
1981 TAUNTON LAYOUT

IMPACTS LEGEND
- BANK (TEMPORARY)
- BANK (PERMANENT)
- WATERS OF THE US (TEMPORARY)
- WATERS OF THE US (PERMANENT)

0 20 50 100
SCALE: 1" = 40'



STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	10	10
PROJECT FILE NO. 613052			

MANSFIELD
CHAUNCY STREET (ROUTE 106)
IMPACT PLAN

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General Permit No.: NAE-2022-02649 Final Effective Date: June 2, 2023
Applicant: General Public, Commonwealth of Massachusetts Expiration Date: June 1, 2028

Department of the Army
General Permits for the Commonwealth of Massachusetts

The New England District of the U.S. Army Corps of Engineers (USACE) hereby issues twenty-five (25) regional general permits (GPs) for activities subject to USACE jurisdiction in waters of the U.S., including wetlands, navigable waters within the Commonwealth of Massachusetts and adjacent ocean waters to the seaward limit of the outer continental shelf. The Massachusetts GPs (hereafter referred to as the MA GP or GP) are issued in accordance with USACE regulations at 33 CFR 320 – 332 [see 33 CFR 325.5(c)(1)]. These GPs establish criteria and contain permit conditions to ensure that the authorized activities have no more than minimal individual and cumulative adverse impacts to the environment.

This document contains the following sections: Pages

SECTION I	Statutory Authorities & Regulated Activities	2
SECTION II	Review Categories & Application Procedures	3-7
SECTION III	Massachusetts General Permits	8-34
SECTION IV	General Conditions	35-51
SECTION V	Mitigation Standards	52-54
SECTION VI	Federal & State Agency Contact Information & Websites	55-56
SECTION VII	Definitions & Acronyms	57-66
APPENDIX A	Guidance for Section 106 NHPA Compliance in Massachusetts	67-71
APPENDIX B	Pre-Construction Notification	72-77
APPENDIX C	Self-Verification Notification	78-81
APPENDIX D	Pre-Construction Notification Application Checklist	82-88

In issuing these GPs, the Federal Government does not assume any liability for the following: (a) damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes; (b) damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the U.S. in the public interest; (c) damages to persons, property or to other permitted or unpermitted activities or structures caused by the activity authorized by any of the GPs; (d) design or construction deficiencies associated with the permitted work; or (e) damage claims associated with any future modification, suspension or revocation of these permits.

Tammy R. Turley 02 June 2023

Tammy R. Turley Date
Chief, Regulatory Division

SECTION I. STATUTORY AUTHORITES & REGULATED ACTIVITIES

1. Work Requiring USACE Authorization

a. Section 10: Work and structures that are located in, over, under or that affect navigable waters of the United States (U.S.) (see 33 CFR 329). The USACE regulates these activities under section 10 of the Rivers and Harbors Act of 1899 (see 33 CFR 322).

b. Section 404: The discharge of dredged or fill material into waters of the U.S (see 33 CFR 328). The USACE regulates these activities under Section 404 of the Clean Water Act (CWA). The term "discharge of dredged or fill material" also includes certain discharges resulting from excavation. Applicants should contact USACE to determine if a particular excavation discharge occurring within waters of the U.S., is a regulated activity. See 33 CFR 323.4 of the CWA for exempted activities.

For additional information on the limits of USACE jurisdiction, please see: https://www.nae.usace.army.mil/Portals/74/docs/regulatory/JurisdictionalLimits/Jurisdictional_Limits_Brochure.pdf

2. Authority to Issue General Permits

a. In accordance with 33 CFR 322.2(f), 325.2(e)(2), and 325.5(c), USACE may issue regional general permits authorizing activities under Section 10 of the RHA.

b. In accordance with Section 404(e) of the CWA, 33 USC 1344(e), and 33 CFR 323.2(h), 325.2(e)(2), and 325.5(c), after notice and opportunity for public hearing, USACE may issue regional general permits for any category of activities involving discharges of dredged or fill material if the activities in such category are similar in nature, will cause only minimal adverse environmental effects when performed separately, and will only have minimal cumulative adverse effect on the environment.

3. Related Laws

33 CFR 320.3 includes a list of related laws including, but not limited to, Section 408 of the Rivers and Harbors Act of 1899, Section 401 of the Clean Water Act, Section 402 of the Clean Water Act, Section 307(c) of the Coastal Zone Management Act of 1972, Section 106 of the National Historic Preservation Act of 1966, Section 7 of the Endangered Species Act, the Fish and Wildlife Coordination Act of 1956, the Magnuson-Stevens Fishery Conservation and Management Act, the Fish and Wildlife Coordination Act, Section 302 of the Marine Protection, Research and Sanctuaries Act of 1972, Section 7(a) of the Wild and Scenic Rivers Act, the Golden Eagle Protection Act, and the Migratory Bird Treaty Act.

SECTION II. REVIEW CATEGORIES & APPLICATION PROCEDURES

To qualify under these GPs, the design, construction, and maintenance associated with each proposed activity must meet the terms and eligibility criteria listed in Section III, all applicable general conditions (GCs) in Section IV, and any specific mitigation requirements in Section V. Applicants should first review the GPs to see if a project is eligible for authorization under one or more of the GPs within this document. Any activity not specifically listed may still be eligible for authorization under these GPs; applicants are advised to contact USACE for specific eligibility determination.

Please note that these GPs allow for Self-Verification (SV) contingent upon meeting all criteria and with full adherence to all GCs. Projects that do not qualify for SV, may meet criteria for Pre-Constriction Notification (PCN). Tables are provided under each activity, which outline criteria for SV and PCN. Activities that do not meet criteria for SV or PCN may require review as an Individual Permit (IP). Activities may require a PCN or IP as noted in Sections III and/or IV of this GP. Notwithstanding compliance with the terms of these GPs, USACE retains discretionary authority to require either PCN review or IP review on a case-by-case basis for any project based on concerns for the environment or for any of the other public interest factors found in 33 CFR 320.4(a). These GPs also do not replace or change those activities identified as exempt from USACE regulation (33 CFR 323.4).

1. Pre-Application Assistance

Prospective applicants may request a pre-application meeting to address any questions they may have. USACE may also request a pre-application meeting or additional information to facilitate review of the request. Pre-application meetings and/or site visits help streamline the authorization process by alerting the prospective applicant to potentially time-consuming factors that may arise during the evaluation of their project (e.g., avoidance, minimization and compensatory mitigation requirements, historic properties, endangered species, essential fish habitat, impacts to federal projects, and/or dredging of contaminated sediments).

To schedule a pre-application meeting, present questions, or if you need further assistance, please contact USACE at:

Email: cenae-r-ma@usace.army.mil (strongly preferred) Phone: (978) 318-8338

Mail: U.S. Army Corps of Engineers
New England District
Regulatory Division, Massachusetts Section
696 Virginia Road
Concord, MA 01742

2. Submitting a Request

Please follow the procedures outlined in Sections II.2-5 when requesting an SV or applying for PCN authorization for activities covered by these GPs. The GPs are provided in Section III below. For SV-eligible projects, the Self-Verification Notification (SVN) must be submitted within 30 days of commencing work. Otherwise, a Pre-Construction Notification (PCN) must be submitted for work that is not SV-eligible. Please include appropriate drawings and attachments and submit your request using the mailbox identified in Section II.4 or II.5 below. USACE will promptly confirm receipt of your request and notify you in the event additional information is required. Guidance on

how to submit electronic correspondence is located on the NAE Regulatory website here: https://www.nae.usace.army.mil/Missions/Regulatory/Submitting-Electronic-Correspondence.

3. Local, State & Federal Approvals

Applicants are responsible for applying for and obtaining any required local, state, and federal permits or approvals. These must be obtained prior to the commencement of work in waters. Such authorizations may include a Water Quality Certification, a Coastal Zone Management Act consistency determination, and other approvals as noted below. Authorization under these GPs does not obviate the need for the permittee to obtain other Federal, State, or local permits, approvals, or authorizations required by law.

I. Water Quality Certification under Section 401 of the Federal Clean Water Act (33 USC 1341).
Applicants are responsible for determining the appropriate 401 Water quality Certification (WQC) requirements and submitting this information to the USACE at the time of their PCN application or when completing their SVN. Applicants that are unsure of whether their activity has been certified should contact MassDEP, or EPA Region 1 when the activity is located on tribal lands, for a determination. The 401 WQC requirement must be satisfied by acquiring one of the following WQCs from MassDEP (see GC 8):

General 401 WQC: The MassDEP issued a WQC on April 21, 2023 conditionally certifies all activities in GPs 1 – 24 eligible for SV and PCN so long as the activity is described in 314 CMR 9.03, and is not an activity described in 314 CMR 9.04, and so long as the activity meets all other requirements, terms and conditions of this WQC. The MassDEP WQC also conditionally certifies activities described in GP 25 so long as the activity meets all other conditions of the WQC. Emergency projects described in GP 25 must obtain an emergency certification or otherwise be authorized pursuant to 310 CMR 10.06, qualify under a Severe Weather Emergency Declaration pursuant to 310 CMR 10.06(8) issued by the MassDEP, or meet the requirements of 9.12(2) or (3) in order to be certified under the WQC

Applicants should refer to the following link to determine if their activity is eligible: *https://www.nae.usace.army.mil/Missions/Regulatory/ State-General-Permits/ Massachusetts-General-Permit/*. If eligible, you must comply with all applicable WQC conditions. Activities listed in 314 CMR 9.03 that are not exempt from the Wetland Protection Act must have a valid Final Order of Conditions (OOC) or Final Restoration Order of Conditions pursuant to 310 CMR 10.00 to be eligible under the General 401 WQC.

Individual 401 WQC: In the event the proposed activity is not covered by the general WQC, applicants shall contact MassDEP and apply for an individual 401 WQC if their activity does not qualify for a General 401 WQC as outlined above. MassDEP may issue, waive, or deny the individual 401 WQC on a case-by-case basis. All activities listed in 314 CMR 9.04 must obtain an individual 401 WQC from MassDEP to be eligible under these GPs. When an Individual 401 WQC is required for *PCN activities*, the applicant shall submit their Individual 401 WQC application concurrently to MassDEP and the USACE to comply with 40 CFR 121.

Activities Proposed on Tribal Lands: When an activity is proposed on Tribal lands, the applicant shall refer to the general 401 WQCs granted by the Environmental Protection Agency (EPA), Region 1 on May 15, 2023. These 401 WQCs are located on the USACE Regulatory website: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/.

II. Coastal Zone Management Act Federal Consistency Concurrence pursuant to Section 307 of the CZMA of 1972, as amended. Federal consistency concurrence is required for all activities located within the coastal zone, unless determined otherwise by the Massachusetts Office of Coastal Zone Management (MA CZM) (see GC 9). As applicable, this requirement must be satisfied by acquiring one of the following from the MA CZM:

General CZM Federal Consistency Concurrence (General Concurrence): MA CZM has granted General Concurrence for all SV and PCN activities for GPs 1-25 and this can be found at: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/. The applicant must obtain all applicable permits and approvals prior to the commencement of work in USACE jurisdiction (i.e., construction begins on site). For SVs, General Concurrence is automatically granted and no further action is required from the applicant. For PCNs, the USACE will coordinate with MA CZM to acquire General Concurrence as part of the PCN application review. During review of the PCN application, USACE may request additional information from the applicant to support CZM's evaluation of the activity.

Individual CZM Federal Consistency Concurrence (Individual Concurrence): In certain cases, MA CZM may elevate any GP activity 1-25 to require Individual Concurrence. The applicant must contact MA CZM and follow the procedures to obtain Individual Concurrence as determined appropriate by MA CZM.

The MA CZM program includes five regional offices that serve 78 coastal municipalities. The following map provides more information about these offices: https://www.mass.gov/service-details/czm-regions-coastal-communities-and-coastal-zone-boundary

III. Other Approvals: Approvals typically required in Massachusetts include, but are not limited to, a Chapter 91 Permit/License, Massachusetts Environmental Protection Act (MEPA) review, Wetlands Protection Act Order of Conditions, and/or Aquaculture Certification. *Applicants should also be aware that USACE may not be able to render a permit decision in the event the proposed activity is denied by another local, state and/or federal agency.*

4. Procedures for Self-Verification (SV) Eligible Projects

If the activity is eligible for an SV, the Self-Verification Notification (SVN) must be completed prior to the start of project construction and submitted to USACE within 30 days of commencing work. The purpose of the SVN is to provide applicants with a tool to assist them when determining if the activity as proposed is SV-eligible. The following GPs do not require submission of the SVN: GP 1 (SV #1), GP 3 (SV #2-3), GP 4 (SV #2), GP 11, GP 12 (note #2), GP 14 (see note), GP 15 (see note), and GP 24 (SV #3). **For the activities not listed above, the SVN must be completed prior to the start of work and be kept on site at all times during project construction.** The applicant shall not begin work for SV-eligible activities until they have completely verified the bulleted items below.

Digital submittals by email are **strongly encouraged** to facilitate the most efficient processing of the SVN submittal. Please communicate with USACE staff if you are unable to provide a digital copy. Addresses are cenae-r-ma-sv@usace.army.mil (email) or Regulatory Division, U.S. Army Corps of Engineers, New England District, 696 Virginia Road, Concord, MA 01742-2751 (mail).

Eligible SV Activities:

- Are subject to USACE jurisdiction (see GC 2); and
- Qualify for one or more of the GPs within this document (Section III); and
- Meet the GCs within this document (Section IV); and

- When required, are supported by a complete SVN (Appendix C); and
- Receive all other required local, State, and/or Federal approvals.

5. Procedures for Pre-Construction Notification (PCN) Eligible Projects

For activities that require a PCN, an application to and written authorization from USACE is required. *No work requiring a PCN may proceed until the applicant receives written authorization from USACE verifying that the activity is authorized.* The verification letter may include special conditions that the applicant must comply with. When possible, it is *highly* recommended that PCN application materials are submitted at least 90 days before the target start date to allow for USACE evaluation and any necessary agency consultations. PCN applications shall demonstrate in writing how the proposed activity complies with all GCs, as applicable to their activity.

Digital submittals by email are **strongly encouraged** to facilitate the most efficient processing of the PCN application. Please communicate with USACE staff if you are unable to provide a digital copy. Addresses are cenae-r-ma@usace.army.mil or Regulatory Division, U.S. Army Corps of Engineers, New England District, 696 Virginia Road, Concord, MA 01742-2751 (mail).

Eligible PCN Activities:

- Are subject to USACE jurisdiction (see GC 2); and
- Qualify for one or more of the GPs within this document (Section III); and
- Meet the GCs within this document (Section IV); and
- Comply with the Mitigation Standards within this document (Section V); and
- Are supported by a complete PCN document (Appendix B); and
- When required, are supported by the submittal of project information to the appropriate parties identified in Appendix A; and
- Receive all other required local, State, and/or Federal approvals.

6. Interagency Review Procedures

The USACE reserves the opportunity to coordinate PCN activities with Federal and State agencies to ensure that the proposed activity results in no more than a minimal impact to the aquatic environment. In some cases, USACE may require project modifications involving avoidance, minimization, and/or compensatory mitigation for unavoidable impacts to ensure the net effects of a project are minimal. The USACE determines, after review and coordination with the agencies and/or the applicant, if PCN applications:

a. Meet the terms and conditions of the GP as proposed;
b. Require additional information;
c. Require avoidance, minimization, compensatory mitigation, construction sequencing, project modification, or other special conditions to avoid or minimize adverse impacts to the aquatic environment;
d. Require individual permit review regardless of whether the terms and GCs of these GPs are met, based on concerns for the aquatic environment or any other factor of the public interest (see Section 9 below).

For activities requiring a PCN, the applicant must wait for written authorization from USACE before commencing activities in waters of the U.S. Beginning work for PCN required activities without a USACE written authorization is a violation of these GPs, and the terms and conditions of this document. The applicant may be subjected to an enforcement action by USACE and/or the Environmental Protection Agency (EPA).

7. Construction of Solid Fill Structures and Fills Along the Coastline or Baseline from Which the Territorial Sea is Measured.

Projects involving the construction of solid fill structures or discharge of fill that may extend beyond the coastline or the baseline from which the territorial sea is measured (i.e., mean low water) will require a PCN. The USACE will submit a description of the proposed work and a copy of the plans to the Solicitor, Department of the Interior, Washington, DC 20240, and request comments concerning the effects of the proposed work on the outer continental rights of the United States. These comments will be included in the administrative record of the application. After completion of permit review, the record will be forwarded to the Chief of Engineers. The decision on the application will be made by the Secretary of the Army after coordination with the Attorney General.

8. Emergency Activities

Per 33 CFR 325.2(e)(4), an emergency is limited to a situation that would result in an unacceptable hazard to life, a significant loss of property, or an immediate, unforeseen, and significant economic hardship if corrective action requiring a permit is not undertaken within a time period less than the normal time needed to process an application under standard procedures. Emergency work shall be limited to that which is necessary to stabilize and secure the situation. Additional work needed for final repairs shall not be completed until approval is obtained through the appropriate, non-emergency process. Emergency work is subject to the same terms and conditions of these GPs as non-emergency work, and similarly, must qualify for authorization under these GPs; otherwise, an IP is required. *See GP 25 Emergency Situations for additional information.*

9. Individual Permit

Projects that do not meet the terms and conditions of this GP may require review as an IP (33 CFR 325.5 (b)). Proposed work in this category will require a separate Federal application for an individual permit from USACE (33 CFR 325.1). In addition, USACE retains discretionary authority on a case-by-case basis to elevate GP-eligible activities to an IP based on concerns for the environment or any other factor of the public interest (33 CFR 320.4 (a)). Applicants are required to submit the appropriate application materials directly to USACE as early as possible to expedite the permit review process. General information and application forms can be obtained at our website or by contacting our office at cenae-r-ma@usace.army.mil or (978) 318-8338. Individual 401 WQC and/or CZMA Federal consistency concurrence from the appropriate MA agencies are required before USACE can issue an individual permit. Applying for an IP does not relieve the applicant from their obligation to obtain all required Federal, State and/or local approvals.

10. Compliance

Applicants shall ensure compliance with all applicable GPs in Section III, GCs in Section IV, and any special conditions included in USACE verification letters. Noncompliance with these GPs, GCs, and special conditions may subject the applicant to criminal, civil, or administrative penalties, and/or an ordered restoration, and/or the permit may be modified, suspended or revoked by USACE. The USACE will consider any activity requiring USACE authorization to be noncompliant if that activity does not comply with all GP terms and conditions at all times, including while the project is under construction and when work is completed.

SECTION III. MASSACHUSETTS GENERAL PERMITS

Applicants are encouraged to review Sections I & II prior to submitting an application to confirm that the activity as proposed complies with all terms and conditions of the 2023 MA GPs. Applicants are also encouraged to review the definitions in Section VII, Definitions & Acronyms, of this document. Several terms are frequently used throughout the GPs, and it is important for the reader to understand these terms. If seeking verification for an activity previously verified under the 2018 MA GPs, please contact the USACE to discuss permitting needs in advance of submitting an application.

General Permits

1. Aids to Navigation and Temporary Recreational Structures
2. Maintenance
3. Moorings
4. Structures in Navigable Waters of the U.S.
5. Boat Ramps and Marine Railways
6. Utility Lines, Oil or Natural Gas Pipelines, Outfall Or Intake Structures, and Appurtenant Features
7. Dredging, Disposal of Dredged Material, Beach Nourishment, Rock Removal and Rock Relocation
8. U.S. Coast Guard Approved Bridges
9. Bank and Shoreline Stabilization
10. Aquatic Habitat Restoration, Enhancement, and Establishment Activities
11. Fish and Wildlife Harvesting and Attraction Devices and Activities
12. Response Operations, Oil and Hazardous Substances
13. Cleanup of Hazardous and Toxic Waste
14. Scientific Measurement Devices
15. Survey Activities
16. Land and Water-Based Renewable Energy Generation Facilities and Hydropower Projects
17. Residential, Commercial and Institutional Developments, and Recreational Facilities
18. Aquaculture
19. Mining Activities
20. Living Shorelines
21. Agricultural Activities
22. Reshaping Existing Drainage Ditches, Construction of New Ditches, and Mosquito Management
23. Linear Transportation Projects and Wetland/Stream Crossings
24. Temporary Construction, Access, and Dewatering
25. Emergency Situations

GP 1. AIDS TO NAVIGATION AND TEMPORARY RECREATIONAL STRUCTURES (Authority: §10)	
(a) The placement of aids to navigation and regulatory markers that are approved by and installed in accordance with the requirements of the U.S. Coast Guard (USCG). See 33 CFR, Part 66; and (b) Temporary buoys, markers, and similar structures placed for recreational use during specific events such as water skiing competitions and boat races or seasonal use. See GC 16.	
Self-Verification Eligible	**Pre-Construction Notification Required**
1. Aids to navigation and regulatory markers approved by and installed in accordance with the requirements of the USCG. 2. Temporary buoys, markers and similar structures that are: (a) placed for recreational use during specific events and removed within 30 days after event; or (b) placed during winter events on ice and removed before spring thaw. These structures must be authorized by the local harbormaster, not located within an FNP or its buffer zone, and not located in saltmarsh or tidal vegetated shallows.	1. Impacts in saltmarsh or tidal vegetated shallows. 2. Activities that are not SV eligible.
Note: An SVN submittal to USACE is not required for work authorized under SV #1 above.	

GP 2. MAINTENANCE (Authorities: §10 and §404)

Repair, rehabilitation, or replacement of any previously authorized[1], currently serviceable structure, or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3 (activities occurring before certain dates), provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction technique requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement are authorized. This GP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the activities above. Maintenance dredging and beach nourishment are not eligible under GP 2 (see GP 7). Stream crossing modifications (including sliplining), replacements or extensions are not eligible under GP 2 (see GPs 6, 17, 23). *See GP 25 Emergency Situations for expedited review of emergency activities.*

Not authorized under GP 2 (IP required): (a) Permanent impacts in >1 acre in non-tidal waters and/or wetlands; or (b) Permanent impacts >1/2 acre in tidal waters; >1000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in tidal vegetated shallows; or (c) Temporary impacts >1 acre in tidal waters; >5000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >1000 SF in vegetated shallows; (d) New stream channelization or stream relocation projects (e.g., those in response to storm or flood events).

Self-Verification Eligible

Maintenance activities that meet all of the following terms:

1. In non-tidal waters, the combined permanent and temporary impacts extending beyond the original footprint are ≤5,000 SF[2] and not located in vegetated shallows or riffle and pool complexes.

2. In tidal waters, the combined permanent and temporary impacts extending beyond the original footprint are ≤5,000 SF, ≤1,000 SF in mudflats and/or natural rocky habitat, and not located in saltmarsh and tidal vegetated shallows.

3. Minor deviations in the repair, rehabilitation, or replacement of previously authorized, currently serviceable structures or fills.

4. Bulkhead replacement in tidal and non-tidal waters via installation of new bulkhead within 18 inches of the existing bulkhead and associated backfill.

5. Drawdown of an impoundment for dam/levee repair provided it does not exceed 18 months and one growing season (April through September).

Pre-Construction Notification Required

1. Discharges associated with removal of accumulated sediments and debris in the vicinity of existing structures, including intake and outfall structures and associated canals.

2. The removal of sediment outside the immediate vicinity of existing structures (e.g., bridges, culverted road crossings, water intake structures, etc.) that is ≥200 linear feet. This activity is limited to the minimum necessary to restore the waterway in the vicinity of the structure to the approximate dimensions existing when the structure was built.

3. Dam and flood control or levee repair, rehabilitation, or replacement involves:
   a. A change in the flood elevation or permanent water surface elevation of the impoundment; or
   b. Drawdown of impoundment for construction exceeding one growing season (see SV eligible #5);
   c. Any modification that changes the character, scope, or size of the original fill design; or
   d. Does not meet SV eligible 1-7.

4. Installation of steel piles, including steel sheet piles, that cannot be done in the dry and where NOAA-ESA listed species are mapped as present.

[1] Some maintenance activities may not be subject to regulation under Section 404 of the CWA in accordance with 33 CFR 323.4(a)(2). Per 33 CFR 330.3, Vested dates are: a) Work performed and structures installed before December 18, 1968 (Section 10); and b) Fill placed before July 25, 1975 (Section 404).
[2] This excludes dam projects that may require a temporary drawdown with impacts >5,000 SF in non-tidal waters. Instead, the drawdown shall comply with SV #5 to be eligible under Self-Verification.

6. Any stream channel modification is limited to the minimum necessary for the repair, rehabilitation, or replacement of the structure or fill; such modifications, including the removal of material from the stream channel, must be immediately adjacent to the project or within the boundaries of the structure or fill. 7. Work to previously approved tide gates not affecting upstream tidal resource areas.	5. Activities located in the Connecticut River or Merrimack River, unless they are completed in the dry or when the tide is waterward of the work area. 6. Activities on USACE properties & USACE-controlled easements. 7. Activities that do not require an IP. Activities that do not require a PCN or an IP may be SV eligible.
Notes: 1. This authorizes the repair, rehabilitation, or replacement of any previously authorized structure or fill that does not qualify for the CWA §404(f) exemption for maintenance. See 33 CFR 323.4(a)(2). Prior USACE permits may have included authorization to maintain the activity, in which case authorization under this GP is not necessary. 2. See GC 22 for information on temporary construction mats.	

GP 3. MOORINGS (Authority: §10)

New moorings and mooring fields; the relocation of previously authorized moorings; expansions, boundary reconfigurations or modifications of previously authorized mooring fields; and maintenance and replacement of moorings.

Not authorized under GP 3 (IP required): (a) Moorings or mooring fields converted to or associated with a new boating facility[1]; or (b) Moorings in a USACE Federal Navigation Anchorage or USACE Federal Navigation Channel, except municipal-operated mooring fields.

Self-Verification Eligible	**Pre-Construction Notification Required**
1. New or relocated moorings that meet all the following terms: a. Authorized by a local harbormaster/ municipality under MGL Chapter 91 §10A; and b. No interference with navigation; and c. Single boat, single-point and non-commercial; and d. Not associated with a boating facility, and e. Neither placed within nor impact tidal vegetated shallows (e.g., eelgrass); and f. Not located within a USACE Federal navigation project (FNP) or the FNP buffer zone. 2. Existing, authorized moorings are converted from traditional moorings to low impact mooring technology (see note below) and/or helical anchors. 3. Maintenance and replacement of moorings authorized by the USACE.	1. New mooring fields; or expansions, boundary reconfigurations or modifications of existing, authorized mooring fields. 2. Moorings located such that they, and/or vessels docked or moored at them, are within the buffer zone of the horizontal limits of a Federal Anchorage. The buffer zone is equal to 3 times the authorized depth of that channel (see GC 15). 3. New individual moorings located in saltmarsh, mudflats, natural rocky habitat, and tidal vegetated shallows. Locating moorings these areas should be avoided to the maximum extent practicable. If these areas cannot be avoided, plans should show conservation mooring or low-impact mooring systems that prevent mooring chains from resting or dragging on the bottom substrate at all tides, where practicable. USACE may require a survey in areas previously mapped as containing eelgrass or within 100 ft. of existing eelgrass beds to document presence or absence of eelgrass and to determine the appropriate type and amount of compensatory mitigation for impacts to eelgrass. 4. Replacement moorings located in tidal vegetated shallows. 5. Moorings that are not SV eligible and do not require an IP.

Notes:

1. Low impact mooring systems, including conservation moorings, are encouraged to minimize impacts of chain scouring from conventional moorings during the tidal cycle.
2. An SVN submittal to USACE is not required for work authorized under SV #2-3 above.

[1] Boating facilities are marinas, yacht clubs, boat clubs, boat yards, dockominiums, town facilities, land/homeowner's associations, etc. that provide for a fee, rent or sell mooring or docking space. Not classified as boating facilities are municipal moorings or municipal mooring fields that charge an equitable user fee based only on the actual costs incurred.

GP 4. STRUCTURES IN NAVIGABLE WATERS OF THE U.S. (Authority: §10 & §404)

New, expansions, reconfigurations or modifications of structures for navigational access in waters of the U.S. including but not limited to temporary/seasonal or permanent pile and pole-supported piers, floats, stairs, shore outhauls, and boat and float lifts.

Not authorized under GP 4 (IP required): (a) Structures associated with a new boating facility; (b) Structures in a USACE Federal anchorage or channel; or (c) Artificial reefs.

Self-Verification Eligible

1. Private, non-commercial piers, floats and lifts that meet all the following terms:

a. Piers and floats in: (i) Tidal waters total ≤600 SF combined; and (ii) Non-tidal navigable waters of the U.S. total ≤600 SF combined; and

b. Piers are ≤4 feet wide and ≥6 feet above the marsh substrate (the height is measured from the marsh substrate to the bottom of the lowest longitudinal support); and

c. Floats and lifts in tidal waters and non-tidal navigable waters of the U.S. are ≥24 inches above the substrate during all tidal cycles. Float stops are preferred when site conditions warrant them (i.e., low tide exposes substrate), and skids can only be used in areas where piles are not feasible and on sandy or hard bottom substrates; and

d. Piers, floats and lifts: (i) Are ≥25 feet from previously mapped or existing vegetated shallows, or riparian property line extensions; (ii) Extend ≤25% of the waterway width in non-tidal navigable waters of the U.S. or MHW in tidal navigable waters of the U.S.

e. Installation of ≤12-inch diameter timber piles. Installation of ≥12-inch diameter piles of any material type when installed in the dry.

2. Fenders and similar structures.

Pre-Construction Notification Required

1. Shore outhauls.
2. Expansions, modifications, or new reconfiguration zones at any authorized boating facility.
3. New, expansions, reconfigurations, reconfiguration zones, or modifications of structures that provide public, community or government recreational uses such as boating, fishing, swimming, access, etc.
4. Installation of steel piles, including steel sheet piles, that cannot be done in the dry and where NOAA-ESA listed species are mapped as present.
5. Located within the buffer zone of the horizontal limits of an FNP (GC 15).
6. Miscellaneous structures.
7. Impacts in tidal vegetated shallows.
8. Structures that are not SV eligible and do not require an IP.

Notes:

1. See GC 19 regarding pile driving and pile removal in navigable waters and
2. See GC 20 regarding time of year restrictions in tidal waters.
3. Boating facilities are facilities that provide for a fee, rent, or sell mooring space, such as marinas, yacht clubs, boat clubs, boat yards, town facilities, dockominiums, etc. Pile supported structures with no discharges of dredged or fill material are not regulated by USACE in non-navigable waters.
4. A SVN submittal to USACE is not required for SV #2 above.

GP 5. BOAT RAMPS AND MARINE RAILWAYS (Authorities: §10 and §404)

Activities required for the construction of boat ramps and marine railways, including excavation and fill.

Not authorized under GP 5 (IP required): (a) Permanent impacts that are >1 acre in non-tidal waters of the U.S., >½ acre in tidal waters; >1000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in tidal vegetated shallows; (b) Temporary impacts in tidal waters that are >1 acre; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows[1]; or (c) dredging in navigable waters of the U.S. (see GP 7).

Self-Verification Eligible	Pre-Construction Notification Required
1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, and (b) not located in riffle and pool complexes and non-tidal vegetated shallows.	1. Boat ramps are located within 25 feet of property line extensions unless the properties are owned by the same owner. The USACE may require a letter of no objection from the abutter(s).
2. In tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, (b) ≤1,000 SF in mudflats and/or natural rocky habitat, and (c), not located in saltmarsh and tidal vegetated shallows.	2. Activities that are not eligible for SV and do not require an IP.

GP 6. UTILITY LINES, OIL OR NATURAL GAS PIPELINES, OUTFALL OR INTAKE STRUCTURES, AND APPURTENANT FEATURES (Authorities: §10 & §404)

Activities required for: (a) The construction, maintenance, repair or removal of utility lines, oil or natural gas pipelines[1], outfall or intake structures[2], and appurtenant features including the associated excavation, backfill, or bedding for these structures. (b) The construction, maintenance, or expansion of substations and other appurtenant facilities associated with a utility line, oil or natural gas pipeline, and outfall or intake structure in non-tidal waters of the U.S.; and (c) The construction and maintenance of foundations for overhead utility line towers, poles, and anchors in tidal and non-tidal waters of the U.S., provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible. This GP authorizes the construction of access roads to facilitate construction of the above activities provided the activity, in combination with all other activities included in one single and complete project, does not exceed the thresholds identified below (IP required). Access roads used solely for construction of the utility line must be removed upon completion of the work. This GP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the activities above.[3]

Not authorized under GP 6 (IP required): (a) Permanent impacts for any single and complete project that are >1 acre in non-tidal waters of the U.S.; >½ acre in tidal waters; >1000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in tidal vegetated shallows; (b) Temporary impacts in tidal waters that are >1 acre; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows; (c) Stormwater treatment or detention systems, or subsurface sewage disposal systems in waters of the U.S.; or (d) New tide gates that do not meet SV criteria below.

Self-Verification Eligible	**Pre-Construction Notification Required**
1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, and (b) not located in riffle and pool complexes and non-tidal vegetated shallows.	1. New outfall and/or intake structures.
2. In tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, (b) ≤1,000 SF in mudflats and/or natural rocky habitat, and (c), not located in saltmarsh and tidal vegetated shallows.	2. Unconfined work or silt producing activities in streams with diadromous fish.
3. Intake structures that are dry hydrants used exclusively for firefighting activities with no stream impoundments.	3. Submarine cables, conduits, or pipelines that occur in, over or under navigable waters of the U.S.
4. New tide gates on outfall structures for pipes conveying stormwater and/or industrial NPDES-permitted discharges from waters that are not waters of the U.S.	4. Stream channelization, relocation, impoundment, or loss of streambed occurs.
	5. The activity is placed within and runs parallel to or along a streambed within waters of the U.S.
	6. There is a permanent change in preconstruction contours in waters of the U.S.
	7. Installation of utility lines or gas/oil pipelines using trench excavation where material is temporarily sidecast into waters of the U.S. for >3 months. Applicants must demonstrate how the material would not be dispersed by currents or other forces.
	8. Activities that are not SV eligible and do not require an IP.

[1] See the definitions of a “utility line” and “oil or natural gas pipeline” in Section VII.
[2] Outfall structures must be in compliance with regulations issued under the National Pollutant Discharge Elimination System Program (Section 402 of the Clean Water Act).
[3] Temporary impacts shall comply with all GCs, including GC 32 Utility Line Installation and Removal.

GP 7. DREDGING (Authority: §10), DISPOSAL OF DREDGED MATERIAL (Authorities: §10, §404), BEACH NOURISHMENT (Authorities: §10 & §404), ROCK REMOVAL (Authority: §10) AND ROCK RELOCATION (Authorities: §10 & §404)

New, improvement and maintenance dredging (see notes below) including: (a) Disposal of dredged material at a confined aquatic disposal cell, beach nourishment location, near shore site, or ocean disposal site selected under Section 404 of the Clean Water Act pursuant to the 404(b)(1) Guidelines, provided the dredged material meets the requirements for such disposal; (b) Beach nourishment not associated with dredging; and (c) Rock removal and relocation for navigation.

Not authorized under GP 7 (IP required): (a) Dredging where ocean disposal is required for the disposal of dredged material (Section 103); New dredging >½ acre; ≥10,000 CY; >1000 SF permanent impacts to intertidal areas, saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF permanent impacts to tidal vegetated shallows; (b) Maintenance or improvement dredging and/or disposal with >1 acre of impacts to intertidal areas, saltmarsh, mudflats, riffle and pool complexes, or non-tidal vegetated shallows; (c) New dredging where the primary purpose is sand mining for beach nourishment; (d) Beach scraping; (e) Boulder removal and relocation for navigation >½ acre; or (f) Blasting.

Self-Verification Eligible

1. Maintenance dredging of previously dredged areas, with upland disposal, that meet all of the following terms:
   a. Dredged area ≤1/2 acre; and
   b. Activities comply with GC 20, TOY Restrictions. The time-of-year restriction(s) stated in Appendix B of the MA Division of Marine Fisheries (DMF) Technical Report TR-47[1] can apply instead if the general TOY restriction if a TOY is provided for a specific waterbody and is less restrictive. This is to protect endangered species, EFH, and other species; and
   c. The dredge footprint is located >25' from salt marsh or >100' from vegetated shallows; and
   d. Combined permanent and temporary impacts that are (i) ≤1,000 SF in mudflats or natural rocky habitat, or (ii) ≤5,000 SF within intertidal habitat and areas containing shellfish (an area contains shellfish unless: it is verified that minimal shellfish are present per the local shellfish constable or a shellfish survey; or it is not mapped as a MassGIS shellfish suitability area).
   e. No return water from upland disposal areas.

2. Boulder relocation with ≤1,000 SF of impacts, relocated to a similar depth and substrate.

Pre-Construction Notification Required

1. Maintenance dredging where the primary purpose is sand mining for beach nourishment.

2. New dredging and associated disposal ≤1/2 acre or <10,000 cubic yards.

3. Improvement dredging.

4. Beach nourishment in waters of the U.S. not associated with dredging.

5. Activities that are located in saltmarsh and tidal vegetated shallows.

6. Dredging in a Federal Navigation Project or within the buffer zone (see GC 15).

7. Activities that are not eligible for SV and do not require an IP.

Notes:

1. See Section VII for definitions of improvement and maintenance dredging.
2. For PCN activities, the USACE may waive or adjust the time of year requirement on a case-by-case basis after consultation with resource agencies.
3. Disposal site of any dredged material must be identified prior to obtaining USACE authorization.
4. Contact the USACE if a ten-year authorization to maintain an area is desired.

[1] The MA DMF Technical Report TR-47: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/

GP 8. U.S. COAST GUARD APPROVED BRIDGES (Authorities: §404)

Discharges of dredged or fill material incidental to the construction and modification of bridges across navigable waters of the U.S., including cofferdams, abutments, foundation seals, piers, and temporary construction and access fills provided that the USCG authorizes the construction of the bridge structure under Section 9 of the Rivers and Harbors Act of 1899 or other applicable laws. A USCG Authorization Act Exemption or a Surface Transportation and Uniform Relocation Assistance Act (STURRA) (144h) exemption do not constitute USCG authorization.

Not authorized under GP 8 (IP Required): Causeways and approach fills (see GP 23).

Self-Verification Eligible	**Pre-Construction Notification Required**
1. Discharges of dredged or fill material that are incidental to the construction of bridges across navigable waters and meet all of the following: a. Combined permanent and temporary impacts that are ≤5,000 SF. b. Combined permanent and temporary impacts that are ≤1,000 SF in mudflats and natural rocky habitat. c. Not located in saltmarsh and tidal vegetated shallows.	1. Activities on USACE properties & USACE controlled easements.2. Installation of steel piles, including steel sheet piles, that cannot be done in the dry and where NOAA-ESA listed species are mapped as present. 3. Activities that are not eligible for SV and do not require an IP.

Notes:

1. GP 8 is not applicable to bridges over inland waters or wetlands that are not tidally influenced or regulated as navigable under Section 10.
2. See eligibility criteria for GPs 2 & 23 for projects that are not subject to USCG regulations.

GP 9. BANK AND SHORELINE STABILIZATION (Authorities: §10 & §404)

Bank stabilization activities necessary for erosion protection along the banks of lakes, ponds, streams, estuarine and ocean waters, and any other open waters. Includes bulkheads, seawalls, riprap, revetments, living seawalls, or slope protection & similar structures, specifically for the purpose of shoreline protection. This GP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the activities above.

Activities must meet the following criteria: (a) No material is placed in excess of the minimum needed for erosion protection; (b) No material is of a type, or is placed in any location, or in any manner, that will impair surface water flow into or out of any waters of the U.S.; (c) No material is placed in a manner that will be eroded by normal or expected high flows (properly anchored native trees and treetops may be used in low energy areas); (d) Native plants appropriate for current site conditions, including salinity, must be used for bioengineering or vegetative bank stabilization; (e) The activity is not a stream channelization activity; and (f) The activity must be properly maintained, which may require repairing it after severe storms or erosion events. This GP authorizes those maintenance and repair activities if they require authorization. This GP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the bank stabilization activity. See GP 20 for living shoreline stabilization structures or fills.

Not authorized under GP 9 (IP required): (a) New bank stabilization >500 feet in total length (>1,000 linear feet in total length when necessary to protect transportation infrastructure) or permanent loss of saltmarsh >1,000 SF, unless the District Engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects (an exception is for bulkheads – the district engineer cannot issue a waiver for a new bulkhead that is >1,000 feet in length along the bank); (b) Stream channelization or relocation activities; or (c) Breakwaters, groins or jetties.

Self-Verification Eligible

1. Activities in tidal and non-tidal waters that are:
   a. <200 feet in length.
   b. <400 feet in length when necessary to protect transportation infrastructure.
   c. ≤1 cubic yard of fill per linear foot average along the bank waterward of the plane of OHW or HTL.
   d. Not located in non-tidal wetlands, saltmarsh, vegetated shallows.

Pre-Construction Notification Required

1. Activities in tidal and non-tidal waters that are:
   a. ≥200 feet to ≤500 feet in total length. Activities >500 feet in total length must have a written waiver from USACE.
   b. ≥400 feet to ≤1,000 feet in total length when necessary to protect transportation infrastructure. Activities >1,000 feet in total length must have a written waiver from USACE.
   c. >1 cubic yard of fill per linear foot average along the bank waterward of the plane of OHW or HTL.
   d. Located in non-tidal wetlands, saltmarsh, vegetated shallows.
2. Activities with permanent loss of tidal or non-tidal waters that is (a) ≥5,000 SF or (b) ≥1,000 SF in mudflats and natural rocky habitat.
3. Activities that are (a) located in the Connecticut River or Merrimack River and/or (b) require installation of steel piles/steel sheet piles that cannot be done in the dry where NOAA ESA-listed species are mapped as present.
4. Activities on USACE properties & USACE-controlled easements.
5. Activities that require grouted riprap and/or poured/unformed concrete.
6. Activities that are not eligible for SV and do not require an IP.

Note: The applicant shall comply with GC 24. This includes utilization of bioengineering techniques in lieu of hard armoring to the maximum extent practicable as site conditions allow.

GP 10. AQUATIC HABITAT RESTORATION, ENHANCEMENT, AND ESTABLISHMENT ACTIVITIES (Authorities: §10 and §404)

Activities for the restoration, enhancement and establishment of non-tidal and tidal wetlands and riparian areas, including invasive, non-native or nuisance species control; the restoration and enhancement of non-tidal streams and other non-tidal open waters; the relocation of non-tidal waters, including non-tidal streams & associated wetlands for reestablishment of a natural stream morphology and reconnection of the floodplain; the restoration and enhancement of shellfish, finfish and wildlife; and the rehabilitation or enhancement of tidal streams, tidal wetlands and tidal open waters; provided those activities result in net increases in aquatic resource functions and services. See GP 9 for bank and shoreline stabilization. See GP 20 for living shorelines.

Not authorized under GP 10 (IP required): Stream channelization activities and artificial reefs.

Self-Verification Eligible	**Pre-Construction Notification Required**
1. In tidal and non-tidal waters excluding tidal vegetated shallows, the combined permanent and temporary impacts are ≤5,000 SF. 2. Eelgrass (vegetated shallows) planting and transplanting ≤100 SF in tidal waters.	1. In tidal and non-tidal waters excluding tidal vegetated shallows, the combined permanent and temporary impacts are >5,000 SF. 2. Eelgrass (vegetated shallows) planting and transplanting >100 SF in tidal waters. 3. Permanent water impoundments, dam removal, fish ladders, or tide gates. 4. Stream relocation, impoundment, or loss of streambed occurs. 5. Runneling projects with the purpose of restoring saltmarsh by removing excess water that ponds on the saltmarsh surface. 6. The conversion of: (a) a stream or natural wetlands to another aquatic habitat type (e.g., stream to wetland or vice versa, wetland to pond, etc.) or uplands, (b) one wetland type to another (e.g., forested wetland to an emergent wetland). 7. Activities in the Connecticut River from the Turners Falls Dam to the MA/CT border, or Merrimack River from the Essex Dam to the mouth, involving permanent or temporary impacts unless they are performed <5 feet waterward from OHW or HTL and in the dry. This is to protect endangered species. 8. Activities on USACE properties & USACE-controlled easements. 9. Activities that are not eligible for SV and do not require an IP.

Notes:

1. Changes in wetland plant communities that occur when wetland hydrology is more fully restored during wetland rehabilitation activities are not considered a conversion to another aquatic habitat type.
2. See RGL 18-01 for guidance on removal of obsolete dams and other structures from rivers and streams. https://www.usace.army.mil/missions/civil-works/regulatory-program-and-permits/guidance-letters/
3. An ecological reference site may be used for a design basis of the restoration activity. The reference site should possess characteristics of an intact aquatic habitat or riparian area that exists in the region. The reference site shall represent the target habitat type of the proposed activity. A reference site may be required at the discretion of USACE.

GP 11. FISH AND WILDLIFE HARVESTING AND ATTRACTION DEVICES AND ACTIVITIES (Authorities: §10 and §404)

Fish and wildlife harvesting and attraction devices and activities in waters of the U.S. such as pound nets, crab traps, crab and shellfish dredging, eel pots, lobster traps, duck blinds, clam and oyster digging, fish aggregating devices, and small fish attraction devices such as open-water fish concentrators (sea kites, etc.).

Not authorized under GP 11 (IP required): Artificial reefs; or new, or expansions of, impoundments and semi-impoundments of waters of the U.S. for the culture or holding of motile species such as lobster with an impounded area >½ acre.

Self-Verification Eligible	**Pre-Construction Notification Required**
1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≤1/2 acre, and (b) not located in riffle and pool complexes and non-tidal vegetated shallows. 2. Fish and wildlife harvesting and attraction devices and activities that do not require a PCN or IP.	1. Pound nets, impoundments or semi-impoundments of waters of the U.S. for the culture or holding of motile species such as lobster with an impounded area ≤½ acre, fish aggregating devices, or small fish attraction devices. 2. Devices and activities that are located in tidal vegetated shallows, mud flats, or saltmarsh. 3. Devices and activities that do not require an IP.

Note: An SVN submittal to USACE is not required for work authorized under GP 11.

GP 12. RESPONSE OPERATIONS, OIL AND HAZARDOUS SUBSTANCES (Authorities: §10 & §404)

(a) Activities conducted in response to a discharge or release of oil and hazardous substances that are subject to the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300) including containment, cleanup, and mitigation efforts, provided that the activities are done under either: (i) The Spill Prevention, Control and Countermeasure Plan required by 40 CFR 112.3; (ii) The direction or oversight of the Federal on-scene coordinator designated by 40 CFR 300; or (iii) Any approved existing State, regional or local contingency plan provided that the Regional Response Team concurs with the proposed response efforts or does not object to the response effort; (b) Activities required for the cleanup of oil releases in waters of the U.S. from electrical equipment that are governed by EPA's polychlorinated biphenyl (PCB) spill response regulations at 40 CFR 761; (c) Booms placed in navigable waters of the U.S. for oil and hazardous substance containment, absorption and prevention; and (d) The use of structures and fills for spill response training exercises. Wetlands, vegetated shallows, mudflats, and riffle and pool complexes should be restored in place at the same elevation.

Self-Verification Eligible	**Pre-Construction Notification Required**
1. Activities are conducted in accordance with (a) or (b) above that are not planned or scheduled, but an emergency response (see Note 1). 2. Booms placed in navigable waters of the U.S. for oil and hazardous substance containment, absorption and prevention. 3. Temporary impacts for spill response training exercises ≤5000 SF in non-tidal waters and ≤1000 SF in tidal waters with no impacts to wetlands, saltmarsh, mudflats, or vegetated shallows. 4. Temporary structures in tidal waters with no impacts to wetlands, saltmarsh, mudflats, vegetated shallows, or riffle and pool complexes and in place ≤30 days.	1. Activities (a) or (b) above are planned or scheduled, not an emergency response; or 2. Activities that are not eligible for SV and do not require an IP.

Notes:

1. For emergency response activities in the Connecticut River from the Turners Falls Dam to the MA/CT border, Merrimack River from the Essex Dam to the mouth, and remaining tidal waters that are not rivers, the permittee must contact the USACE at (978) 318-8338 before or as soon as possible after the work authorized under GP 12(a) - (c) commences for the USACE to address effects under the Endangered Species Act.
2. An SVN submittal to USACE is not required for booms used for spill prevention, or properly contained and cleaned de minimus oil or hazardous substance discharges into navigable waters of the U.S.

GP 13. CLEANUP OF HAZARDOUS AND TOXIC WASTE (Authorities: §10 and §404)

Specific activities required to affect the containment, stabilization, or removal of hazardous or toxic waste materials, including court ordered remedial action plans or related settlements, which are performed, ordered or sponsored by a government agency with established legal or regulatory authority.

Not authorized under GP 13: (a) Establishment of new disposal sites; or (b) Expansion of existing sites used for the disposal of hazardous or toxic waste.

Self-Verification Eligible	Pre-Construction Notification Required
1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, and (b) not located in vegetated shallows and riffle and pool complexes.	1. In non-tidal waters, the combined permanent and temporary impacts are (a) >5,000 SF, and (b) located in vegetated shallows and riffle and pool complexes. 2. Permanent and temporary impacts in tidal waters or navigable waters of the U.S. 3. Stream channelization, relocation, impoundment, or loss of streambed occurs. 4. Activities that are not eligible for SV and do not require an IP.

Notes:

1. Wetlands, vegetated shallows, mudflats, and riffle and pool complexes should be restored in place at the same elevation to the maximum extent practicable.
2. Activities undertaken entirely on a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site by authority of CERCLA, are not required to obtain permits under Section 404 of the CWA or Section 10 of the Rivers and Harbors Act.

GP 14. SCIENTIFIC MEASUREMENT DEVICES (Authorities: §10 and §404)

Scientific measurement devices for measuring and recording scientific data, such as staff gauges, tide and current gauges, meteorological stations, water recording and biological observation devices, water quality testing and improvement devices, and similar structures. Also eligible are small weirs and flumes constructed primarily to record water elevation, flow and/or velocity. Upon completion of the use of the device to measure and record scientific data, the measuring device and any other structures or fills associated with that device (e.g., foundations, anchors, buoys, lines, etc.) must be removed to the maximum extent practicable and the site restored to preconstruction elevations.

Not authorized under GP 14 (IP required): (a) Permanent impacts that are >5,000 SF in tidal and non-tidal waters of the U.S.; >1000 SF in tidal saltmarsh, mud flats, riffle and pool complexes; or >100 SF in tidal vegetated shallows; or (b) Temporary impacts in tidal waters that are >1 acre, unless the District Engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows.

Self-Verification Eligible	**Pre-Construction Notification Required**
1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, (b) not located in riffle and pool complexes and non-tidal vegetated shallows. 2. In tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, (b) ≤1,000 SF in mudflats and/or natural rocky habitat, (c) not located in saltmarsh and tidal vegetated shallows. 3. Temporary, non-biological sampling devices in waters that do not restrict or concentrate movement of aquatic organisms and will not adversely affect the course, condition, or capacity of a waterway for navigation. 4. Scientific measurement devices, and small weirs and flumes constructed primarily to record water quantity and velocity provided the discharge of fill is limited to 25 cubic yards. These cannot obstruct or restrict the waterway course, condition, capacity, and location. 5. Temporary measuring devices and associated structures (e.g., anchors, buoys, etc.) in tidal and non-tidal waters that do not require a PCN or IP.	1. Biological sampling devices, weirs or flumes, or the activity restricts or concentrates movement of aquatic organisms. 2. Permanent towers located in navigable waters that record and measure scientific data. 3. Devices that are not eligible for SV and do not require an IP.

Note: An SVN submittal to USACE is not required for temporary measuring devices with a footprint of <10 SF, with a profile of <3 feet high measured from the substrate and located in water deeper than -10 feet MLW.

GP 15. SURVEY ACTIVITIES (Authorities: §10 and §404)

Survey activities such as soil borings, core sampling, seismic exploratory operations, plugging of seismic shot holes and other exploratory-type bore holes, exploratory trenching, soil surveys, sampling, sample plots or transects for wetland delineations, and historic resources surveys.

Not authorized under GP 15 (IP required): (a) Permanent impacts that are >1 acre in tidal and non-tidal waters; >1000 SF in tidal saltmarsh, mud flats, or riffle and pool complexes; or >100 SF in tidal vegetated shallows; or (b) Temporary impacts in tidal waters that are >1 acre, unless the District Engineer waives this criterion by making a written determination concluding that the discharge of dredged or fill material will result in no more than minimal adverse environmental effects; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows.

Self-Verification Eligible	**Pre-Construction Notification Required**
1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, (b) not located in riffle and pool complexes and non-tidal vegetated shallows. 2. In tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, (b) ≤1,000 SF in mudflats and/or natural rocky habitat, (c) not located in saltmarsh and tidal vegetated shallows.	1. Exploratory trenching (see Note 2) occurs in waterways (e.g., streams, tidal waters). 2. Activities associated with the recovery of historic resources, and the drilling and discharge of excavated material from test wells for oil and gas exploration. 3. Seismic exploratory operations occur in tidal waters, the Connecticut River from the Turners Falls Dam to the MA/CT border, or the Merrimack River from the Essex Dam to the mouth. This is to protect endangered species. 4. Activities that are not eligible for SV and do not require an IP.

Notes:

1. An SVN submittal is not required for wetland delineations, and core sampling conducted for preliminary evaluation of dredge project analysis.
2. For the purposes of GP 15, the term “exploratory trenching” means mechanical land or underwater clearing of the upper soil profile to expose bedrock or substrate for the purpose of mapping or sampling the exposed material.
3. The discharge of drilling mud and cuttings may require a permit under §402 of the CWA.

GP 16. LAND AND WATER-BASED RENEWABLE ENERGY GENERATION FACILITIES (Authorities: §10 and §404), AND HYDROPOWER PROJECTS (Authority: §10 and §404)

Structures and work in tidal waters and discharges of dredged or fill material into tidal and non-tidal waters for the construction, expansion, modification or removal of: (a) Land-based renewable energy production facilities (e.g., solar, wind, biomass, geothermal) and their attendant features; (b) Water-based wind or hydrokinetic renewable energy generation projects and their attendant features; and (c) Discharges of dredged or fill material associated with hydropower projects. Attendant features may include, but are not limited to, land-based collection and distribution facilities, control facilities, and parking lots. For each single and complete project in (b) above, no more than 10 generation units (e.g., wind turbines or hydrokinetic devices) are authorized in navigable waters of the U.S. Upon completion of the pilot project (see note 2), the generation units, transmission lines, and other structures or fills associated with the pilot project must be removed to the maximum extent practicable.

Not authorized under GP 16 (IP required): (a) Permanent impacts that are >1 acre in non-tidal waters, >½ acre in tidal waters; >1000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in vegetated shallows; or (b) Temporary impacts in tidal waters that are >1 acre; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows.

Self-Verification Eligible	**Pre-Construction Notification Required**
In non-tidal waters, the combined permanent and temporary impacts for land-based activities are (a) ≤5,000 SF, (b) not located in riffle and pool complexes and non-tidal vegetated shallows.	1. In non-tidal waters, the combined permanent and temporary impacts for land-based activities are (a) >5000 SF, or (b) located in vegetated shallows or riffle and pool complexes. 2. Permanent and temporary impacts in tidal waters. 3. Water-based wind or hydrokinetic renewable energy generation projects, and hydropower projects. 4. For all activities eligible for authorization under GP 16: a. The activity occurs in tidal waters or in, over or under navigable waters. b. Stream channelization, relocation, impoundment, or loss of streambed occurs. 5. Activities that are not eligible for SV and do not require an IP.

Notes:

1. Utility lines constructed to transfer the energy from the land-based renewable generation or collection facility to a distribution system, regional grid, or other facility may be authorized by GP 6.
2. For the purposes of this GP, the term “pilot project” means an experimental project where the renewable energy generation units will be monitored to collect information on their performance and environmental effects at the project site.

GP 17. RESIDENTIAL, COMMERCIAL AND INSTITUTIONAL DEVELOPMENTS AND RECREATIONAL FACILITIES (AUTHORITIES: §404)

Discharges of dredged or fill material into non-tidal waters for the construction or expansion of: (a) Residences and residential subdivisions; (b) Residential, commercial and institutional building foundations and building pads; and (c) Recreational facilities such as playgrounds, playing fields, bikeways, trails, etc. This GP also authorizes attendant features that include, but are not limited to, roads, parking lots, garages, yards, and utility lines, and stormwater management facilities. This GP authorizes attendant features if they are necessary for the use of the project purpose.

Not authorized under GP 17 (IP required): (a) Permanent impacts that result in loss of non-tidal waters >1/2 acre; >1000 SF in riffle and pool complexes or vegetated shallows; or (b) Subsurface sewerage disposal systems in non-tidal waters.

Self-Verification Eligible	**Pre-Construction Notification Required**
1. In non-tidal waters, the combined permanent and temporary impacts are (a) <5,000 SF, and (b) not located in riffle and pool complexes and non-tidal vegetated shallows. 2. Stream channelization or relocation resulting in loss of streambed that is <200 LF.	1. In non-tidal waters, the combined permanent and temporary impacts are (a) ≥5,000 SF, or (b) located in riffle and pool complexes or non-tidal vegetated shallows. 2. Stream and wetland crossings that require a PCN per GCs 20 TOY Restrictions and GC 31 Stream Work and Crossings & Wetland Crossings. 3. Stream channelization or relocation resulting in loss of streambed that is ≥200 LF. Stream impoundment activities of any kind. 4. Activities on USACE properties & USACE-controlled easements. 5. Activities that are not SV eligible and do not require an IP.

Notes:

1. Stream and wetland crossings (permanent and temporary), including those built with construction mats; and modifications (including sliplining), replacements or extensions to existing crossings.
2. See GC 22 for information on temporary construction mats.
3. Subdivisions: For residential subdivisions, the aggregate total loss of waters of United States authorized by this GP cannot exceed 1/2-acre. This includes any loss of waters of the United States associated with development of individual subdivision lots.

GP 18. AQUACULTURE (Authorities: §10 and §404)

(a) The installation of buoys, floats, racks, trays, nets, lines, tubes, containers, and other structures into navigable waters of the U.S.; (b) Discharges of dredged or fill material into tidal and non-tidal waters necessary for shellfish seeding, rearing, cultivating, transplanting, and harvesting activities; and (c) Shellfish seeding or brushing the flats projects. Any fill material imported to the project from offsite (this is limited to mineral growth medium used in culture trays) shall be clean and of comparable grain size to the native substrate. Activities authorized under this GP must have (a) their MA DMF Aquaculture Certificate letter for licensed shellfish aquaculture sites, (b) documentation that the applicant has coordinated with the U.S. Coast Guard regarding USCG Private Aids to Navigation standards, (c) their MEPA Certificate (if required), and (d) documentation that the applicant has contacted their local authorities (ex. harbormaster, select board, shellfish constable) for authorization of their facility.

Not authorized under GP 18 (IP required): (a) New, or expansions of, impoundments and semi-impoundments of tidal and non-tidal waters for the culture or holding of motile species such as lobster with an impounded area >½ acre; (b) Cultivation of a nonindigenous species (see Note 1) unless that species has been previously cultivated in the waterbody; (c) Cultivation of an aquatic nuisance species (see Note 1); (d) Attendant features such as docks, piers, boat ramps (see GP 4); (e) stockpiles, staging areas, or the deposition of shell material back into tidal and non-tidal waters as waste.

Self-Verification Eligible

1. In tidal waters, a new lease site area is (a) ≤2-acre, (b) not located in salt marsh, natural rocky habitat, or tidal vegetated shallows.

2. In tidal waters, *expansions* of existing lease sites not to exceed 2 acres for the entire site (e.g. 1 acre lease site increasing to a 2 acre lease site may qualify as SV). A PCN is required for expansions in salt marsh, natural rocky habitat, and tidal vegetated shallows.

3. Cages, racks that are elevated ≥2 feet above the ocean floor with legs within a lease site with ≤4 buoys marking the corners.

4. Floating cage strings with a single connecting line, ≤2 anchors and ≤2 end marker buoys per string within a lease site with ≤4 buoys marking the corners.

5. No activities located within 25 feet of tidal vegetated shallows.

6. Culture only indigenous species.

7. Not located in FNP or within a distance of three times the authorized depth of an FNP (see GC 15).

8. Not located in or impinge upon the value of any National Lands or Federal Properties.

9. Floating upweller docks that total ≤600 SF in area.

Pre-Construction Notification Required

1. Discharges of fill material associated with aquaculture >5,000 SF.

2. Research, educational, commercial-viability or experimental aquaculture gear activities >1,000 SF.

3. Kelp or finfish aquaculture.

4. Land-based hatchery intakes >3 inches in diameter.

5. Activities in water depths >10 feet mean low lower water (MLLW).

6. Activities with in-water lines, ropes or chains that are not SV eligible (see #3-4).

7. Activities occur in the Connecticut River from the Turners Falls Dam to the MA/CT border or the Merrimack River from the Essex Dam to the mouth. This is to protect endangered species.

8. New, or expansions of, impoundments and semi-impoundments for the culture or holding of motile species such as lobster with an impounded area ≤1/2 acre.

9. Activities that do not require an IP. Activities that do not require a PCN or an IP may be SV eligible.

Note: The Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 defines: (a) nonindigenous species as “any species or other viable biological material that enters an ecosystem beyond its historic range, including any such organism transferred from one country into another”; and (b) aquatic nuisance species as “a nonindigenous species that threatens the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural, or recreational activities dependent on such waters.”

GP 19. MINING ACTIVITIES (Authorities: §10 and §404)

Discharges of dredged or fill material into non-tidal waters for mining activities, except for coal mining and metallic mineral mining activities.

Not authorized under GP 19 (IP required): (a) Permanent impacts >1 acre in non-tidal waters; or (b) Activities in tidal waters.

Self-Verification Eligible	Pre-Construction Notification Required
In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, and (b) not located in riffle and pool complexes, non-tidal vegetated shallows, and streams.	1. In non-tidal waters, the combined permanent and temporary impacts are (a) >5,000 SF, or (b) located in riffle and pool complexes, non-tidal vegetated shallows, and streams. 2. The activity occurs in non-tidal navigable waters of the U.S. 3. Stream channelization, relocation, impoundment, loss of streambed, or discharge of tailings into streams occurs. 4. Work on USACE properties & USACE-controlled easements. 5. Activities that are not eligible for SV and do not require an IP.

GP 20. LIVING SHORELINES[1] (Authorities: §10 and §404)

Construction and maintenance of living shorelines to stabilize banks and shores in tidal waters. In non-tidal waters that are not subject to the ebb and flow of the tide, nature-based bank stabilization techniques such as bioengineering and vegetative stabilization may be authorized by GP 9. This GP authorizes those maintenance and repair activities in-kind that are necessary to address changing environmental conditions.

The following terms must be met for both SVs and PCNs as applicable: (a) Coir logs, coir mats, stone, native oyster shell, native wood debris, and other structural materials must be adequately anchored, of sufficient weight, or installed in a manner that prevents relocation in most wave action or water flow conditions, except for extremely severe storms; (b) For living shorelines consisting of tidal fringe wetlands, native plants appropriate for current site conditions, including salinity and elevation, must be used if the site is planted by the permittee; (c) Discharges of dredged or fill material into waters of the U.S., and oyster or mussel reef structures in navigable waters, must be the minimum necessary for the establishment and maintenance of the living shoreline; (d) If sills or other structural materials per PCN #4 must be constructed to protect fringe wetlands for the living shoreline, those structures must be the minimum size necessary to protect those fringe wetlands; (e) The activity must be designed, constructed, and maintained so that it has no more than minimal adverse effects on water and sediment movement between the waterbody and the shore and the movement of aquatic organisms between the waterbody and the shore; and (f) The living shoreline must be properly maintained and monitored, which may require periodic repair of sills, bioengineered components, or replacing sand fills after severe storms or erosion events. Vegetation may be replanted to maintain the living shoreline.

Not authorized under GP 20 (IP required): (a) The activity is ≥1000 feet in length along the bank (≥2000 LF both banks) unless waived by the District Engineer; or (b) The activity is >30 feet channel ward of mean low water in tidal waters; or (c) Upland reclamation activities; or (d) Stream channelization or relocation activities; or (e) Breakwaters, groins, jetties, or artificial reefs; or (f) Permanent impacts >1,000 SF in existing saltmarsh; >100 SF in existing tidal vegetated shallows.

Self-Verification Eligible	**Pre-Construction Notification Required**
1. Tidal and non-tidal living shorelines ≤100 LF for each bank (≤200 LF for both banks). 2. Combined permanent and temporary impacts ≤5,000 SF in tidal waters, excluding existing salt marsh, tidal vegetated shallows, natural rocky habitat, and mudflats.	1. Tidal and non-tidal living shorelines >100 LF to <1000 LF (>200 LF to <2000 LF for both banks). 2. Permanent and temporary impacts in existing salt marsh, tidal vegetated shallows, or mudflats. 3. Work on USACE properties & USACE-controlled easements. 4. Use of stone sills, native oyster shell, native wood debris, or other structural materials.

Notes:

1. PCNs require monitoring for a minimum of 5 years in accordance with an approved restoration plan, unless otherwise determined by the USACE. The first year of monitoring will be the first year that the site has been through a full growing period after completion of construction and planting.
2. Applicants are encouraged to obtain a MEPA certificate prior to submitting a USACE permit application.

[1] A living shoreline has a footprint that is made up mostly of native material. It incorporates vegetation or other living, natural "soft" elements alone or in combination with some type of harder shoreline structure (e.g., oyster or mussel reefs or rock sills) for added protection and stability. Living shorelines should maintain the natural continuity of the land-water interface and retain or enhance shoreline ecological processes. Living shorelines must have a substantial biological component, either tidal or lacustrine fringe wetlands or oyster or mussel reef structures.

GP 21. AGRICULTURAL ACTIVITIES (Authority: §404)

Discharges of dredged or fill material in non-tidal waters for agricultural activities, including the construction of building pads for farm buildings. Authorized activities include: (a) installation, placement, or construction of drainage tiles, ditches, or levees; mechanized land clearing; land leveling; the relocation of existing serviceable drainage ditches; and similar activities; (b) construction of farm ponds, excluding perennial streams, provided the farm pond is used solely for agricultural purposes; and (c) discharges of dredged or fill material to relocate existing serviceable drainage ditches constructed in non-tidal streams.

Not authorized under GP 21 (IP required): (a) Permanent impacts that are >1 acre in non-tidal waters; or >1000 SF in riffle and pool complexes, or non-tidal vegetated shallows; (b) Work in tidal waters; or (c) Construction of farm ponds in perennial streams.

Self-Verification Eligible	**Pre-Construction Notification Required**
In non-tidal waters, the combined permanent and temporary impacts are (a) ≤5,000 SF, and (b) not located in riffle and pool complexes and non-tidal vegetated shallows.	1. In non-tidal waters, the combined permanent and temporary impacts are (a) >5,000 SF, or (b) located in riffle and pool complexes and non-tidal vegetated shallows. 2. Activities occur in non-tidal navigable waters of the U.S. 3. Stream channelization, relocation, impoundment, loss of streambed, or farm ponds in non-perennial streams occurs. 4. Activities that are not eligible for SV and do not require an IP.

Note: Some discharges for agricultural activities may qualify for an exemption under Section 404(f) of the CWA (see 33 CFR 323.4). This GP authorizes the construction of farm ponds that do not qualify for the CWA §404(f)(1)(C) exemption because of the recapture provision at §404(f)(2).

GP 22. RESHAPING EXISTING DRAINAGE DITCHES, CONSTRUCTION OF NEW DITCHES, AND MOSQUITO MANAGEMENT (Authorities: §10 and §404)

Discharges to modify the cross-sectional configuration of currently serviceable drainage ditches constructed in tidal and non-tidal waters, for the purpose of improving water quality by regrading the drainage ditch with gentler slopes, which can reduce erosion, increase growth of vegetation, and increase uptake of nutrients and other substances by vegetation. Also authorized are mosquito reduction activities.

Not authorized under GP 22 (IP required): Stream channelization, relocation, impoundments, or loss of streambed.

Self-Verification Eligible	**Pre-Construction Notification Required**
≤500 linear feet of drainage ditch will be reshaped provided excavated material is deposited in an upland area.	1. >500 linear feet of drainage ditch will be reshaped, excavated material is deposited in a water of the U.S., or the reshaping of the ditch increases the drainage capacity beyond the original as-built capacity or expands the area drained by the ditch as originally constructed (i.e., the capacity of the ditch is not the same as originally constructed or drains additional wetlands or other waters of the U.S.). 2. Permanent and temporary impacts in tidal vegetated shallows. 3. New ditches or relocation of drainage ditches constructed in waters of the U.S. (i.e., the location of the centerline of the reshaped drainage ditch is not approximately the same as the location of the centerline of the original drainage ditch). 4. Activities that are not eligible for SV and do not require an IP.

Note: Some ditch activities are exempt under Section 404(f) of the CWA (see 33 CFR 323.4).

GP 23. LINEAR TRANSPORTATION PROJECTS AND WETLAND/STREAM CROSSINGS (Authorities: §10 & §404)

Activities[1] required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., driveways, roads, highways, railways, trails, airport runways, and taxiways) and attendant features. This GP also authorizes temporary structures, fills, and work, including the use of temporary mats (see Note 1), necessary to construct the linear transportation project.

Not authorized under GP 23 (IP required): (a) Permanent impacts for any single and complete project that are >1 acre in non-tidal waters; >½ acre in tidal waters; >1000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in tidal vegetated shallows; (b) Temporary impacts in tidal waters that are >1 acre; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows; (c) Non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars (see GP 17); or (d) New tide gates.

Self-Verification Eligible	**Pre-Construction Notification Required**
1. In non-tidal waters, the combined permanent and temporary impacts are a) ≤5,000 SF; b) not located in riffle and pool complexes and non-tidal vegetated shallows; and c) meet the Massachusetts River and Stream Crossing Standards 2. Existing crossings (e.g., culverts, elliptical or arch pipes, etc.) are not modified by (a) decreasing the diameter of the crossing or (b) changing the friction coefficient, such as through slip lining (retrofitting an existing culvert by inserting a smaller diameter pipe), culvert relining or invert lining. 3. Stream channelization or relocation resulting in loss of streambed that is <200 LF.	1. In non-tidal waters, the combined permanent and temporary impacts are a) >5,000 SF; b) located in vegetated shallows or riffle and pool complexes; or c) do not meet the Massachusetts River and Stream Crossing Standards (see note 4). 2. The activity occurs in tidal waters, salt marsh, or in, over or under navigable waters of the U.S. 3. Stream and wetland crossings that require a PCN per GC 20 TOY Restrictions and GC 31 Stream Work and Crossings & Wetland Crossings. 4. Stream channelization or relocation resulting in loss of streambed that is ≥200 LF. Stream impoundment activities of any kind. 5. Work on USACE properties & USACE-controlled easements. 6. Activities that are not eligible for SV and do not require an IP.

Notes:

1. See GC 22 for information on temporary construction mats.
2. Discharges of dredged or fill material incidental to the construction of bridges across navigable waters of the U.S. may be authorized under GP 8.
3. Loss of streambed does not require a PCN when bridge piers or similar supports are used.
4. In their PCN application submission to the USACE, applicants must explain why they are unable to meet the Massachusetts River and Stream Crossing Standards.
5. For tidal crossings, modeling is encouraged as a method to verify the proposed crossing would not be undersized and resilient to the effects of sea level rise.

[1] Stream crossings must conform with the MA Stream Crossing Guidelines when practicable and comply with all applicable GCs of this document (Section IV).

GP 24. TEMPORARY CONSTRUCTION, ACCESS, AND DEWATERING (Authorities: §10 and §404)

Temporary structures, work, and discharges, including cofferdams, necessary for construction activities or access fills or dewatering of construction sites that are not authorized under another GP activity.

Not authorized under GP 24 (IP required): (a) Permanent structures or impacts; (b) Temporary impacts in tidal waters that are >1 acre; >5000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1000 SF in vegetated shallows; (c) Use of cofferdams to dewater wetlands or other aquatic areas to change their use; (d) Temporary stream crossings (see GPs 6, 17, 23); (e) Structures or fill left in place after construction is completed.

Self-Verification Eligible	**Pre-Construction Notification Required**
1. In non-tidal waters, temporary impacts are a) ≤5,000 SF; b) not located in riffle and pool complexes and non-tidal vegetated shallows. 2. In tidal waters, temporary impacts are a) ≤5,000 SF, b) ≤1,000 SF in mudflats and/or natural rocky habitat, and c) not located in saltmarsh and tidal vegetated shallows. 3. Structures in navigable waters of the U.S. provided impacts do not require a PCN and they are left in place ≤30 days.	1. In non-tidal waters, temporary impacts are a) >5,000 SF; b) located in riffle and pool complexes or non-tidal vegetated shallows. 2. In tidal waters, temporary impacts are a) >5,000 SF; b) >1,000 SF in mudflats and/or natural rocky habitat, or (c) located in saltmarsh and tidal vegetated shallows. 3. Activities in the Connecticut River from the Turners Falls Dam to the MA/CT border, or Merrimack River from the Essex Dam to the mouth, involving temporary impacts unless they are performed <5 feet waterward from OHW or HTL and in the dry. This is to protect endangered species; or 4. Activities not eligible for SV and do not require an IP.

Notes:

1. Turbidity or sediment resuspension is generally not considered to occur when properly using management techniques to work in dry conditions. See GC 25.
2. Total impact areas under SV Eligible 1-2 exclude use of temporary construction mats. See GC 22 for information on temporary construction mats.
3. An SVN submittal to USACE is not required for SV #3 above.

GP 25. EMERGENCY SITUATIONS (Authorities: §10 and §404)

Structures or work in or affecting navigable waters of the U.S. and the discharge of dredged or fill material into waters of the U.S., including wetlands, necessary for repair or protection measures associated with an emergency situation[1], MassDEP Emergency Declaration/Certification, or FEMA Declared Disaster. The activity shall be the minimum necessary to alleviate the immediate emergency unless that additional work would result in no more than minimal effects to aquatic environment and is necessary to reduce the potential for future failure or loss of the structure or site. Typical activities authorized under this GP include, but are not limited to, restoration of damaged areas; bank stabilization; temporary fills for staging, access, and dewatering; and, repair, replacement, or rehabilitation of existing structures and/or fills (i.e., roads, bridges, utility pipelines and flood control structures, including attendant features, and other existing structures located in waters of the U.S.).

For the restoration of areas damaged by storms floods, or other discrete events: (a) The restored area must not extend waterward of the ordinary high-water mark or high tide line that existed prior to the damage. (b) The slope of the restored area below the ordinary high-water mark or high tide line must not exceed the slope that existed prior to the damage. (c) The bottom elevation of the restored area must not exceed the bottom elevation that existed prior to the damage (i.e., the restored area must not result in a reduction in the depth of the waterbody that existed prior to the damage). (d) Except in cases of FEMA reimbursement, the activity must be initiated, under contract to commence, or funds shall be allocated for the activity within 30 days of authorization under GP 25.

Not authorized under GP 25 (IP required): (a) Permanent impacts for a single and complete project >1/2 acre in tidal waters, unless the district engineer waives this criterion by making a written determination concluding that the activity will result in no more than minimal adverse environmental effects; >1,000 SF in saltmarsh, mud flats, riffle and pool complexes, or non-tidal vegetated shallows; or >100 SF in tidal vegetated shallows; (b) Temporary impacts in tidal waters that are >5,000 SF in saltmarsh, mud flats, or riffle and pool complexes; or >1,000 SF in vegetated shallows; (c) New structures or fills that did not previously exist before the storm event or other discrete event (see other GPs).

Self-Verification Eligible	**Pre-Construction Notification Required**
1. Activities that qualify under a Severe Weather Emergency Declaration pursuant to 310 CMR 10.06(8) and/or receive an Emergency Certification pursuant to 310 CMR 10.06 and/or meet the requirements of 314 CMR 9.12(2) or (3); and 2. Activities eligible under a FEMA Declared Disaster that also comply with #1 above.	1. Activities that are eligible under a FEMA Declared Disaster and do not qualify under SV #1. 2. Minor deviations in the structure or fill area, including those to existing structures or fills are authorized due to changes in materials, construction techniques, requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to alleviate the emergency. 3. Activities that are not eligible for SV and do not require an IP.

Notes:

1. Review the GCs (Section IV) to confirm if a PCN is not required elsewhere in this document.
2. If the activity is not a MassDEP Emergency Declaration/Certification, does not meet the requirements of 314 CMR 9.12(2) or (3), or is not a FEMA Declared Disaster, applicants must explain in writing why their activity qualifies as an emergency (see footnote) to be eligible under GP 25.
3. SV eligible activities qualify under the general 401 WQC MassDEP issued for the 2023 MA GPs (GC 9).

[1] An emergency, as determined by this office and 33 CFR 325.2(e)(4), is one which would result in an unacceptable hazard to life, a significant loss of property, or an immediate, unforeseen, and significant economic hardship if corrective action requiring a Department of the Army permit is not undertaken within a time period less than the normal time to process the request under standard processing procedures.

SECTION IV. GENERAL CONDITIONS:

To qualify for GP authorization, the applicant must comply with the following general conditions, as applicable, in addition to authorization-specific conditions imposed by the division or district engineer.

1. Other Permits
2. Federal Jurisdictional Boundaries
3. Single and Complete Projects
4. Use of Multiple General Permits
5. Suitable Material
6. Tribal Rights & Burial Sites
7. Avoidance, Minimization, and Compensatory Mitigation
8. Water Quality & Stormwater Management
9. Coastal Zone Management
10. Federal Threatened and Endangered Species
11. Essential Fish Habitat
12. National Lands
13. Wild and Scenic Rivers
14. Historic Properties
15. USACE Property and Federal Projects (§408)
16. Navigation
17. Permit/Authorization Letter On-Site
18. Storage of Seasonal Structures
19. Pile Driving and Pile Removal in Navigable Waters
20. Time of Year Restrictions
21. Heavy Equipment in Wetlands
22. Temporary Fill & Construction Mats
23. Restoration of Wetland Areas
24. Bank Stabilization
25. Soil Erosion and Sediment Controls
26. Aquatic Life Movements and Management of Water Flows
27. Spawning, Breeding, and Migratory Areas
28. Vernal Pools
29. Invasive Species
30. Fills Within 100-Year Floodplains
31. Stream Work and Crossings & Wetland Crossings
32. Utility Line Installation and Removal
33. Water Supply Intakes
34. Coral Reefs
35. Blasting
36. Inspections
37. Maintenance
38. Property Rights
39. Transfer of GP Verifications
40. Modification, Suspension, and Revocation
41. Special Conditions
42. False or Incomplete Information
43. Abandonment
44. Enforcement Cases
45. Previously Authorized Activities
46. Duration of Authorization

1. Other Permits. Authorization under these GPs does not obviate the need for the permittee to obtain other Federal, State, or local permits, approvals, or authorizations required by law. Permittees are responsible for obtaining all required permits, approvals, or authorizations. Activities that are not regulated by the State, but subject to USACE jurisdiction, may still be eligible for these GPs.

2. Federal Jurisdictional Boundaries.
a. Applicability of these GPs shall be evaluated with reference to Federal jurisdictional boundaries. Activities shall be evaluated with reference to "waters of the U.S." under the CWA (33 CFR 328) and "navigable waters of the U.S." under §10 of the Rivers and Harbors Act of 1899 (33 CFR 329). Permittees are responsible for ensuring that the boundaries used satisfy the Federal criteria defined at 33 CFR 328-329. These sections prescribe the policy, practice, and procedures to be used in determining the extent of the USACE jurisdiction. Note: Waters of the U.S. includes all waters pursuant to 33 CFR 328.3(a), and adjacent wetlands as the term is defined in 33 CFR 328.3(c).
b. Wetlands shall be delineated in accordance with the USACE Wetlands Delineation Manual and the most recent Northcentral/Northeast Regional Supplement. Wetland delineation and jurisdiction information is located at: www.nae.usace.army.mil/missions/regulatory/jurisdiction-and-wetlands and maps are located at www.nae.usace.army.mil/missions/regulatory/state-general-permits/massachusetts-general-permit.
c. Vegetated shallows shall be delineated when present on the project site. Vegetated shallow survey guidance and maps are located at: www.nae.usace.army.mil/missions/regulatory/state-general-permits/massachusetts-general-permit.
d. Natural rocky habitats shall be delineated when present on the project site. The definition of natural rocky habitats is in Section VII of the MA GP. Natural rocky habitat survey guidance and maps are located at: www.nae.usace.army.mil/ missions/regulatory/state-general-permits/massachusetts-general-permit.

3. Single and Complete Projects. The MA GP shall not be used for piecemeal work and shall be applied to single and complete projects. The term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers.
a. For non-linear projects, a single and complete project must have independent utility. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed, even if the other phases were not built, can be considered as separate single and complete projects with independent utility.
b. Unless USACE determines the activity has independent utility, all components of a single project and/or all planned phases of a multi-phased project (e.g., subdivisions should include all work such as roads, utilities, and lot development) shall be evaluated as one single and complete project.
c. For linear projects such as power lines or pipelines with multiple crossings, a "single and complete project" is all crossings of a single water of the U.S. (i.e., single waterbody) at a specific location. For linear projects crossing a single waterbody several times at separate and distant locations, each crossing is considered a single and complete project. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately. If any crossing requires a PCN review or an individual permit review, then the entire linear project shall be reviewed as one project under PCN or the individual permit procedures.

4. Use of Multiple General Permits. The use of more than one GP for a single and complete project is prohibited, except when the acreage loss of waters of the U.S. authorized by the GPs does not exceed the acreage limit of the GPs with the highest specified acreage limit. For example, if a road crossing over waters is constructed under GP 23, with an associated utility line

crossing authorized by GP 6, if the maximum acreage loss of waters of the U.S. for the total project is ≥1 acre it shall be evaluated as an IP.

5. Suitable Material & Discharge of Pollutants. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). All activities involving any discharge into waters of the U.S. authorized under these GPs shall be consistent with applicable water quality standards, effluent limitations, standards of performance, prohibitions, and pretreatment standards and management practices established pursuant to the CWA (33 U.S.C. 1251), and applicable state and local laws. If applicable water quality standards, limitations, etc., are revised or modified during the term of this GP, the authorized work shall be modified to conform with these standards within six months from the effective date of such revision or modification, or within a longer period of time deemed reasonable by the District Engineer in consultation with the Regional Administrator of the EPA. Unless monitoring data indicates otherwise, applicants may presume that their activity complies with state water quality standards provided they are in compliance with the Section 401 WQC (Applicable only to the Section 404 activity).

6. Tribal Rights & Burial Sites

a. For all SV and PCN applications, prospective permittees shall follow the guidance set forth in Appendix A, Guidance for NHPA Section 106 Compliance in Massachusetts.

b. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

c. Many tribal resources are not listed on the National Register of Historic Places (NRHP) and may require identification and evaluation in collaboration with the identifying tribe and by qualified professionals. The Tribal Historic Preservation Officer (THPO) and State Historic Preservation Officer (SHPO) may be able to assist with locating information on:

i. Previously identified tribal resources; and
ii. Areas with potential for the presence of tribal resources.

d. Discovery of Previously Unknown Remains and Artifacts: If any previously unidentified human remains, cultural deposits, or artifacts are discovered while accomplishing the activity authorized by this permit, you must immediately notify the USACE of what you have found, and to the maximum extent practicable, cease work and avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The USACE will initiate the appropriate the Federal, Tribal, and state coordination required to determine if the items or remains are eligible for listing in the NRHP and warrant a recovery effort or can be avoided.

e. Burial Sites: Burial sites, marked or unmarked, are subject to state law (Massachusetts Unmarked Burial Law). Native American burial sites on federal or tribal land are subject to the provisions of Native American Graves Protection and Repatriation Act (NAGPRA). Regulated activities may not result in disturbance or removal of human remains until disposition of the remains has been determined by the appropriate authority under these laws, and the work is authorized by the USACE. Regulated activities which result in an inadvertent discovery of human remains must stop immediately, and the USACE, as well as the appropriate state and tribal authority, must be notified. Regulated work at inadvertent discovery sites requires compliance with state law or NAGPRA, as appropriate, prior to re-starting work.

7. Avoidance, Minimization, and Compensatory Mitigation. To qualify under the MA GP, activities must comply with Section V Mitigation Standards and the following as applicable:

a. Avoid and Minimize: Activities must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the U.S. to the maximum extent practicable at the project site. Avoidance and minimization are required to the extent necessary to ensure that the adverse effects to the aquatic environment (both area and function) are no more than minimal.

b. Compensatory mitigation for unavoidable impacts to waters of the U.S., including direct, indirect, secondary, and temporal loss, will generally be required for permanent impacts that exceed the thresholds identified in Section V, and may be required for temporary impacts, to offset unavoidable impacts which remain after all appropriate and practicable avoidance and minimization has been achieved and to ensure that the adverse effects to the aquatic environment are no more than minimal. Proactive restoration projects or temporary impact work with no secondary effects may generally be excluded from this requirement.
c. Mitigation proposals shall follow the guidelines found in the Compensatory Mitigation for Losses of Aquatic Resources; Final Rule April 10, 2008; 33 CFR 332. Prospective permittees may purchase mitigation credits in-lieu of permittee-responsible mitigation as compensation for unavoidable impacts to waters of the U.S. in the Commonwealth of Massachusetts.

8. Water Quality & Stormwater Management. The 401 WQC requirement applies to all activities listed under GPs 1-25, unless determined otherwise by MassDEP. Permittees shall also satisfy stormwater management requirements in Massachusetts.

a. General 401 WQC: MassDEP issued a WQC on April 21, 2023 which conditionally certifies all activities in GPs 1 – 24 eligible for SV and PCN so long as the activity is described in 314 CMR 9.03, and is not an activity described in 314 CMR 9.04, and so long as the activity meets all other requirements, terms and conditions of the WQC. The MassDEP WQC also conditionally certifies activities described in GP 25 so long as the activity meets all other conditions of the WQC. Emergency projects described in GP 25 must obtain an emergency certification or otherwise be authorized pursuant to 310 CMR 10.06, qualify under a Severe Weather Emergency Declaration pursuant to 310 CMR 10.06(8) issued by the MassDEP, or meet the requirements of 9.12(2) or (3) in order to be certified under the WQC. Prospective permittees may refer to the following link to determine if their activity is eligible: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/ Massachusetts-General-Permit/. The General 401 WQC is located here, and it provides detailed information regarding what activities are certified and the conditions for certification. Activities listed in 314 CMR 9.03 that are not exempt from the Wetland Protection Act must have a valid Final Order of Conditions (OOC) or Final Restoration Order of Conditions pursuant to 310 CMR 10.00 to be eligible under the General 401 WQC.
b. Individual 401 WQC: Prospective permittees shall contact MassDEP and apply for an individual 401 WQC if their activity does not qualify for a General 401 WQC as outlined above. MassDEP may issue, waive, or deny the individual 401 WQC on a case-by-case basis. All activities listed in 314 CMR 9.04 must obtain an individual 401 WQC from MassDEP to be eligible under these GPs. When an Individual 401 WQC is required for *PCN activities*, the prospective permittee shall submit their Individual 401 WQC application concurrently to MassDEP and USACE to comply with 40 CFR 121.
c. The prospective permittee is responsible for determining the appropriate 401 WQC requirement and submitting this information to the USACE at the time of their PCN application or when completing their SVN. Prospective permittees that are unsure of whether their activity has been certified should contact MassDEP for a determination.
d. As applicable, all activities shall be compliant with the Massachusetts Stormwater Handbook. The Stormwater Handbook can be accessed on the NAE Regulatory website here: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/.
e. No work requiring authorization under Section 404 of the CWA may be performed unless (1) the prospective permittee qualifies for coverage under the April 21, 2023 General 401 WQC, (2) the prospective permittee receives an individual Section 401 WQC from the MassDEP, or (3) the MassDEP waives individual Section 401 WQC.

9. Coastal Zone Management. The permittee must obtain CZM consistency concurrence when an activity is located in the coastal zone in order to be eligible under the MA GP. This requirement

shall be satisfied by acquiring one of the following from the Massachusetts Office of Coastal Zone Management (MA CZM):

a. General CZM Federal Consistency Concurrence (General Concurrence): MA CZM has granted General Concurrence for all SV and PCN activities for GPs 1-25. The prospective permittee must obtain all applicable permits and approvals before construction of the authorized activity begins (e.g., before work begins on site). For SVs, General Concurrence is automatically granted and no further action is required from the prospective permittee. For PCNs, the USACE will coordinate with MA CZM to acquire General Concurrence as part of the PCN application review.
b. Individual CZM Federal Consistency Concurrence (Individual Concurrence): In certain cases, MA CZM may elevate any GP activity 1-25 and require Individual Concurrence. The prospective permittee must contact MA CZM and follow the procedures to obtain Individual Concurrence as determined appropriate by MA CZM.
c. Permittees must obtain CZM consistency concurrence as outlined above before commencing work authorized under these GPs.

10. Federal Threatened and Endangered Species

a. No activity is authorized under any GP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. No activity is authorized under any GP which "may affect" a listed species or critical habitat, unless ESA section 7 consultation addressing the consequences of the proposed activity on listed species or critical habitat has been completed. See 50 CFR 402.02 for the definition of "effects of the action" for the purposes of ESA section 7 consultation, as well as 50 CFR 402.17, which provides further explanation under ESA section 7 regarding "activities that are reasonably certain to occur" and "consequences caused by the proposed action."
b. Other Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If a PCN is required for the proposed activity, the Federal permittee must provide USACE with the appropriate documentation to demonstrate compliance with those requirements. The USACE will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.
c. USFWS ESA-Listed Species: Non-federal applicants shall use the USFWS website, Information for Planning and Consultation (IPAC), to determine if their activity is located within the ESA-listed species range. The IPAC website can be accessed on the NAE Regulatory website: https://www. nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/. Applicants shall ensure they have an updated, valid species list before construction begins. This may require applicants to update their species list in IPAC before the start of construction. Note: Applicants should refer to the NAE Regulatory Website at the link above to determine if they have been designated as a non-federal representative. Applicants shall complete Section 7 consultation according to the guidance document located on the NAE Regulatory Website. After completing the Rangewide Determination Key and reaching the outcome "may affect, not likely to adversely affect", you may be required to wait up to 15 days before that outcome is final and compliance under Section 7 of the ESA is fulfilled.

i. *Self-Verification Criteria*: The activity is SV-eligible if:
   1) The activity is not located within the ESA-listed species range;
   2) Another (lead) Federal agency has completed Section 7 consultation; or
   3) The activity is located within the ESA-listed species range ***and*** USACE has designated the applicant as a non-federal representative under 50 CFR 402.08 of the ESA for all

species within the project's action area. As the non-federal representative, the applicant shall complete consultation through IPAC and reach the outcome of "no effect" or "not likely to adversely affect".

ii. *Pre-Construction Notification Criteria*: The activity requires a PCN if:

1) The activity is located within the ESA-listed species range ***and*** USACE has NOT designated the applicant as a non-federal representative under 50 CFR 402.08 of the ESA for all species within the project's action area;

2) The activity is located in designated or proposed critical habitat; or

3) The activity is located within the ESA-listed species range and completion of the IPAC determination key has resulted in the outcome of "may affect" or "may affect, likely to adversely affect"; or

4) A PCN is required elsewhere in this document.

d. NOAA-Listed Species: Non-federal applicants shall refer to the Section 7 Mapper for federally listed species to determine if any species are mapped as present. When NOAA-listed species are present, the applicant shall generate a species report through the mapper and submit this document as part of their PCN or SVN submission. The NOAA Fisheries' Section 7 Mapper can be accessed here on the NAE Regulatory website here: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/.

e. Authorization of an activity by an GP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

11. Essential Fish Habitat (EFH).

a. SV eligible activities have been determined to result in no more than minimal adverse effects, provided the permittee complies with all terms and conditions of the MA GP as appliable to the activity. NMFS has granted General Concurrence [50 CFR 600.920(g)] for all SV eligible activities. These activities do not require project specific EFH consultation.

b. For PCN required activities, the applicant is required to describe and identify potential adverse effects to EFH and should refer to NOAA Fisheries' EFH Mapper (http://www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper) and Omnibus Essential Fish Habitat Amendment 2 Volume 2: EFH and HAPC Designation Alternatives and Environmental Impacts (https://www.habitat.noaa.gov/application/efhmapper/oa2_efh_hapc.pdf). If an activity is located within EFH, the PCN application must contain:

1. A description of the action located in EFH.
2. An analysis of the potential adverse effects of the action on EFH and the managed Species.
3. Conclusions regarding the effects of the action on EFH.
4. Proposed mitigation, if applicable (refer to the mitigation thresholds located in Section V).

c. Federal agencies shall follow their own procedures for complying with the EFH requirements of the Magnuson-Stevens Fishery Conservation and Management Act. For activities requiring a PCN, the applicant is responsible for furnishing documentation that demonstrates consultation for EFH has been completed.

d. For PCN activities, no work may commence until EFH consultation as required by the Magnuson-Stevens Act has been completed.

12. National Lands. Activities that impinge upon the value of any National Wildlife Refuge, National Forest, National Marine Sanctuary, National Historic Landmarks or any other area administered by the National Park Service, U. S. Fish and Wildlife Service (USFWS) or U.S. Forest Service (USFS) require a PCN or Individual Permit. Federal land managers seeking authorization for activities located in the above listed National Lands may proceed under SV, unless a PCN is required elsewhere in this document.

13. Wild and Scenic Rivers. The following activities in designated river or study river segments in the National Wild and Scenic River (WSR) System require a PCN unless the Federal agency with direct management responsibility for such river, in Massachusetts this is generally the National Park Service, has determined in writing to the proponent that the proposed work will not adversely affect the WSR designation or study status:

a. Activities that occur in WSR segments, in and 0.25 miles up or downstream of WSR segments, or in tributaries within 0.25 miles of WSR segments;
b. Activities that occur in wetlands within 0.25 miles of WSR segments;
c. Activities that have the potential to alter free-flowing characteristics in WSR segments.

No GP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

As of May 10, 2023, affected rivers in Massachusetts include: the Taunton River (40 miles), Sudbury River (16.6 miles), Assabet River (4.4 miles), Concord River (8 miles), Nashua River (27 miles), Squannacook River (16.3 miles), Nissitissit River (4.7 miles), and the Westfield River, including West Branch, Middle Branch, Gendale Brook, East Branch, Drowned Land Brook, Center Brook, Windsor Jambs Brook, Shaker Mill Brook, Depot Brook, Savery Brook, Watson Brook, Center Pond Brook (78.1 miles). The most up to date list of designated and study rivers and their descriptions may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: http://www.rivers.gov/.

14. Historic Properties

a. For all SV and PCN applications, permittees shall follow the guidance set forth in Appendix A, Guidance for NHPA Section 106 Compliance in Massachusetts.

b. No undertaking authorized by these GPs shall cause effects[1] (defined in 36 CFR Part 800 and 33 CFR Part 325, Appendix C, and its Interim Guidance) on properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places (NRHP)[2], including previously unknown historic properties within the permit area, unless the USACE or another Federal action agency has satisfied the consultation requirements of Section 106 of the National Historic Preservation Act (Section 106). If another Federal agency is determined the lead federal agency for compliance with Section 106, applicant must obtain the appropriate documentation and provide this information to the USACE to demonstrate compliance with Section 106. The applicant shall not begin the activity until the USACE notifies them in writing that the documentation provided satisfies Section 106 requirements.

[1] Effect means the alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register of Historic Properties.
[2] See the NAE Regulatory website, National Register of Historic Places link here: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/.

c. Many historic properties are not listed on the NRHP and may require identification and evaluation by qualified historic preservation and/or archaeological consultants. The State Historic Preservation Officer (SHPO), Massachusetts Board of Underwater Archaeological Resources (BUAR), local historical societies, certified local governments, general public, and NRHP may also be able to assist with locating information on:

i. Previously identified historic properties; and
ii. Areas with potential for the presence of historic properties.

d. Discovery of Previously Unknown Remains and Artifacts: If any previously unidentified human remains, cultural deposits, or artifacts are discovered while accomplishing the activity authorized by this permit, you must immediately notify the USACE of what you have found, and to the maximum extent practicable, cease work and avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The USACE will initiate the Federal, State and tribal coordination required to determine if the items or remains warrant a recovery effort and/or if the site is eligible for listing in the National Register of Historic Places.

e. Section 110k: Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. § 306113) prevents the USACE from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106, has intentionally significantly adversely effected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the USACE, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the USACE is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties effected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or effects historic properties on tribal lands or effects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

f. Underwater Archaeological Resources: Under Massachusetts General Law Ch. 6, s.'s 179-180, and Ch. 91, s. 63, the BUAR has statutory jurisdiction within state waters and is the sole trustee of the Commonwealth's underwater heritage, charged with the responsibility of encouraging the discovery and reporting, as well as the preservation and protection, of underwater archaeological resources. Underwater archaeological resources located within the waters of the Commonwealth of Massachusetts are property of the Commonwealth, which holds title to these resources and retains regulatory authority over their use. Under Massachusetts General Law, no person, organization or corporation may "remove, displace, damage, or destroy" any underwater archaeological resources located within the Commonwealth's submerged lands except through consultation with the BUAR and in conformity with the permits it issues. https://www.mass.gov/orgs/board-of-underwater-archaeological-resources.

15. USACE Property and Federal Projects. (33 USC §408)

a. USACE projects and property can be found at: https://www.nae.usace.army.mil/Missions/Civil-Works/.

b. In addition to any authorization under these GPs, prospective permittee shall contact the USACE Real Estate Division (https://www.nae.usace.army.mil/Missions/Real-Estate-Division/) at (978) 318-8585 for work occurring on or potentially affecting USACE properties and/or USACE-controlled easements. Work may not commence on USACE properties and/or USACE-controlled easements until they have received any required USACE real estate documents evidencing site-specific permission to work.

c. Any proposed temporary or permanent occupation or alteration of a Federal project (including, but not limited to, a levee, dike, floodwall, channel, anchorage, breakwater, seawall, bulkhead, jetty, wharf, pier, or other work built or maintained but not necessarily owned by the United States),

is not eligible for SV and requires a PCN. This includes all proposed structures and work in, over, or under a USACE federal navigation project (FNP) or in the FNP's buffer zone. The buffer zone is an area that extends from the horizontal limits of the FNP to a distance of three times the FNP's authorized depth. The activity also requires review and approval by the USACE pursuant to 33 USC 408 (Section 408 Permission). The prospective permittee may reach out to the POCs located here: https://www.nae.usace.army.mil/ Missions/Section-408/.
d. Any structure or work constructed in a FNP or its buffer zone shall be subject to removal at the owner's expense prior to any future USACE dredging or the performance of periodic hydrographic surveys.
e. Where a Section 408 permission is required, written verification for the PCN will not be issued prior to the decision on the Section 408 permission request.

16. Navigation
a. No activity may cause more than a minimal adverse effect on navigation.
b. Any safety lights and signals prescribed by the U.S. Coast Guard, must be installed, and maintained at the permittee's expense on authorized facilities in navigable waters of the U.S.
c. There shall be no unreasonable interference with navigation by the existence or use of the activity authorized herein, and no attempt shall be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the activity authorized herein.
d. The permittee understands and agrees that if future U.S. operations require the removal, relocation, or other alteration of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from USACE, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the U.S. No claim shall be made against the U.S. on account of any such removal or alteration.

17. Permit/Authorization Letter On-Site. For PCNs, the permittee shall ensure that a copy of these GPs and the accompanying authorization letter are at the work site (and the project office) whenever work is being performed, and that all personnel with operational control of the site ensure that all appropriate personnel performing work are fully aware of its terms and conditions. The entire permit authorization shall be made a part of any and all contracts and sub-contracts for work that affects areas of USACE jurisdiction at the site of the work authorized by these GPs. This shall be achieved by including the entire permit authorization in the specifications for work. The term "entire permit authorization" means these GPs, including GCs and the authorization letter (including its drawings, plans, appendices, special conditions, and other attachments), and any permit modifications. If the authorization letter is issued after the construction specifications, but before receipt of bids or quotes, the entire permit authorization shall be included as an addendum to the specifications. If the authorization letter is issued after receipt of bids or quotes, the entire permit authorization shall be included in the contract or sub-contract as a change order. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions contained within the entire authorization letter, and no contract or sub-contract shall require or allow unauthorized work in areas of USACE jurisdiction. For SVs, the permittee shall ensure that a complete and signed copy of the SVN is present on site during construction and is made available for review at any time by USACE and other Federal, State, & Local regulatory agencies. A complete and signed copy of the SVN must be submitted to USACE Regulatory within 30 days of initiating construction of the authorized activity, unless stated otherwise in the applicable GP.

18. Storage of Seasonal Structures. Coastal structures such as pier sections, floats, etc., that

are removed from the waterway for a portion of the year (often referred to as seasonal structures) shall be stored in an upland location, located above MHW and not in tidal wetlands. These seasonal structures may be stored on the fixed, pile-supported portion of the structure that is seaward of MHW. This is intended to prevent structures from being stored on the marsh substrate and the substrate seaward of MHW.

19. Pile Driving and Pile Removal in Navigable Waters.
a. Derelict, degraded or abandoned piles and sheet piles in navigable waters of the U.S., except for those inside existing work footprints for piers, must be completely removed, cut and/or driven to 3 feet below the substrate to prevent interference with navigation, and existing creosote piles that are affected by project activities shall be completely removed if practicable. In areas of fine-grained substrates, piles must be removed by the direct, vibratory or clamshell pull method[1] to minimize sedimentation and turbidity impacts and prevent interference with navigation from cut piles. Removed piles shall be disposed of in an upland location landward of MHW or OHW and not in wetlands, tidal wetlands or mudflats.
b. A PCN is required for the installation or removal of structures with jetting techniques.
c. A PCN is required for the installation of >12 inch-diameter piles of any material type or steel piles of any size in tidal waters, unless they are installed in the dry. If piles are not installed in the dry:
i. Impact pile driving shall commence with an initial set of three strikes by the hammer at 40% energy, followed by a one-minute wait period, then two subsequent 3-strike sets at 40% energy, with one minute waiting periods, before initiating continuous impact driving.
ii. Vibratory pile driving shall be initiated for 15 seconds at reduced energy followed by a one-minute waiting period. This sequence of 15 seconds of reduced energy driving, one-minute waiting period shall be repeated two more times, followed immediately by pile-driving at full rate and energy.
iii. In addition to using a soft start at the beginning of the workday for pile driving as described in 19c(i-ii), a soft start must also be used at any time following a cessation of pile driving for a period of 30 minutes or longer.
d. Bubble curtains may be used to reduce sound pressure levels during vibratory or impact hammer pile driving.

20. Time-of-Year (TOY) Restrictions. Activities that include in-water work must comply with the TOY Restrictions below to be SV eligible, otherwise a PCN is required. PCN submittals shall contain written justification for deviation from the TOY Restrictions. The term “in-water work” does not include conditions where the work site is “in-the-dry” (e.g., intertidal areas exposed at low tide). The term “in-the-dry” includes work contained within a cofferdam so long as the cofferdam is installed and subsequently removed outside the TOY Restriction. The TOY restrictions stated in Appendix B of the MA DMF Technical Report TR-47[2] can apply instead for activities in tidal waters if (1) TOYs are provided for a specific waterbody where the activity is proposed and (2) the TOYs are less restrictive than below. The activity must also not require a PCN elsewhere in this document to be SV eligible.

[1] Direct Pull: Each piling is wrapped with a choker cable or chain that is attached at the top to a crane. The crane then pulls the piling directly upward, removing the piling from the sediment. Vibratory Pull: The vibratory hammer is a large mechanical device (5-16 tons) that is suspended from a crane by a cable. The vibrating hammer loosens the piling while the crane pulls up. Clamshell Pull: This can remove intact, broken or damaged pilings. The clamshell bucket is a hinged steel apparatus that operates like a set of steel jaws. The bucket is lowered from a crane and the jaws grasp the piling stub as the crane pulls up. The size of the clamshell bucket is minimized to reduce turbidity during piling removal.
[2] The MA DMF Technical Report TR-47: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/

	TOY Restriction (No work)
Non-tidal Waters	Defer to TR-47
Tidal Waters	January 15 – November 15

Alternate work windows proposed under a PCN will generally be coordinated with the USFWS and NMFS. Resulting written verifications may include species-specific work allowed windows.

21. Heavy Equipment in Wetlands. Operating heavy equipment (drill rigs, fixed cranes, etc.) within wetlands shall be minimized, and such equipment shall not be stored, maintained, or repaired in wetlands, to the maximum extent practicable. Where construction requires heavy equipment operation in wetlands, the equipment shall:

i. Have low ground pressure (typically ≤3 psi);

ii. Be placed on swamp/construction/timber mats (herein referred to as "construction mats" or "mats") that are adequate to support the equipment in such a way as to minimize disturbance of wetland soil and vegetation. See GC 22 for information on the placement of construction mats; or

iii. Be operated on adequately dry or frozen wetlands such that shear pressure does not cause subsidence of the wetlands immediately beneath the equipment and upheaval of adjacent wetlands. Construction mats are to be placed in the wetland from the upland or from equipment positioned on mats if working within a wetland. Dragging construction mats into position is prohibited. Other support structures that are capable of safely supporting equipment may be used with written USACE authorization.

22. Temporary Fill, Work & Construction Mats.

a. *Construction mats in non-tidal waters*: Temporary construction mats shall be in place ≤1 year *and* for one growing season or less to be SV eligible. A PCN is required if construction mats are in place >1 year *or* for more than one growing season. Construction mats can be placed in an area of any size in non-tidal waters. The activity may occur in segments to ensure the requirements for SV above are met, otherwise a PCN is required.

b. *Construction mats in tidal waters*: Temporary construction mats placed in an area <5,000 SF in tidal waters are SV eligible, provided those mats are in place ≤6 months. Temporary construction mats placed in an area ≥5,000 SF or in place >6 months in tidal waters require a PCN.

c. *Management of construction mats:* At a minimum, construction mats shall be managed in accordance with the following construction mat best management practices (BMPs):

1. Mats shall be in good condition to ensure proper installation, use, and removal.
2. As feasible, mats shall be placed in a location that will minimize the amount of mats needed for the wetland crossing(s).
3. Inspect mats prior to their re-use and remove any plant debris. Mats are to be thoroughly cleaned before re-use to prevent the spread of invasive plant species.
4. Impacts to wetland areas shall be minimized during installation, use, and removal of the mats.
5. Adequate erosion & sediment controls shall be installed at approaches to mats to promote a smooth transition to, and minimize sediment tracking onto, the mats.
6. In most cases, mats should be placed along the travel area so that the individual boards are resting perpendicular to the direction of traffic. No gaps should exist between mats. Place mats far enough on either side of the resource area to rest on firm ground.

d. A PCN is required for temporary fills in place >2 years. All temporary fills and disturbed soils shall be stabilized to prevent the material from eroding into waters of the U.S. where it is not authorized. Work shall include phased or staged development to ensure only areas under active development are exposed and to allow for stabilization practices as soon as practicable. Temporary fill must be placed in a manner that will prevent it from being eroded by expected high flows.

e. Activities that require unconfined temporary fill and are authorized for discharge into waters of the U.S. shall consist of material that minimizes effects to water quality.
f. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Materials shall be placed in a location and manner that does not adversely impact surface or subsurface water flow into or out of the wetland. Temporary fill authorized for discharge into wetlands shall be placed on geotextile fabric or other appropriate material laid on the pre-construction wetland grade where practicable to minimize impacts and to facilitate restoration to the original grade. Construction mats are excluded from this requirement.
g. Construction debris and deteriorated materials shall not be located in waters of the U.S.
h. Temporary fills, construction mats, and corduroy roads shall be entirely removed as soon as they are no longer needed to construct the authorized activity and the disturbed areas be restored to pre-construction contours and conditions.
i. Construction equipment, such as temporary barges in tidal waters, shall provide clearance above the substrate to avoid grounding onto the substrate during all tides.

23. Restoration of Wetland Areas.
a. Upon completion of construction, all disturbed wetland areas shall be stabilized with a wetland seed mix or plant plugs containing only plant species native to New England, and be appropriate for site conditions, including salinity and frequency of inundation, and shall not contain any species listed in the “Invasive and Other Unacceptable Plant Species” Appendix K of the New England District “Compensatory Mitigation Standard Operating Procedures” found at https://www.nae.usace.army.mil/Missions/Regulatory/Mitigation.aspx.
b. The introduction or spread of invasive plant species in disturbed areas shall be prevented and controlled. Equipment shall be thoroughly cleaned before and after project construction to prevent the spread of invasive species. This includes, but is not limited to, tire treads and construction mats.
c. In areas of authorized temporary disturbance, if trees are cut in USACE jurisdiction, they shall be cut at or above ground level and not uprooted in order to prevent disruption of any kind to the wetland soil structure and to allow stump sprouts to revegetate the work area, unless otherwise authorized.
d. Wetland areas where permanent disturbance is not authorized shall be restored to their original condition and elevation, which under no circumstances shall be higher than the pre-construction elevation. Original condition means careful protection and/or removal of existing soil and vegetation, and replacement back to the original location such that the original soil layering and vegetation schemes are approximately the same, unless otherwise authorized.

24. Bank Stabilization.
a. Projects involving construction or reconstruction/maintenance of bank stabilization within USACE jurisdiction shall be designed to minimize environmental effects, effects to neighboring properties, scour, conversion of natural shoreline to hard armoring, etc. to the maximum extent practicable.
b. Projects involving the construction of new bank stabilization within USACE jurisdiction shall use bioengineering techniques and natural materials in the project design to the maximum extent practicable. Use of hard structures shall be eliminated or minimized unless the prospective permittee can demonstrate that use of bioengineering techniques is not practicable due to site conditions.
c. Where possible, bank stabilization projects shall optimize the natural function of the shoreline, including self-sustaining stability to attenuate flood flows, fishery, wildlife habitat and water quality protection, while protecting upland infrastructure from storm events that can cause erosion as well as impacts to public and private property.
d. No material shall be placed in excess of the minimum needed for erosion protection.
e. No material shall be placed in a manner that will be eroded by normal or expected high flows (properly anchored native trees and treetops may be used in low energy areas).

f. Native plants appropriate for current site conditions, including salinity, must be used for bioengineering or vegetative bank stabilization.
g. The activity must be properly maintained, which may require repairing it after severe storms or erosion events.

25. Soil Erosion and Sediment Controls.
a. Appropriate soil erosion and sediment controls[1] (hereinafter referred to as "controls") must installed prior to earth disturbance and maintained in effective operating condition during construction. Biodegradable wildlife friendly erosion controls should be used whenever practicable to minimize effects to water quality.
b. Activities in streams (rivers, streams, brooks, etc.) and tidal waters that are capable of producing sedimentation or turbidity should be done during periods of low-flow or no-flow, when the stream or tide is waterward of the work area. Controls may also be used to obtain dry work conditions (e.g., coffer dam, turbidity curtain). The prospective permittee must demonstrate in the project plans where the controls are proposed and how these controls would avoid and/or minimize turbidity or sedimentation.
c. A PCN is required for controls that encroach: i) >25% of the stream width measured from OHW in non-tidal diadromous streams from March 15 to June 30; or ii) >25% of the waterway width measured from MHW in tidal waters from Feb. 1 to June 30, or >50% of the waterway width measured from MHW in tidal waters from July 1 to Jan. 14. This is to protect upstream fish passage. Proponents must also maintain downstream fish passage throughout the project.
d. No dewatering shall occur with direct discharge to waters or wetlands. Excess water in isolated work areas shall be pumped or directed to a sedimentation basin, tank or other dewatering structures in an upland area adequately separated from waters or wetlands. Suspended solids shall be removed prior to discharge back into waters or wetlands from these dewatering structures. All discharge points back into waters and wetlands shall use appropriate energy dissipaters and erosion and sedimentation control BMPs.
e. Temporary controls shall be removed upon completion of work, but not until all exposed soil and other fills, as well as any work waterward of OHW or the HTL, are permanently stabilized at the earliest practicable date. Sediment and debris collected by these devices shall be removed and placed at an upland location in a manner that will prevent its later erosion into a waterway or wetland. Controls may be left in place if they are biodegradable and flows and aquatic life movements are not disrupted.

26. Aquatic Life Movements and Management of Water Flows.
a. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies and wetlands shall be:
   i. Suitably spanned, bridged, culverted, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species; and
   ii. Properly aligned and constructed to prevent bank erosion or streambed scour both adjacent to and inside the crossing.

[1] Appropriate soil erosion, sediment and turbidity controls include cofferdams, bypass pumping around barriers immediately up and downstream of the work footprint (i.e., dam and pump), installation of sediment control barriers (i.e., silt fence, vegetated filter strips, geotextile silt fences, filter tubes, erosion control mixes, hay bales or other devices) downhill of all exposed areas, stream fords, retention of existing vegetated buffers, application of temporary mulching during construction, phased construction, and permanent seeding and stabilization, etc.

b. To avoid adverse impacts on aquatic organisms, the low flow channel/thalweg shall remain unobstructed during periods of low flow, except when necessary to perform the authorized work.
c. For work in tidal waters, in-stream controls (e.g., cofferdams) should be installed in such a way as to not obstruct fish passage.
d. Riprap and other stream bed materials shall be installed in a manner that avoids organism entrapment in rock voids or water displaced to subterranean flow with crushed stone and riprap.
e. To the maximum extent practicable, the preconstruction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity shall not restrict or impede the passage of normal or high flows unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

27. Spawning, Breeding, and Migratory Areas.
a. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized under these GPs.
b. Activities in waters of the U.S. that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.
c. The applicant is responsible for obtaining any "take" permits required under the USFWS's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The applicant should contact the appropriate local office of the USFWS to determine if such "take" permits are required for a particular activity.
d. Information on spawning habitat for species managed under the Magnuson-Stevens Fishery Conservation and Management Act (i.e., EFH for spawning adults) can be obtained from NAE Regulatory website, Essential Fish Habitat section, at: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/.
e. Information regarding diadromous fish habitat can be obtained from the following DMF website at: https://www.mass.gov/info-details/massgis-data-diadromous-fish.

28. Vernal Pools.
a. A PCN is required if a discharge of dredged or fill material is proposed within a vernal pool depression that is also a water of the U.S.
b. Vernal pools must be identified on the plans that show aquatic resource delineations.
c. Adverse impacts to vernal pools shall be avoided & minimized to the maximum extent practicable.

29. Invasive Species.
a. The introduction, spread or the increased risk of invasion of invasive plant or animal species on the project site, into new or disturbed areas, or areas adjacent to the project site caused by the site work shall be avoided. Construction mats shall be thoroughly cleaned before reuse to avoid spread of invasive species.
b. Unless otherwise directed by USACE, all applications for PCN non-tidal projects proposing fill in USACE jurisdiction shall include an Invasive Species Control Plan. Additional information can be found at: https://www.nae.usace.army.mil/Missions/Regulatory/Invasive-Species/, https://www.nae.usace.army.mil/Missions/Regulatory/Mitigation/.

30. Fills Within 100-Year Floodplains. The activity shall comply with applicable Federal Emergency Management Agency (FEMA) approved, Massachusetts Emergency Management

Agency (MEMA) approved and/or local floodplain management requirements. Applicants should contact FEMA and/or MEMA regarding floodplain management requirements.

31. Stream Work and Crossings & Wetland Crossings.
a. When feasible, all temporary and permanent crossings of waterbodies and wetlands (hereinafter referred to as "crossings") shall conform to the "Massachusetts River and Stream Crossing Standards" located at: https://www.mass.gov/doc/massachusetts-river-and-stream-crossing-standards/download or https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/. Projects that do not conform to these guidelines shall be reviewed under PCN or IP procedures.
b. Crossings shall be suitably culverted, bridged, or otherwise designed to withstand and to prevent the restriction of high flows, to maintain existing low flows, maintain water quality, and not obstruct the movement of aquatic life indigenous to the waterbody beyond the duration of construction.
c. Crossings shall be installed in such a manner as to preserve hydraulic capacity and flow, sediment transport, and organism passage at its present level, between the wetlands on either side of the road. The applicant shall take necessary measures to correct any wetland damage resulting from deficiencies in hydraulic capacity, sediment transport and organism passage.
d. Stream crossings shall utilize a natural mixed grain-size streambed material composition that matches upstream and downstream substrates to create a stable streambed. Substrate should function appropriately during normal and high flows without washing out. If natural streambed material is not utilized, a PCN is required.
e. Activities involving open trench excavation in flowing waters require a PCN. Work should not occur in flowing waters (requires using management techniques such as temporary flume pipes, culverts, cofferdams, etc.). Normal flows should be maintained within the stream boundary's confines when practicable. Projects utilizing these management techniques must meet all applicable terms and conditions of the GP, including the GCs in Section IV.

32. Utility Line Installation and Removal
a. Subsurface utility lines must be installed at a sufficient depth to avoid damage from anchors, dredging, etc., and to prevent exposure from erosion and stream adjustment.
b. When utility lines are installed via horizontal directional drilling, a frac-out contingency plan shall be present on site for the duration of construction. As necessary, the applicant shall immediately contain, control, recover, and remove drilling fluids released into the environment.
c. Abandoned or inactive utility lines must be removed and faulty lines (e.g., leaking hazardous substances, petroleum products, etc.) must be removed or repaired. A written verification from the USACE is required if they are to remain in place, e.g., to protect sensitive areas or ensure safety.
d. Utility lines shall not adversely alter existing hydrology, and trenches cannot be constructed or backfilled in such a manner as to drain waters of the U.S. (e.g., backfilling with extensive gravel layers, creating a French drain effect). In wetland areas, structures such as ditch plugs, cut-off walls, clay blocks, bentonite, or other suitable material shall be used within utility trenches to ensure that the trench through which the utility line is installed does not drain waters of the U.S. including wetlands.
e. Stockpiling of tree debris, to the extent where it has the effect of fill material, shall not occur in waters of the U.S. Tree debris shall be removed from waters of the U.S. and placed in uplands without causing additional disturbance to aquatic resources. Failure to meet this condition could change the bottom elevation of the wetland and be considered a discharge of fill material, and depending on the area of alteration, may require a PCN or IP.

33. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

34. Coral Reefs. Impacts to coral reefs are not authorized under these GPs. Coral reefs consist of the skeletal deposit, usually of calcareous or silicaceous materials, produced by the vital activities of anthozoan polyps or other invertebrate organisms present in growing portions of the reef.

35. Blasting. Blasting in waters of the U.S. associated with work such as dredging, trenching, pile installation, etc. is not authorized under these GPs.

36. Inspections. The permittee shall allow USACE to make periodic inspections at any time deemed necessary to ensure that the work is being or has been performed in accordance with the terms and conditions of this permit. To facilitate these inspections, for activities requiring a PCN, the permittee shall complete and return the Certificate of Compliance when it is provided with a PCN verification letter. For SV-eligible activities, the permittee shall complete and submit the SVN to USACE within 30 days of initiating project construction, at which point, USACE may opt to inspect the activity to verify compliance with the terms and conditions of the GP. Post-construction engineering drawings may be required by USACE for completed work. This includes post-dredging survey drawings for any dredging work.

37. Maintenance. The permittee shall maintain the activity authorized by these GPs in good condition and in conformance with the terms and conditions of this permit. Some maintenance activities may not be subject to federal regulation under Section 404 in accordance with 33 CFR 323.4(a)(2). This condition is not applicable to maintenance of dredging projects. Prospective permittees should contact USACE to inquire about maintenance of dredging projects, and its eligibility under these GPs. Maintenance dredging is subject to the review thresholds in GP #7 as well as any conditions included in a written USACE authorization. Maintenance dredging includes only those areas and depths previously authorized and dredged.

38. Property Rights. Per 33 CFR 320.4(g)(6), these GPs do not convey any property rights, either in real estate or material, or any exclusive privileges, nor do they authorize any injury to property or invasion of rights or any infringement of Federal, State, or local laws or regulations.

39. Transfer of GP Verifications. When the work authorized by these GPs is still in existence at the time the property is transferred, the terms and conditions of these GPs, including any special conditions, will continue to be binding on the entity or individual who received the GP authorizations, as well as the new owner(s) of the property. If the permittee sells the property associated with a GP authorization, the applicant may transfer the GP authorization to the new owner by submitting a letter to USACE to validate the transfer. A copy of the GP authorization letter must be attached to the letter, and the letter must include the following statement: “The terms and conditions of these general permits, including any special conditions, will continue to be binding on the new owner(s) of the property.” This letter shall be signed by both the seller and new property owner(s).

40. Modification, Suspension, and Revocation. These GPs and any individual authorization issued thereof may be either modified, suspended, or revoked in whole or in part pursuant to the policies and procedures of 33 CFR 325.7; and any such action shall not be the basis for any claim for damages against the U.S.

41. Special Conditions. The USACE may impose other special conditions on a project authorized pursuant to these GPs that are determined necessary to minimize adverse navigational and/or environmental effects or based on any other factor of the public interest. Failure to comply with all conditions of the authorization, including special conditions, constitutes a permit violation and may subject the applicant to criminal, civil, or administrative penalties or restoration.

42. False or Incomplete Information. If USACE makes a determination regarding the eligibility of a project under these GPs, and subsequently discovers that it has relied on false, incomplete, or inaccurate information provided by the applicant, the authorization will not be valid, and the U.S. Government may institute appropriate legal proceedings.

43. Abandonment. If the permittee decides to abandon the activity authorized under these GPs, unless such abandonment is merely the transfer of property to a third party, he/she/they may be required to restore the area to the satisfaction of USACE.

44. Enforcement cases. These GPs do not apply to any existing or proposed activity in USACE jurisdiction associated with an on-going USACE or EPA enforcement action, until such time as the enforcement action is resolved or USACE or EPA determines that the activity may proceed independently without compromising the enforcement action.

45. Previously Authorized Activities.

a. Completed projects that received prior authorization from USACE (SV or PCN), shall remain authorized in accordance with the original terms and conditions of those authorizations, including their terms, GCs, and any special conditions provided in a written verification.

b. Activities authorized pursuant to 33 CFR 330.3 (activities occurring before certain dates) are not affected by these GPs.

46. Duration of Authorization.

These GPs expire on June 1, 2028. Activities authorized under these GPs will remain authorized until the GPs expire, unless discretionary authority has been exercised on a case-by-case basis to modify, suspend, or revoke the authorization in accordance with 33 CFR 325.2(e)(2). Activities authorized under GPs 1-25 that have either commenced (i.e., are under construction) or are under contract to commence in reliance upon this authorization will have until June 1, 2029 to complete the work. If requested by USACE, the permittee shall furnish documentation that demonstrates the project was under construction or under contract to commence by June 1, 2028. If work is not completed before June 1, 2029, the permittee must contact USACE. The USACE may issue a new authorization provided the project meets the terms and conditions of the MA GPs in effect at the time. Activities completed under the SV or PCN authorizations of these GPs will continue to be authorized after their expiration date.

SECTION V: MITIGATION STANDARDS

1. Mitigation Types

For all activities, applicants must (a) demonstrate how the project has been designed to avoid or minimize impacts to aquatic resources; and (b) describe measures taken to avoid or minimize impacts to aquatic resources through construction techniques and/or site access. Please see https://www.nae.usace.army.mil/Missions/Regulatory/Mitigation/ for assistance with preparing mitigation in accordance with the 2008 Compensatory Mitigation for Losses of Aquatic Resources; Final Rule (33 CFR 332.3), hereafter referred to as "2008 Mitigation Rule."

Avoidance - Avoidance of impacts (direct and indirect) to aquatic resources means that project activities would not result in the placement of fill material or installation of a structure that could impact the resource area. Avoidance can include, but is not limited to, designing the project to avoid impacts to all or a portion of the aquatic resource areas.

Minimization - Minimization of impacts (direct and indirect) to aquatic resources means that measures are taken to ensure the amount and duration of impacts are limited to the maximum extent practicable. There are many minimization measures that could be implemented, prior to, during, or after the proposed activity, to ensure impacts are minimized. Examples include, but are not limited to:

- Permanent preservation of avoided aquatic features and buffer zone, in perpetuity. In these cases, the preserved area would be under a conservation easement and managed by conservation oriented third-party manager.
- Utilization of best management practices (BMPs) to ensure impacts are limited, and do not result in adverse impacts to the integrity and long-term functions of preserved/avoided features.

Compensatory Mitigation - Compensatory mitigation is generally required for PCN activities in which the impacts to the aquatic resources have been avoided and minimized to the maximum extent practicable but would still result in unavoidable adverse effects to the environment that are considered more than minimal or are contrary to the public interest. *Whatever the case may be, compensatory mitigation is no substitute for avoidance and minimization.*

2. Thresholds for Compensatory Mitigation

The basic objective of compensatory mitigation in the USACE Regulatory Program is to offset environmental losses resulting from unavoidable impacts to waters of the U.S. authorized by Department of the Army permits. **The following compensatory mitigation thresholds apply to all PCN activities that result in loss[1] of the resource area types listed below. Activities[2] in waters of the U.S. associated with the restoration, enhancement, and establishment of tidal and non-tidal aquatic resources are not considered loss and are not subject to the thresholds below.** Thresholds for different resource areas may not be combined to exceed 5,000 SF of total loss of all waters. The USACE will continue to evaluate projects on a case-by-case basis, and may in some cases require compensatory mitigation below these thresholds (e.g. minor impacts that add to a cumulative loss).

[1] See definition of loss in Section VII.
[2] These activities must result in net increases in aquatic resource functions and services to be exempted from the thresholds above.

Compensatory Mitigation Thresholds in Massachusetts		
Resource Area	**Non-Tidal Threshold**	**Tidal Threshold**
Stream	200 LF	200 LF
Bank Stabilization	500 LF	500 LF
Open Water	Project Dependent	Project Dependent
Wetland	5,000 SF	500 SF
Vernal Pool	All	N/A
SAV	Project dependent	25 SF
Mudflat	N/A	1,000 SF
Intertidal	N/A	1,000 SF

These thresholds can be utilized to determine at what point compensatory mitigation is required but are not used to determine how much mitigation may be needed to offset impacts to resources. Per the 2008 Mitigation Rule (33 CFR 332.3(f)(1)) "the amount of required compensatory mitigation must be, to the extent practicable, sufficient to replace lost aquatic resource functions. In cases where appropriate functional or condition assessment methods or other suitable metrics are available, these methods should be used where practicable to determine how much compensatory mitigation is required. If a functional or condition assessment or other suitable metric is not used, a minimum one-to-one acreage or linear foot compensation ratios must be used."

3. Compensatory Mitigation Hierarchy

Compensatory mitigation should follow the hierarchy as outlined in 33 CFR 332.3(b)(2-6) or current regulation. This hierarchy in order of preference includes: (1) Mitigation Bank credits, (2) In-Lieu Fee program credits, (3) permittee-responsible mitigation under a watershed approach, (4) permittee-responsible mitigation through on-site and in-kind mitigation, and (5) permittee-responsible mitigation through off-site and/or out-of-kind mitigation. If the proposed mitigation deviates from this mitigation hierarchy, the applicant **must** justify in writing why the proposed mitigation is environmentally preferable to the preferred method of compensatory mitigation (See 2008 Mitigation Rule). **In order for your application to be considered complete, you must provide a statement that discusses how your project will compensate for the loss or impact to aquatic resources.** If you are proposing permittee responsible mitigation, the 12 components of a mitigation plan (33 CFR 332.4(c)(2-14) must be addressed for your application to be considered complete. Prospective applicants are encouraged to contact USACE with questions at any time. Addressing the 12 components of a mitigation plan is commensurate with the amount of compensatory mitigation required, and USACE can assist prospective applicants with the level of information needed to satisfy each component.

For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee.

4. In-Lieu Fee (ILF)

The purchase of credits from the Massachusetts In-Lieu Fee Program (MA ILFP) is the ***preferred*** method of compensatory mitigation in Massachusetts since, as of the issuance date of this GP, there are no mitigation banks available in Massachusetts. The applicant shall develop a mitigation plan that addresses the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)).

The MA ILFP is administered by the Massachusetts Department of Fish & Game (DFG) in accordance with the 2008 Mitigation Rule at 33 CFR 332. The Mitigation Rule governs in-lieu fee compensatory mitigation associated with USACE permits under §404 of the Clean Water Act and/or §9 or §10 of the Rivers and Harbors Act of 1899.

MA ILFP Website: https://www.mass.gov/in-lieu-fee-program

Acceptance of an ILF payment into the ILFP established by the 2014 MA ILFP Instrument (link below) is an acknowledgement by DFG that it assumes all legal responsibility for satisfying the mitigation requirements of the USACE (i.e., the implementation, performance, and long-term management and monitoring of the compensatory mitigation project(s) approved under this Instrument and subsequent Compensatory Mitigation Plans). This transfer of legal responsibility is established by: 1) the approval of this In-Lieu Fee Instrument; 2) receipt by the district engineer of a Notice of Credit Sale and Transfer of Legal Responsibility to DFG that is signed by the DFG and the permittee and dated; and 3) the transfer of fees from the permittee to DFG.

MA ILFP Fact Sheet: https://www.mass.gov/files/documents/2017/01/sj/ilfp-fact-sheet-ma-ilfp-fees.pdf

MA ILFP Instrument: https://www.mass.gov/files/documents/2016/08/nd/ilfp-final-instrument-dfg.pdf

5. Permittee-Responsible

The USACE may determine that the proposed permittee-responsible compensatory mitigation is appropriate on a case-by-case basis. As described in the Compensatory Mitigation Hierarchy section above, applicants must justify in writing why the proposed mitigation is environmentally preferable to the purchase of ILF credits. Applicants are encouraged to contact the USACE prior to submission of a permit application to seek further guidance regarding USACE mitigation requirements.

Applicants will demonstrate their proposed compensatory mitigation in writing by addressing the 12 components of a mitigation plan (33 CFR 332.4(c)(2-14). *Please note that all elements must be addressed, or the permit application will be deemed incomplete.* In certain circumstances, the district engineer may determine that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). Guidance on how to address these components can be found on the New England District Mitigation webpage: https://www.nae.usace.army.mil/Missions/Regulatory/Mitigation/

Performance standards will be used to measure the successfulness of the mitigation project. A successful mitigation project is one that is self-sustaining. For a mitigation project that will restore, enhance, or create wetlands, proper performance standards must address hydrology, hydric soils, and hydrophytic vegetation. The mitigation proposal must include an explanation of quantitative methods used to measure the success of performance standards (i.e., percent cover may be measured using vegetation plots, hydrology may be measured using data loggers, soil cores may be taken and evaluated for hydric soil indicators).

Monitoring methods should include quantitative sampling methods following established, scientific protocols. Sampling documentation, as part of monitoring reports, should include maps and coordinates (also shapefiles, if available) showing locations of sampling points, transects, quadrats, etc. In addition, permanent photo stations should be established coincident with sampling locations.

SECTION VI: FEDERAL & STATE AGENCY CONTACT INFORMATION & ORGANIZATIONAL WEBSITES

Federal Agencies

U.S. Army Corps of Engineers
Regulatory Division
696 Virginia Road
Concord, Massachusetts 01742-2751
(978) 318-8338 (phone); (978) 318-8303 (fax)
www.nae.usace.army.mil/missions/regulatory

U.S. Army Corps of Engineers
Navigation Division – Section 408
696 Virginia Road
Concord, Massachusetts 01742-2751
See link below for contact information:
https://www.nae.usace.army.mil/Missions/Section-408/

National Marine Fisheries Service
55 Great Republic Drive
Gloucester, Massachusetts 01930
(978) 281-9300 (phone)
(*Federal endangered species & EFH)*

U.S. Fish & Wildlife Service
70 Commercial Street, Suite 300
Concord, New Hampshire 03301
(603) 223-2541 (phone)
(Federal endangered species)

National Park Service
15 State Street
Boston, Massachusetts 02109
(617) 223-5191 (phone)
(*Wild and Scenic Rivers*)

Bureau of Ocean and Energy Management
1849 C Street, NW
Washington D.C. 20240
202-208-6474 (phone)
(*Offshore Wind Facilities)*

Chief, Risk Analysis Branch
FEMA Region 1
99 High Street, 6th Floor
U.S. Department of Homeland Security
Boston, Massachusetts 02110
(617) 956-7576 (phone)

Commander (dpb)
First Coast Guard District
Battery Building
One South Street
New York, New York 10004-1466
(212) 514-4331 (phone); (212) 514-4337 (fax)
(*Bridge permits*)

U.S. Environmental Protection Agency
5 Post Office Square
Suite 100 (OEP06–3)
Boston, Massachusetts 02109-3912
(617) 918-1692 (phone)

State Agencies in Massachusetts

Massachusetts Department of Environmental Protection (MassDEP)	
DEP Division of Wetlands & Waterways	100 Cambridge Street, Suite 900 Boston, Massachusetts 02114 (617) 292-5695
Northeast Region	150 Presidential Way, Suite 300 Woburn, Massachusetts 01801 (978) 694-3200
Southeast Region	20 Riverside Drive, Route 105 Lakeville, Massachusetts 02347 (508) 946-2800
Central Region	8 New Bond Street Worcester, Massachusetts 01606 (508) 792-7650
Western Region	436 Dwight Street Springfield, Massachusetts 01103 (413) 784-1100

Massachusetts Office of Coastal Zone Management (CZM) Emails may be sent to: czm@mass.gov	
MA Office of Coastal Zone Management	100 Cambridge Street, Suite 900 Boston, Massachusetts 02114 (617) 626-1200
North Shore Region	2 State Fish Pier Gloucester, Massachusetts 01930 (978) 281-3972
South Shore Region	175 Edward Foster Road Scituate, Massachusetts 02066
Cape Cod and Islands Region	3195 Main Street, P.O. Box 220 Barnstable, MA 02630
South Coastal Region	81-B County Road, Suite E Mattapoisett, MA 02739

Massachusetts Historical Commission (MHC)	
Office Location:	220 Morrisey Boulevard Boston, Massachusetts 02125 (617) 727-8470

Massachusetts Board of Underwater Archaeological Resources (BUAR) Emails may be sent to: david.s.robinson@mass.gov	
Office Location:	100 Cambridge Street, Suite 900 Boston, Massachusetts 02114 (617) 626-1014

SECTION VII: Definitions & Acronyms

Artificial or Living Reef: A structure which is constructed or placed in waters for the purpose of enhancing fishery resources and commercial and recreational fishing opportunities.
Attendant Features: Occurring with or as a result of; accompanying.
Biodegradable: A material that decomposes into elements found in nature within a reasonably short period of time and will not leave a residue of plastic or a petroleum derivative in the environment after degradation. In contrast, degradable plastics break down into plastic fragments that remain in the environment after degradation. Examples of biodegradable materials include jute, sisal, cotton, straw, burlap, coconut husk fiber (coir) or excelsior. In contrast, degradable plastics break down into plastic fragments that remain in the environment after degradation. Photodegradable, UV degradable or Oxo-(bio)degradable plastics are not considered biodegradable under this GP.
Boating facilities: These provide, rent or sell mooring space, such as marinas, yacht clubs, boat yards, dockominiums, municipal facilities, land/home owners, etc. Not classified as boating facilities are piers shared between two abutting properties or municipal mooring fields that charge an equitable user fee based on the actual costs incurred.
Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved. Must comply with the applicable provisions of 33 CFR 332. See also the New England District Compensatory Mitigation Guidance at http://www.nae.usace.army.mil/Missions/Regulatory/Mitigation.aspx.
Construction mats: Constructions, swamp and timber mats (herein referred to as “construction mats”) are generic terms used to describe structures that distribute equipment weight to prevent wetland damage while facilitating passage and providing work platforms for workers and equipment. They are comprised of sheets or mats made from a variety of materials in various sizes. A timber mat consists of large timbers bolted or cabled together. Corduroy roads, which are not considered to be construction mats, are cut trees and/or saplings with the crowns and branches removed, and the trunks lined up next to one another. Corduroy roads are typically installed as permanent structures. Like construction mats, they are considered as fill whether they are installed temporarily or permanently.
Cumulative Impacts: The impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.1). Although the impact of a particular discharge may constitute a minor change in itself, the cumulative effect of numerous such piecemeal changes can result in a major impairment of the water resources and interfere with the productivity and water quality of existing aquatic ecosystems. See 40 CFR 230.11(g).
Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.
Dredging:
Improvement Dredging: For the purposes of these GPs, this is dredging deeper than previously authorized by the USACE and dredged under that authorization.
Maintenance Dredging: For the purposes of these GPs, this is dredging from an area previously authorized by the USACE and dredged under that authorization. The USACE may require proof of authorization and dredging. Maintenance dredging typically refers to the routine removal of accumulated sediment to maintain the design depths of serviceable navigation channels, harbors, marinas, boat launches and port facilities. Maintenance dredging is conducted for navigational purposes and does not include any expansion of the previously dredged area. The USACE may

review a maintenance dredging activity as new dredging if sufficient time has elapsed to allow for the colonization of SAS, shellfish, etc.

New Dredging: For the purposes of these GPs, this is a) first time the USACE authorizes dredging of a particular location or b) dredging has not occurred for an extended period of time, and this has allowed for aquatic resources (i.e., eelgrass, shellfish, etc.) to redevelop in the area.

Dredged material & discharge of dredged material: These are defined at 33 CFR 323.2(c) and (d). The term dredged material means material that is excavated or dredged from waters of the U.S.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s) but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Ephemeral stream: A stream with flowing water only during, and for a short duration, after precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Erosion Controls: Appropriate soil erosion, sediment and turbidity controls include cofferdams, bypass pumping around barriers immediately up and downstream of the work footprint (i.e., dam and pump), installation of sediment control barriers (i.e., silt fence, vegetated filter strips, geotextile silt fences, filter tubes, erosion control mixes, hay bales or other devices) downhill of all exposed areas, stream fords, retention of existing vegetated buffers, application of temporary mulching during construction, phased construction, and permanent seeding and stabilization, etc.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area (33 CFR 332.2).

Expansions: Work that increases the footprint of fill, structures, depth of basin or drainage features, or floats, or slip capacity.

Essential Fish Habitat (EFH): The Federal Magnuson-Stevens Fishery Management and Conservation Act broadly defines EFH to include those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. See www.greateratlantic.fisheries.noaa.gov/habitat for more information.

Fill material & discharge of fill material: Material placed in waters of the U.S. where the material has the effect of either replacing any portion of a water of the U.S. with dry land or changing the bottom elevation of any portion of a water of the U.S. Fill material does not include any pollutant discharged into the water primarily to dispose of waste. These are defined at 33 CFR 323.2 (e) & (f).

Federal navigation projects (FNPs): These areas are maintained by the USACE; authorized, constructed and maintained on the premise that they will be accessible and available to all on equal terms; and comprised of USACE Federal anchorages, Federal channels and Federal turning basins. The buffer zone is equal to three times the authorized depth of a FNP. The following are FNPs in MA and more information, including the limits, is provided at www.nae.usace.army.mil/missions/navigation >> Navigation Projects:

- Andrews River, Harwich, MA
- Aunt Lydia's Cove
- Beverly Harbor
- Boston Harbor
- Buttermilk Bay Channel
- Canapitsit Channel
- Cape Cod Canal
- Chatham Harbor
- Cohasset Harbor
- Cross Rip Shoals, Nantucket Sound
- Cuttyhunk Harbor
- Dorchester Bay and Neponset River
- Duxbury Harbor
- Edgartown Harbor
- Essex River
- Fall River Harbor
- Falmouth Harbor
- Gloucester Harbor and Annisquam River
- Green Harbor
- Hingham Harbor
- Hyannis Harbor
- Ipswich River
- Island End River (Chelsea, MA)
- Kingston Harbor
- Lagoon Pond
- Little Harbor Woods Hole

Lynn Harbor
Malden River
Menemsha Creek
Merrimack River
Mystic River
Nantucket Harbor of Refuge
New Bedford and Fairhaven Harbor
Newburyport Harbor
Oak Bluffs Harbor
Pigeon Cove Harbor
Plymouth Harbor
Pollock Rip Shoals, Nantucket Sound
Provincetown Harbor
Red Brook Harbor
Rockport Harbor
Salem Harbor
Sandy Bay Harbor of Refuge
Saugus River
Scituate Harbor
Sesuit Harbor
Taunton River
Vineyard Haven Harbor
Wareham Harbor
Wellfleet Harbor
Westport River and Harbor
Weymouth Back River
Weymouth Fore and Town Rivers
Winthrop Harbor
Woods Hole Channel

Flume: An open artificial water channel, in the form of a gravity chute, which leads water from a diversion dam or weir alongside a natural flow. A flume can be used to measure the rate of flow.
FNP buffer zone: The buffer zone of a USACE Federal Navigation Project (FNP) is equal to three times the authorized depth of the FNP.
Frac out: During horizontal directional drilling (HDD) operations, drilling fluid travels up the borehole into a pit. When the borehole becomes obstructed or the pressure becomes too great inside the borehole, the ground fractures and fluid escapes to the surface and may affect surface waters.
Ground disturbance: Any activity that compacts, relocates, overturns, removes, mixes, or otherwise disturbs the ground, including under water. Ground disturbance can be caused by the use of hand tools (shovels, pick axe, posthole digger, etc.), heavy equipment (excavators, backhoes, bulldozers, dredgers, trenching and earthmoving equipment, etc.), and heavy trucks (large four wheel drive trucks, dump trucks and tractor trailers, etc.). Trenching, bulldozing, dredging, excavating, scraping, and plowing are typical examples of ground disturbance activities.
Height:width ratio: The height of structures shall at all points be equal to or exceed the width of the deck. For the purpose of this definition, height shall be measured from the marsh substrate to the bottom of the longitudinal support beam.
High Tide Line (HTL): The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides 58 that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds. (33 CFR 328). Refer to the highest predicted tide for the current year at the nearest NOAA tide gage. https://tidesandcurrents.noaa.gov/map/index.html
Historic Property: Any prehistoric or historic site (including archaeological sites), district, building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).
Impacts:
Direct Impacts: Effects that are caused by the activity and occur at the same time and place (40 CFR 1508.7).
Indirect impacts: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.
Secondary impacts: Effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material.

Information about secondary effects on aquatic ecosystems shall be considered prior to the time final section 404 action is taken by permitting authorities. Some examples of secondary effects on an aquatic ecosystem are: aquatic areas drained, flooded, fragmented; fluctuating water levels in an impoundment and downstream associated with the operation of a dam; septic tank leaching and surface runoff from residential or commercial developments on fill; and leachate and runoff from a sanitary landfill located in waters of the U.S. See 40 CFR 230.11(h).

Incidental Fallback: Incidental fallback is the redeposit of small volumes of dredged material that is incidental to excavation activity in waters of the U.S. when such material falls back to substantially the same place as the initial removal (33 CFR 323.2(d)(2)(iii)).

In the dry: Work that is done under dry conditions, e.g., work behind cofferdams or when the stream or tide is waterward of the work.

Independent utility: A test to determine what constitutes a single and complete non-linear project in the USACE Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Individual permit: A Department of the Army authorization that is issued following a case-by-case evaluation of a specific structure or work in accordance with the procedures of 33 CFR 322, or a specific project involving the proposed discharge(s) in accordance with the procedures of 33 CFR 323, and in accordance with the procedures of 33 CFR 325 and a determination that the proposed discharge is in the public interest pursuant to 33 CFR 320.

Intermittent stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Intertidal: The area in between mean low water and the high tide line.

Living reef: See the definition of “artificial or living reef.”

Living shoreline: A term used to describe a low-impact approach with a substantial biological component to shoreline protection and restoration along coastal shores, riparian zones, lacustrine fringe wetlands, or oyster or mussel reef structures. This approach integrates natural features to restore, enhance, maintain, or create habitat, functions, and processes while also functioning to mitigate flooding or shoreline erosion. Living shorelines may stabilize banks and shores with small fetch and gentle slopes that are subject to low-to mid-energy waves. A living shoreline has a footprint that is made up mostly of native material. It incorporates vegetation or other living, natural “soft” elements alone or in combination with some type of harder shoreline structure (e.g., oyster or mussel reefs or rock sills) for added protection and stability. Living shorelines should maintain the natural continuity of the land-water interface and retain or enhance shoreline ecological processes.

Loss of waters of the United States: Waters of the U.S. that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. The loss of stream bed includes the acres of stream bed that are permanently adversely affected by filling or excavation because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the U.S. is a threshold measurement of the impact to jurisdictional waters or wetlands for determining whether a project may qualify for a GP; it is not a net threshold that is calculated after considering compensatory mitigation that maybe used to offset losses of aquatic functions and services. Waters of the U.S. temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the U.S. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the U.S.

Maintenance: The repair, rehabilitation, or in-kind replacement of any previously authorized, currently serviceable structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3 – "Activities occurring before certain dates," provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Maintenance includes minor deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards that are necessary to make repair, rehabilitation, or replacement are authorized. Currently serviceable means useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Maintenance Exemption: In accordance with 33 CFR 323.4(a)(2), any discharge of dredged or fill material that may result from any of the following activities is not prohibited by or otherwise subject to regulation under Section 404 of the CWA: "Maintenance, including emergency reconstruction of recently damaged parts, of currently serviceable structures such as dikes, dams, levees, groins, riprap, breakwaters, causeways, bridge abutments or approaches, and transportation structures. Maintenance does not include any modification that changes the character, scope, or size of the original fill design."

Mean high water: Line on the shore reached by the plane of the average high water. Where precise determination of the actual location of the line becomes necessary, it must be established by survey with reference to the available tidal datum, preferably averaged over a period of 18.6 years. Less precise methods, such as observation of the "apparent shoreline" which is determined by reference to physical markings, lines of vegetation, or changes in type of vegetation, may be used only where an estimate is needed of the line reached by the mean high water.

Mechanized land clearing: Land clearing activities using mechanized equipment such as backhoes or bulldozers with sheer blades, rakes or discs constitute point source discharges and are subject to section 404 jurisdiction when they take place in wetlands or waters of the U.S (Regulatory Guidance Letter 90-05).

Metallic mineral: Any ore or material to be excavated from the natural deposits on or in the earth for its metallic mineral content to be used for commercial or industrial purposes. "Metallic mineral" does not include thorium or uranium.

Minor deviations: Deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, or current construction codes or safety standards, which are necessary to make repair, rehabilitation, or replacement are permitted, provided the adverse environmental effects resulting from such repair, rehabilitation, or replacement are minimal.

Natural Rocky Habitats: Intertidal and subtidal substrates of pebble-gravel, cobble, boulder, or rock ledge and outcrops. Manufactured stone (e.g., cur or engineered riprap) is not considered a natural rocky habitat. Natural rocky habitats are either found as pavement (consolidated pebble-gravel, cobble, or boulder areas) or as a mixture with fines (i.e., clay and sand) and other substrates. Rocky habitats as EFH are defined as follows: (1) All pebble-gravel, cobble, or boulder pavements; (2) Pebble-gravel mixed with fines: mixed substrate of pebble-gravel and fines where pebble-gravel is an evident component of the substrate (either through visual observation or within sediment samples). Sediment samples with a content of 10% or more of pebble-gravel in the top layer (6-12 inches) should be delineated; (3) Scattered cobble, scattered boulder, scattered cobble/boulder: mixed substate of cobble and/or boulder and other substrates. The aerial extent of cobbles and/or boulders should be delineated; and (4) All rock ledge outcrops: area should be delineated along the edge of the ledge/outcrop (as defined by NMFS Habitat and Ecosystems Services Branch, Gloucester, MA).

Navigable waters or Navigable waters of the U.S.: These waters are subject to section 10 of the Rivers and Harbors Act of 1899 and are defined as those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce (33 CFR Part 329). Work or structures in navigable

waters require permits pursuant to §9 and §10 of the Rivers and Harbors Act of 1899. Also see the definition of "waters of the U.S." below.
Note: Currently the following non-tidal waters have been determined to be navigable waters of the U.S. subject to permit jurisdiction in Massachusetts: Merrimack River, Connecticut River, and Charles River to the Watertown Dam.
Nearshore disposal: This is defined in the USACE Coastal Engineering Manual as "(1) In beach terminology an indefinite zone extending seaward from the shoreline well beyond the breaker zone. (2) The zone which extends from the swash zone to the position marking the start of the offshore zone, typically at water depths of the order of 20m." A nearshore berm is an artificial berm built in shallow water using dredged material. Often, the berm is intended to renourish the adjacent and downdrift shore over time under the influence of waves and currents.
Non-regulated activity: Only structures or fills that were previously authorized and are in compliance with the terms and condition of the original authorization can be maintained as a non-regulated activity under 33 CFR 323.4(a)(2). Minor deviations from the previously authorized footprint do not qualify as a non-regulated activity and require new authorization from the USACE. The state's maintenance provisions may differ from the USACE and a project may require reporting and written authorization from the state.
Non-tidal wetlands: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the HTL (*i.e.,* spring HTL). Also see the definition of "Waters of the U.S." below.
Oil or natural gas pipeline: Any pipe or pipeline for the transportation of any form of oil or natural gas, including products derived from oil or natural gas, such as gasoline, jet fuel, diesel fuel. heating oil, petrochemical feedstocks, waxes, lubricating oils, and asphalt.
Ordinary High Water Mark (OHWM): A line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas. See 33 CFR 328.3(e).
Overall project: The overall project, for purposes of these GPs, includes all regulated activities that are reasonably related and necessary to accomplish the project purpose. Also see the definition of "single and complete linear project."
Perennial stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.
Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.
Permanent impacts: Permanent impacts means waters of the U.S. that are permanently affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent impacts include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody.
Preconstruction notification (PCN): A request submitted by the applicant to the USACE for confirmation that a particular activity is authorized by these GPs. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Preconstruction notification may be required by the terms and conditions of these GPs. A PCN may be voluntarily submitted in cases where PCN is not required and the applicant wants confirmation that the activity is authorized under these GPs.
Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions (33 CFR 332.2).
Real estate subdivision: Includes circumstances where a landowner or developer divides a tract of land into smaller parcels for the purpose of selling, conveying, transferring, leasing, or

developing said parcels. This would include the entire area of a residential, commercial or other real estate subdivision, including all parcels and parts thereof

Reconfiguration zone: A USACE authorized area in which permittees may rearrange pile-supported structures and floats without additional authorizations. A reconfiguration zone does not grant exclusive privileges to an area or an increase in structure or float area.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/ historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in again in aquatic resource area and functions (33 CFR 332.2).

Reference Site: Reference sites - Compensatory restoration, rehabilitation, and creation mitigation projects should seek to duplicate the features of reference aquatic resources or enhance connectivity with adjacent natural upland and aquatic resource landscape elements. Performance standards related to reference sites are encouraged. Mitigation project sites must be selected based on their ability to be, and continue to be, resistant to disturbance from the surrounding landscape, by locating them adjacent to refuges, buffers, green spaces, and other preserved natural elements of the landscape. In general, aquatic resource mitigation projects must be designed to be self-sustaining, natural systems within the landscape and climate in which they are located, with little or no ongoing maintenance and/or hydrologic manipulation.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area (33 CFR 332.2).

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation (33 CFR 332.2).

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Sedimentation: Sedimentation is defined as the process of deposition of a solid material from a state of suspension. Deposited sediments may accumulate and have temporal impacts to aquatic resource areas. See secondary effects definition above. For the purposes of this document, “greater than minimal sedimentation” is generally not considered to occur when using proper erosion controls (GC 25) or when sedimentation is considered “de minimis” 33 CFR 323.2(d)(5).

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term “single and complete project” is defined as that portion of the total linear project proposed or accomplished by one owner/ developer or partnership or other association of owners/developers that includes all crossings of a single water of the U.S. (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for the purposes of these GPs. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term “single and complete project” is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete

non-linear project must have independent utility (see the definition of “independent utility”). Single and complete non-linear projects may not be “piecemealed” to avoid the limits in a GP authorization.

Special aquatic sites (SAS): These include inland and saltmarsh wetlands, mud flats, vegetated shallows, sanctuaries and refuges, coral reefs, and riffle and pool complexes. These are defined at 40 CFR 230.3 and listed in 40 CFR 230 Subpart E.

Streambed: The stream substrate between the OHW marks on each side. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the streambed, but outside of the OHW marks, are not considered part of the streambed.

Stream channelization: The manipulation of a stream’s course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the U.S.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Temporal loss: The time lag between the loss of aquatic resource functions caused by the permitted impacts and the replacement of aquatic resource functions at the compensatory mitigation site(s) (33 CFR 332.2).

Temporary impacts: Temporary impacts include, but are not limited to, jurisdictional waters that are temporarily filled, flooded, excavated, or drained because of the regulated activity. Impacts are considered temporary when they are removed immediately upon completion of the activity. Note: An impact is considered temporary when the aquatic resource is restored to pre-project conditions, but effects to archaeological and/or cultural resources may be permanent in duration.

Tidal wetlands: A wetland that is subject to the ebb and flow of the tide. See the definition of “Waters of the U.S.” below.

Tide gates: Structures such as duckbills, flap gates, manual and self-regulating tide gates, etc. that regulate or prevent upstream tidal flows.

Turbidity: A measure of the level of particles such as sediment, plankton, or organic by-products, in a body of water. As the turbidity of water increases, it becomes denser and less clear due to a higher concentration of these light-blocking particles. Suspended solids are more likely to carry toxic chemicals, and can also negatively affect aquatic organisms, water temperature, and dissolved oxygen levels.

Utility line: Any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose that is not oil, natural gas, or petrochemicals. A utility line also includes any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and radio and television communication. The term ‘utility line’ does not include activities that drain a water of the U.S., such as drainage tile or French drains, but it does apply to pipes conveying drainage from another area.

Vegetated shallows: Permanently inundated areas that under normal circumstances support communities of rooted aquatic vegetation, such as eelgrass *(Zostera marina)* and widgeon grass (*Rupia maritima*) in marine systems (does not include salt marsh) as well as a number of freshwater species in rivers and lakes. These are a type of SAS defined at 40 CFR 230.43. Vegetated shallows are commonly referred to as submerged aquatic vegetation or SAV. Vegetated shallow survey guidance is located at www.nae.usace.army.mil/missions/regulatory /jurisdiction-and-wetlands. Maps of vegetated shallows in Massachusetts are located at www.nae.usace.army.mil/missions/regulatory/state-general-permits/massachusetts-general-permit.

Vernal pools: For the purposes of these GPs, vernal pools are depressional wetland basins that typically dry up in most years and may contain inlets or outlets, typically of intermittent flow. Vernal pools range in both size and depth depending upon landscape position and parent material(s). In

most years, vernal pools support one or more of the following obligate indicator species: wood frog, spotted salamander, blue-spotted salamander, marbled salamander, Jefferson's salamander and fairy shrimp. However, they should preclude sustainable populations of predatory fish.

Water diversions: Water diversions are activities such as bypass pumping (e.g., "dam and pump") or water withdrawals. Temporary flume pipes, culverts or cofferdams where normal flows are maintained within the stream boundary's confines aren't water diversions. "Normal flows" are defined as no change in flow from pre-project conditions.

Waters of the United States (U.S.) These waterbodies are the waters where permits are required for the discharge of dredged or fill material pursuant to §404 of the CWA. These waters include but are not limited to navigable waters of the U.S. and tidal wetlands and include many non-tidal wetlands and other waterbodies. See definitions for navigable waters of the U.S., tidal wetlands, waterbody, and non-tidal wetlands. (33 CFR 328)

Waterbody: Examples of "waterbodies" include oceans, coastal waters, rivers, streams, ditches, lakes, ponds, and wetlands. If a wetland is adjacent to a waterbody determined to be a water of the U.S., that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)).

Weir: A barrier across a river designed to alter the flow characteristics. In most cases, weirs take the form of a barrier, smaller than most conventional dams, across a river that causes water to pool behind the structure and allows water to flow over the top. Weirs are commonly used to alter the flow regime of a river, prevent flooding, measure discharge and help render a river navigable.

Wetland: Wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. The Corps of Engineers Wetlands Delineation Manual in conjunction with the associated regional supplement should be used to determine if a wetland is present and delineate wetland boundaries.

Acronyms

BMPs	Best Management Practices
BUAR	Massachusetts Board of Underwater Archaeological Resources
CWA	Clean Water Act
CZM	Coastal Zone Management
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
EFH	Essential Fish Habitat
FNP	Federal Navigation Project
GC	General Condition
GP	General Permit
HTL	High Tide Line
IP	Individual Permit
LID	Low impact development
MassDEP	Massachusetts Department of Environmental Protection
MA DMF	Massachusetts Division of Marine Fisheries
MHC	Massachusetts Historical Commission
MHW	Mean High Water
MLLW	Mean Lower Low Water
MLW	Mean Low Water
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
OHW	Ordinary High Water Mark
PCN	Preconstruction Notification
SAS	Special Aquatic Sites
SF	Square Feet
SV	Self-Verification
SHPO	State Historic Preservation Officer
THPO	Tribal Historic Preservation Officer
USFWS	U.S. Fish and Wildlife Service
USCG	U.S. Coast Guard
USFS	U.S. Forest Service
USGS	U.S. Geological Service
WQC	Water Quality Certification

Appendix A: Guidance for NHPA Section 106 Compliance in Massachusetts

1. Purpose & Applicability

Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA) (54 U.S.C § 306108), requires Federal agencies to take into account the effects of their undertakings on Historic Properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. Therefore, in order for an activity to be eligible for authorization under the 2023 Massachusetts General Permit, the USACE must consider the effect the activity may have on historic properties. Historic properties may include, but are not limited to, historic districts, archaeological districts, sites, buildings, structures, objects, sacred sites, traditional cultural places, and traditional cultural landscapes that are included in, or eligible for inclusion in, the National Register of Historic Places (NRHP).

This guidance applies to projects that require authorization under Section 404 of the Clean Water Act (33 U.S.C. § 1344) and/or Section 10 of the Rivers and Harbors Act (33 U.S.C. §403) and will assist applicants when evaluating and documenting the presence of historic properties within or near their project site(s). The prospective applicant will evaluate their proposed project using the criteria below to determine if their project has the potential to affect historic properties and if so, whether or not historic properties are present or are likely to be present. All activities authorized under these GPs shall follow the terms outlined in General Condition 14: Historic Properties and General Condition 6: Tribal Rights & Burial Sites. Prospective applicants shall complete their due diligence according to the procedures below for their application to be deemed complete.

2. No Potential to Affect Historic Properties

Certain activities do not have the potential to cause effects on historic properties, assuming such historic properties were present, based on the nature of the activity and site-specific conditions. Therefore, these activities **do not** require historic property identification efforts or notification of the SHPO, THPOs, and/or BUAR under Section 106. The USACE has determined the following activities within the stated parameters have no potential to affect historic properties:

General Permit	Activity Parameters
1	Temporary buoys, markers and similar structures that are placed during winter events on ice and removed before spring thaw.
2	Repair or rehabilitation of structures that are less than 45 years in age. Any temporary structures or fills or work necessary to complete repairs or rehabilitation must not result in any ground disturbance.
3	Maintenance and replacement of moorings that are less than 45 years in age.
6	Maintenance, repair, replacement, or removal of utility lines, oil or natural gas pipelines, outfall or intake structures, and/or appurtenant features that are less than 45 years in age when all access, staging, and ground disturbance is strictly limited to previously disturbed areas (including any previous ground disturbance). Replacement must be in kind or smaller in size. Installation of tide gates on outfall structures that are less than 45 years in age.
7	Maintenance dredging of previously dredged areas where dredging does not extend beyond the original bottom elevations.

	Disposal of dredged material at an existing established and USACE-approved confined aquatic disposal cell. Beach nourishment in ongoing existing nourishment areas.
11	Fish and wildlife harvesting and attraction devices and activities.
13	Cleanup of hazardous and toxic waste materials, including contaminated sediments, that are less than 45 years in age.
16	Removal of land-based and water-based renewable energy generation facilities and hydropower projects that are less than 45 years in age.
18	Installation of buoys, floats, racks, trays, nets, lines, tubes, containers, and other structures for previously authorized by the USACE and ongoing aquaculture activities. Discharges of dredged or fill material into tidal or non-tidal waters necessary for shellfish seeding, rearing, cultivating, transplanting, and harvesting activities for previously authorized and ongoing aquaculture activities.
20	Maintenance activities for existing living shorelines excluding maintenance activities that require new ground disturbance such as excavation or re-sloping of the bank/shoreline.
22	Reshaping or maintenance of existing drainage ditches less than 45 years in age excluding ditch enlargement.
23	Placement of temporary and removable linear transportation and wetland/stream crossings that have no ground disturbance prior to placement, during placement, and during removal (i.e., placed on the surface and subsequently removed within one year of placement).
24	Placement of temporary and removable crossings and cofferdams that have no ground disturbance prior to placement, during placement, and during removal (i.e., placed on the surface and subsequently removed within one year of placement).
25	Emergency repair of existing structures and/or fills less than 45 years in age.

3. Historic Property Identification

If the activity does not fit under the criteria above, the following historic property identification efforts must be completed to demonstrate compliance with Section 106 of the NHPA. This includes documenting previously identified and unidentified historic properties in the project area.

a. Previously Identified Historic Properties: The prospective applicant shall document if previously identified historic properties are present on or adjacent to the project site by notifying the Massachusetts Historical Commission (MHC) and the Massachusetts Board of Underwater Archaeological Resources (BUAR), as appropriate, of the proposed project. The MHC and BUAR will check their records for the presence of any previously identified historic properties. The following outlines how prospective applicants should notify the MHC and BUAR.

i. The prospective applicant will notify the SHPO and BUAR to identify any previously recorded cultural resources. Applicants shall mail a completed Project Notification Form[18], project narrative, location (coordinates), plans, soil maps, and information on known cultural resources to the MHC. The MHC does not accept submissions via email. Applicants shall email or mail this information to the BUAR when the activity is located in lakes, ponds, rivers, and/or navigable waters in MA. Emailed file attachments should be <10MB. Any files >10MB shall be delivered via a file exchange system or the hard copy documents shall be mailed. Preferred contact information is listed below.

ii. **When sending this information, applicants must also document proof of receipt OR proof the information was delivered.** Proof of receipt constitutes a certified mail receipt, read email receipt, or other mail/email/online tracking services that document the information has reached the intended recipient(s). Proof the information was delivered constitutes a certificate of mailing, email delivery receipt, or other mail/email/online services that document the information was sent at a particular time. When using proof of delivery such (e.g., certificate of mailing), applicants should add 5 days to the 30-day notification period so the mail has time to reach its intended recipient. When using proof of receipt, the applicant may begin the 30-day notification period from the date received by the intended recipient.

iii. When mailing or emailing the application materials, applicants should include the following statement: "Please send responses to this notification directly to the USACE via email: cenae-r-ma@usace.army.mil or address regular mail responses to: Regulatory Division, U.S. Army Corps of Engineers, New England District, 696 Virginia Road, Concord, Massachusetts 01742-2751." Email responses to the USACE are strongly preferred. The SHPO and BUAR will contact the USACE and cc the applicant(s) within 30 days of receiving the notification if their records indicate that historic properties are located in the project vicinity, and if additional review and/or surveys are recommended to ensure NHPA compliance. If the SHPO and/or BUAR do not respond within 30 days of receiving the notification, is it presumed that no known historic properties are present.

b. Previously Unidentified Historic Properties: The prospective applicant shall evaluate the project site and determine the sensitivity for the presence of historic properties if the project site has not been previously surveyed for cultural resources within the last 10 years. If the sensitivity is determined to be moderate to high, an intensive archaeological and/or architectural survey is required to investigate the potential presence of historic properties. The individual conducting this survey must meet the Secretary of the Interior's Standards for Professional Qualifications (48 FR 44738-44739) in the discipline relevant to a particular resource type. For example, archeologists should not document and evaluate buildings or structures and architectural historians should not document and evaluate archaeological sites. The identification and qualifications for those participating in any survey and evaluation of resources should be included with the survey results. The criteria listed below are indicators of low sensitivity for the presence of historic properties for consideration when determining if an archaeological or architectural survey is needed.

Low sensitivity indicators:

- Previous archaeological and/or architectural survey within the last 10 years with negative results.
- In a location created in modern times (i.e., built on fill placed within the last 45 years or within an area excavated within the last 45 years).
- USACE has reviewed the project description and determined that a survey is not warranted based on the proposed activity and its location.

State survey guidance and standards are provided in the September 1995 Historic Properties Survey Manual Guidelines for the Identification of Historical and Archaeological Resources in Massachusetts available. State survey guidance and standards for underwater surveys are provided

[18] https://www.sec.state.ma.us/mhc/mhcform/formidx.htm

in the Board of Underwater Archaeological Resources' 2022 Policy Guidance on Archaeological Investigations and Related Survey Standards for the Discovery of Underwater Archaeological Resources. This guidance is available on the NAE Regulatory website: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit/.

Please note, a negative result from MHC and/or BUAR does not necessarily mean no historic properties are present. Often proposed project sites have not been previously subject to a survey, so historic properties which may be present have not been previously recorded.

4. Tribal Coordination

Prospective applicants shall mail the Project Notification Form, project narrative, location (coordinates), plans with locus map, soil maps, and information on cultural resources to the Wampanoag Tribe of Gay Head (Aquinnah), Mashpee Wampanoag Tribe, Narragansett Indian Tribe, and/or Stockbridge-Munsee Community Band of Mohican Indians with interests in the project location. Preferred tribal contact information, including their respective areas of interest, can be found below. Applicants shall follow the same procedures as identified in Section 3(a)i-iii above when notifying Tribes of the proposed activity. Applicants shall provide the USACE with any responses received from the tribe(s) with their PCN application. If a tribe does not respond within 30 days of receiving the notification, the applicant shall provide USACE with all documentation of tribal outreach with their SV or PCN submission (e.g., emails, letters, phone call log, etc.). If the tribe indicates the presence of a previously unrecorded cultural resource, including a traditional cultural property (TCP) or traditional cultural landscape (TCL), a PCN is required.

5. Effect Determination

The project may have the potential to affect historic properties and/or tribal resources if 1) notification recipients respond within 30 calendar days of notification with concerns, 2) historic properties eligible for listing, or potentially eligible for listing in the NRHP, are present or 3) tribal resources are known to be present. The USACE may need to further review the project to confirm potential effects to historic properties and/or tribal resources. A PCN is required for any activity that may affect a historic property.

The USACE may determine the project will have 'no effect' on historic properties (i.e., no historic properties affected) when procedures outlined in Section 3 above are followed and no cultural resources are identified. Similarly, if historic properties are identified and will be completely avoided, the USACE may determine 'no effect.'

6. Contact Information:

Massachusetts Historical Commission

The Massachusetts Archives Building
220 Morrissey Boulevard
Boston, Massachusetts 02125

No email. Applicants or their representatives must send project information via certified mail and submit the certified mail receipt to the USACE or send via regular mail and submit proof of delivery.

Area of concern: All of Massachusetts.

Massachusetts Board of Underwater Archaeological Resources (BUAR)

100 Cambridge Street, Suite 900
Boston, Massachusetts 02114
Email: david.s.robinson@mass.gov

Applicants or their representatives must send project information via email (***strongly preferred***) or regular mail and provide proof of receipt or proof of delivery.

Area of concern: All waterbodies in Massachusetts.

Wampanoag Tribe of Gay Head (Aquinnah)

Bettina Washington
Tribal Historic Preservation Officer (THPO)
20 Black Brook Road
Aquinnah, Massachusetts 02535
Email: thpo@wampanoagtribe-nsn.gov

Applicants or their representative must send project information via email (***preferred***) or regular mail and provide proof of receipt or proof of delivery.

Area of concern: All of Massachusetts.

Mashpee Wampanoag Tribe

ATTN: David Weeden
Tribal Historic Preservation Officer (THPO)
483 Great Neck Road South
Mashpee, Massachusetts 02649
Email: 106review@mwtribe-nsn.gov
Cc: David.weeden@mwtribe-nsn.gov

Applicants or their representative must send project information via email (***preferred***) or regular mail and provide proof of receipt or proof of delivery.

Area of concern: All of Massachusetts.

Narragansett Indian Tribe

ATTN: John Brown
Tribal Historic Preservation Officer (THPO)
Narragansett Indian Longhouse
4425 South County Trail
Charlestown, Rhode Island 02813
Email: tashtesook@aol.com

Applicants or their representative must send project information via email (***preferred***) or regular mail and provide proof of receipt or proof of delivery.

Area of concern: Massachusetts east of the Connecticut River.

Stockbridge-Munsee Community Band of Mohican Indians

ATTN: Jeff Bendremer
Tribal Historic Preservation Manager
Stockbridge-Munsee Community
Tribal Historic Preservation Extension office
86 Spring Street
Williamstown, Massachusetts 01267
Email: thpo@mohican-nsn.gov

Applicants or their representative must send project information via email (***preferred***) or regular mail and provide proof of receipt or proof of delivery.

Area of concern: West of the Connecticut River and Northfield, Montague, Miller's Falls, Turner's Falls, Sunderland, Amherst, Hadley, South Hadley, Chicopee, Springfield and Longmeadow.

APPENDIX B PRE-CONSTRUCTION NOTIFICATION

U.S. Army Corps of Engineers (USACE), New England District (NAE)

PRE-CONSTRUCTION NOTIFICATION (PCN)

DATA REQUIRED BY THE PRIVACY ACT OF 1974

Authority Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332.

Principal Purpose The information provided will be used in evaluating activities under Pre-Construction Notification procedures within New England.

Routine Uses This information may be shared with other federal, state, and local government agencies during the application review process. Submission

Disclosure of requested information is voluntary. However, if information is not provided the PCN application cannot be fully evaluated nor can USACE render a permit decision.

Instructions The applicant must complete ALL required sections of this document before their submission to USACE. The PCN submission to USACE shall include one set of drawings which show the location and character of the proposed activity, statements that address each required field below, and documentation that supports each field (e.g., emails, letters, description/narrative, phone calls, surveys, reports, etc.). Electronic submissions to the following address are strongly preferred: cenae-r-ma@usace.army.mil. The email subject line shall contain the following: General Permit #, PCN, City/Town, and date submitted. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY USACE)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (*agent is not required*)
First - Middle - Last -	First - Middle - Last -
Company -	Company -
E-mail Address -	E-mail Address -
6. APPLICANT'S ADDRESS:	9. AGENT'S ADDRESS:
Address-	Address-
City - State - Zip - Country -	City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. with AREA CODE	10. AGENT'S PHONE NOs. with AREA CODE
a. Residence b. Business c. Fax d. Mobile	a. Residence b. Business c. Fax d. Mobile

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act on my behalf as my agent in the processing of this general permit PCN application and to furnish, upon request, supplemental information in support of this general permit PCN application.

_____ _____

SIGNATURE OF APPLICANT DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME or TITLE (*see instructions*)

13. NAME OF WATERBODY, IF KNOWN (*if applicable*)	14. PROPOSED ACTIVITY STREET ADDRESS (*if applicable*)
15. LOCATION OF PROPOSED ACTIVITY (*see instructions*)	City: State: Zip:
Latitude: °N Longitude: °W	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (*see instructions*)

State Tax Parcel ID: Municipality:

Section: Township: Range:

17. DIRECTIONS TO THE SITE.

18. IDENTIFY THE SPECIFIC GENERAL PERMIT(S) YOU PROPOSE TO USE:

19. DESCRIPTION OF PROPOSED GENERAL PERMIT ACTIVITY (*see instructions*)

20. DESCRIPTION OF PROPOSED MITIGATION MEASURES (*see instructions*)

21. PURPOSE OF GENERAL PERMIT ACTIVITY (*Describe the reason or purpose of the project, see instructions*)

22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by Proposed General Permit Activity (*see instructions*)

Area (square feet)	Length (linear feet)	Volume (cubic yards)	Duration	Purpose

Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site.

23. List any other GP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project on any related activity (*see instructions*)

24. If the proposed activity will result in the loss of aquatic resources that exceed those identified in the New England District Compensatory Mitigation Thresholds, explain how the compensatory mitigation requirement will be satisfied. (*see instructions*)

25. Is Any Portion of the General Permit Activity Already Complete? ☐ Yes ☐ No If Yes, describe the completed work:

26. List the name(s) of any species listed as endangered or threatened under the Endangered Species Act that might be affected by the proposed GP activity or utilize the designated critical habitat that might be affected by the proposed GP activity. (*see instructions*)

27. List any historic properties that have the potential to be affected by the proposed GP activity or include a vicinity map indicating the location of the historic property or properties. Attach relevant project information, along with any responses received from project notifications to this submittal. (*see instructions*)

28. For a proposed GP activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, identify the Wild and Scenic River or the "study river":

29. If the proposed GP activity also requires permission from the USACE pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, have you submitted a written request for section 408 permission from the USACE district having jurisdiction over that project? ☐ Yes ☐ No

If "yes", please provide the date your request was submitted to the USACE District:

30. Does the activity require a 401 Water Quality Certification (WQC)? If so, specify the type of 401 WQC that is required (general or individual). In cases where an individual 401 WQC is required, provide the date the 401 WQC certification request was submitted to the certifying authority and their contact information.

31. If the terms of the GP(s) you want to use require additional information to be included in the PCN (i.e. sampling and analysis plan), please include that information in this space or provide it on an additional sheet of paper marked Block 30. (*see instructions*)

32. I certify that the information in this pre-construction notification is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE

The Pre-Construction Notification must be signed by the person who desires to undertake the proposed activity (applicant) and, if the statement in block 11 has been filled out and signed, the authorized agent.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Instructions for Preparing a

Department of the Army

General Permit (GP) Pre-Construction Notification (PCN)

Blocks 1 through 4. To be completed by the U.S. Army Corps of Engineers.

Block 5. Applicant' Name. Enter the name and the e-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the PCN, please attach a sheet of paper with the necessary information marked Block 5.

Block 6. Address of Applicant. Please provide the full address of the party or parties responsible for the PCN. If more space is needed, attach an extra sheet of paper marked Block 6.

Block 7. Applicant Telephone Number(s). Please provide the telephone number where you can usually be reached during normal business hours.

Blocks 8 through 11. To be completed, if you choose to have an agent.

Block 8. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, consultant, or any other person or organization. Note: An agent is not required.

Blocks 9 and 10. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where they can be reached during normal business hours.

Block 11. Statement of Authorization. To be completed by the applicant, if an agent is to be employed.

Block 12. Proposed General Permit Activity Name or Title. Please provide a name identifying the proposed GP activity, e.g., Windward Marina, Rolling Hills Subdivision, or Smith Commercial Center.

Block 13. Name of Waterbody. Please provide the name (if it has a name) of any stream, lake, marsh, or other waterway to be directly impacted by the GP activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14. Proposed Activity Street Address. If the proposed GP activity is located at a site having a street address (not a box number), enter it in Block 14.

Block 15. Location of Proposed Activity. Enter the latitude and longitude of where the proposed GP activity is located. Indicate whether the project location provided is the center of the project or whether the project location is provided as the latitude and longitude for each of the "corners" of the project area requiring evaluation. If there are multiple sites, please list the latitude and longitude of each site (center or corners) on a separate sheet of paper and mark as Block 15.

Block 16. Other Location Descriptions. If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality where the site is located.

Block 17. Directions to the Site. Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide a description of the location of the proposed GP activity, such as lot numbers, tract numbers, or you may choose to locate the proposed GP activity site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed GP activity site if known. If there are multiple locations, please indicate directions to each location on a separate sheet of paper and mark as Block 17.

Block 18. Identify the Specific General Permit(s) You Propose to Use. List the number(s) of the General Permit(s) you want to use to authorize the proposed activity (e.g., GP 4).

Block 19. Description of the Proposed General Permit Activity. Describe the proposed GP activity, including the direct and indirect adverse environmental effects of the proposed activity. The description of the proposed activity should be sufficiently detailed for USACE to determine that the adverse environmental effects of the activity will be no more than minimal. Identify the materials to be used in construction, as well as the methods by which the work is to be done.

Provide drawings to show that the proposed GP activity complies with the terms of the applicable GP(s). Drawings should contain sufficient detail to provide an illustrative description of the proposed GP activity, but do not need to be detailed engineering plans. The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 19.

Block 20: Description of Proposed Mitigation Measures. Describe any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed GP activity. The description of any proposed mitigation measures should be sufficiently detailed for USACE to determine how the measures would avoid and minimize adverse environmental effects. If adverse effects exceed the New England District compensatory mitigation thresholds, you must document how compensatory mitigation would be satisfied in Block 24.

Block 21. Purpose of General Permit Activity. Describe the purpose and need for the proposed GP activity. What will it be used for and why? Also include a brief description of any related activities associated with the proposed project. Provide the approximate dates you plan to begin and complete all work.

Block 22. Quantity of Wetlands, Streams, or Other Types of Waters Directly Affected by the Proposed General Permit Activity. For discharges of dredged or fill material into Waters of the U.S., provide the amount of wetlands, streams, or other types of waters filled, flooded, excavated, or drained by the proposed GP activity. For structures or work in Navigable Waters of the U.S. subject to Section 10 of the Rivers and Harbors Act of 1899, provide the amount of navigable waters filled, dredged, occupied by one or more structures (e.g., aids to navigation, mooring buoys) by the proposed GP activity. The area of impact includes the structures or fills with direct or indirect effects to waters of the U.S. The length of impact includes the length of a stream, including is banks, that are directly affected by the structures or fills. The duration of impact should be identified as temporary (xx days) or permanent. The impact purpose should briefly describe what structure or fill is responsible for the impact.

Block 23. Identify Any Other General Permit(s), Regional General Permit(s), or Individual Permit(s) Used to Authorize Any Part of Proposed Activity or Any Related Activity. List any other GP(s) or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. For linear projects, list other separate and distant crossings of waters and wetlands authorized by these GPs that do not require PCNs. If more space is needed, attach an extra sheet of paper marked Block 23.

Block 24. Compensatory Mitigation Statement for Losses Greater Than the New England District Compensatory Mitigation Thresholds. New England District requires compensatory mitigation at a minimum one for one replacement ratio or greater for all aquatic resource losses that require a PCN and exceed the New England District Compensatory Mitigation Thresholds, unless USACE determines in writing that either some other form of mitigation is more environmentally appropriate or the adverse environmental effects of the proposed GP activity are no more than minimal without compensatory mitigation, and provides an activity specific waiver of this requirement. Describe the proposed compensatory mitigation for wetland losses greater than the New England District Compensatory Mitigation Thresholds or provide an explanation of why USACE should not require wetland compensatory mitigation for the proposed GP activity. If more space is needed, attach an extra sheet of paper marked Block 24.

Block 25. Is Any Portion of the General Permit Activity Already Complete? Describe any work that has already been completed for the GP activity.

Block 26. List the Name(s) of Any Species Listed As Endangered or Threatened under the Endangered Species Act that Might be Affected by the General Permit Activity. If you are not a federal agency, and if any listed species or designated critical habitat might be affected or is in the vicinity of the proposed GP activity, or if the proposed GP activity is located in designated critical habitat, list the name(s) of those endangered or threatened species that might be affected by the proposed GP activity or utilize the designated critical habitat that might be affected by the proposed GP activity. If you are a Federal agency, and the proposed GP activity requires a PCN, you must provide documentation demonstrating compliance with Section 7 of the Endangered Species Act.

Block 27. List Any Historic Properties that Have the Potential to be Affected by the General Permit Activity. If you are not a federal agency, and if any historic properties have the potential to be affected by the proposed GP activity, list the name(s) of those historic properties that have the potential to be affected by the proposed GP activity. Provide all relevant documentation about these historic properties in the PCN submittal. If you are a Federal agency, and the proposed GP activity requires a PCN, you must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

Block 28. List the Wild and Scenic River or Congressionally Designated Study River if the General Permit Activity Would Occur in such a River. If the proposed GP activity will occur in a river in the National Wild and Scenic River System or in a river officially designated by Congress as a “study river” under the Wild and Scenic Rivers Act, provide the name of the river. For a list of Wild and Scenic Rivers and study rivers, please visit http://www.rivers.gov/

Block 29. General Permit Activities that also Require Permission from the USACE Under 33 U.S.C. 408. If the proposed GP activity also requires permission from the USACE under 33 U.S.C. 408 because it will temporarily or permanently alter, occupy, or use a USACE federal authorized civil works project, indicate whether you have submitted a written request for section 408 permission from the USACE district having jurisdiction over that project.

Block 30. 401 Water Quality Certification. As described above, specify if the activity requires a 401 WQC from the certifying authority.

Block 31. Other Information Required For General Permit Pre Construction Notifications. The terms of some of the General Permits include additional information requirements for preconstruction notifications:

* Maintenance – information regarding the original design capacities and configurations of the outfalls, intakes, small impoundments, and canals.
* Temporary Construction, Access, and Dewatering – a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions.
* Repair of Uplands Damaged by Discrete Events – documentation, such as a recent topographic survey or photographs, to justify the extent of the proposed restoration.
* Commercial Shellfish Aquaculture Activities – (1) a map showing the boundaries of the project area, with latitude and longitude coordinates for each corner of the project area; (2) the name(s) of the species that will be cultivated during the period this GP is in effect; (3) whether canopy predator nets will be used; (4) whether suspended cultivation techniques will be used; and (5) general water depths in the project area (a detailed survey is not required).Dredging – (1) a proposed sampling and analysis plan shall be provided to USACE for approval prior to its execution. Pre-application meetings are encouraged.
* Beach Nourishment – sediment grain size should be determined for the length of the beach where nourishment is proposed. The frequency and locations of sediment sampling shall be sufficient to identify the sediment composition of the beach profile. This data shall be consolidated to generate a sediment gradation curve for each sampled transect. Each sampled transect should also be identified on the project plans (drawings).

If more space is needed, attach an extra sheet of paper marked Box 31.

Block 32. Signature of Applicant or Agent. The PCN must be signed by the person proposing to undertake the GP activity, and if applicable, the authorized party (agent) that prepared the PCN. The signature of the person proposing to undertake the GP activity shall be an affirmation that the party submitting the PCN possesses the requisite property rights to undertake the GP activity (including compliance with special conditions, mitigation, etc.).

DELINEATION OF WETLANDS, OTHER SPECIAL AQUATIC SITES, AND OTHER WATERS

Each PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current wetland delineation manual and regional supplement published by the USACE. The permittee may ask the USACE to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the USACE does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. The 60-day PCN review period will not start until a delineation has been completed.

DRAWINGS AND ILLUSTRATIONS

General Information.

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View or a Typical Cross Section Map. Identify each illustration with a figure or attachment number. For linear projects (e.g. roads, subsurface utility lines, etc.) gradient drawings should also be included. Please submit one copy of all drawings on 8½ x 11 inch plain white paper (electronic submissions preferred). Use the fewest number of sheets necessary for your drawings or illustrations. Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross section). While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate, and contain all necessary information.

ADDITIONAL INFORMATION AND REQUIREMENTS

For proposed GP activities that involve discharges into waters of the United States, water quality certification from the State, Tribe, or EPA must be obtained or waived. Some States, Tribes, or EPA have issued water quality certification for one or more GPs. Please check the New England District website to see if water quality certification has already been issued for the GP(s) you wish to use. For proposed GP activities in coastal states, state Coastal Zone Management Act consistency concurrence must be obtained, or a presumption of concurrence must occur. Some States have issued Coastal Zone Management Act consistency concurrences for one or more GPs. Please check the New England District website to see if Coastal Zone Management Act consistency concurrence has already been issued for the GP(s) you wish to use.

APPENDIX C SELF-VERIFICATION NOTIFICATION

U.S. Army Corps of Engineers (USACE)

SELF-VERIFICATION NOTIFICATION (SVN)

DATA REQUIRED BY THE PRIVACY ACT OF 1974

Authority Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332.

Principal Purpose This information will be used in evaluating activities under Self-Verification procedures within Massachusetts.

Routine Uses Routine uses will include: (1) Documenting compliance with the terms and conditions of the General Permit (GP) for activities that may require authorization pursuant to one or more of USACE's Regulatory authorities. (2) Records may be referred to other Federal, State, and local agencies for evaluation and enforcement purposes.

Disclosure Failure to fully comply and abide by the GP terms and conditions prior to commencing work and after completion project may result in formal enforcement action, up to and including monetary penalties and/or legal action, pursuant to 33 CFR Part 326.

Instructions The permittee must complete ALL required sections of this document before commencing USACE-regulated activities. A copy of this completed SVN must be kept on site during construction and be made available for review by USACE and other Federal, State, & Local regulatory authorities at any time. Within 30 days of initiating project construction, the permittee shall submit the completed SVN to USACE. The SVN shall be submitted to USACE as **ONE signed document** that includes project plans and documentation that supports each field (e.g., emails, letters, description, phone calls, surveys). Electronic submissions to the following address are strongly preferred: cenae-r-ma-sv@usace.army.mil. The email subject line shall contain the following: GP #, SVN, City/Town, and date submitted.

(ITEMS 1 THRU 3 TO BE FILLED BY USACE)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED

APPLICANT AND AGENT INFORMATION

4. APPLICANT'S NAME	7. AGENT'S ADDRESS:
First - Middle - Last -	First - Middle - Last -
Company -	Company -
E-mail Address -	E-mail Address -
5. APPLICANT'S ADDRESS:	8. AGENT'S ADDRESS:
Address-	Address-
City - State - Zip - Country -	City - State - Zip - Country -
6. APPLICANT'S PHONE NOs. w/AREA CODE	9. AGENTS PHONE NOs. w/AREA CODE
a. Residence b. Business c. Fax	a. Residence b. Business c. Fax

NAME, LOCATION, AND DESCRIPTION OF PROJECT SITE

10. PROJECT NAME OR TITLE

11. FILE NUMBER(S) OF PREVIOUS USACE ACTIONS ON THE SITE (if applicable)	12. NAME OF WATERBODY
13. PROJECT COORDINATES (in decimal degrees)	14. PROJECT STREET ADDRESS (if applicable)
Latitude: ◦N Longitude: ◦W	Address
	City - State - Zip -

ACTIVITY TYPE, PROJECT IMPACTS, AVOIDANCE & MINIMIZATION

15. GENERAL PERMIT ACTIVITIES (CHECK ALL THAT APPLY)

1 ☐	6 ☐	11 ☐	16 ☐	21 ☐
2 ☐	7 ☐	12 ☐	17 ☐	22 ☐
3 ☐	8 ☐	13 ☐	18 ☐	23 ☐
4 ☐	9 ☐	14 ☐	19 ☐	24 ☐
5 ☐	10 ☐	15 ☐	20 ☐	25 ☐

16. SUMMARY OF PROJECT IMPACTS (*see instructions*)

Area (square feet)	Length (linear feet)	Volume (cubic yards)	Duration

17. PROJECT PLANS (BY CHECKING THE BOXES BELOW, YOU CERTIFY THESE ITEMS ARE COMPLETE) (*see instructions*)

- ☐ a. Plans shall at least contain the following: Vicinity Map, Plan View, and Typical Cross Section View of the proposed activity.
- ☐ b. All direct, indirect and secondary impacts from USACE regulated activities are shown on the project plans.
- ☐ c. The size of the impact area for each activity (acre, square feet, linear feet) are shown on the project plans.
- ☐ d. For discharges of fill material (§404), the volume of fill material is identified on the project plans.
- ☐ e. The duration of each impact, permanent or temporary (X days), is identified on the project plans.
- ☐ f. Do activities with permanent impacts result in the loss of waters? If so, this is identified on the project plans.
- ☐ g. All aquatic resources in the vicinity of the USACE regulated activities are delineated on the project plans.

18. AVOIDANCE & MINIMIZATION (BY CHECKING THE BOXES BELOW, YOU CERTIFY THESE CRITERIA ARE MET) (*see instructions*)

- ☐ a. The project has been designed to avoid and minimize impacts to aquatic resources.
- ☐ b. The footprint of activities in waters of the U.S. has been reduced to only what is necessary to achieve the overall project purpose.
- ☐ c. All practicable measures have been taken to avoid and minimize impacts to aquatic resources through construction techniques and site access (e.g., Best Management Practices, Time of Year Restrictions).
- ☐ d. All temporary impacts from USACE regulated activities will be restored upon completion of construction and the project area will be returned to pre-construction contours and conditions.

COMPLIANCE WITH FEDERAL REGULATIONS & SUPPLEMENTAL INFORMATION

19. DUE DILIGENCE (*see instructions*)

Complete the entries below to document compliance with the following Federal requirements. Construction may NOT begin if a PCN is/may be required, and you must contact USACE to determine permitting requirements. Documentation that demonstrates how the activity complies with each field below shall be submitted to the USACE as noted in the instructions block. See each General Condition (GC) in the GP for how to comply with each requirement.

a. State Historic Preservation Officer	Select Option		
b. Massachusetts BUAR	Select Option		
c. Tribal Historic Preservation Officers	Select Option		
d. Endangered Species Act - NOAA	Select Option		
e. Endangered Species Act - USFWS	Select Option		
f. Northern Long Eared Bat (ESA)	Select Option		
g. Essential Fish Habitat	Select Option		
h. Wild & Scenic Rivers	Select Option		
i. 401 Water Quality Certification 401	Select Option		
	401 WQC/OOC File Number:	OOC issued:	401 issued:
j. Section 408 Permission	Select Option		
k. Coastal Zone	Select Option		
l. Construction Mats	Select Option		
m.Time of Year Restrictions	Select Option		
n. Vernal Pools	Select Option		
o. Sediment & Erosion Controls	Select Option		
p. Stream/Wetland Crossings	Select Option		

20. AQUACULTURE ACTIVITIES - GP 18 (*see instructions*)

- ☐ a. If required, an Aquaculture Certification from the Massachusetts Division of Marine Fisheries was obtained prior to commencing work.
- ☐ b. Coordination with the U.S. Coast Guard pursuant to Private Aids to Navigation has occurred prior to commencing work.
- ☐ c. If required, a MEPA Certificate was obtained from the Massachusetts Environmental Protection Agency prior to commencing work. Select Option
- ☐ d. The prospective permittee contacted local authorities (e.g. harbormaster, select board, shellfish constable) for authorization of their facility prior to commencing work.

21. ADDITIONAL INFORMATION/ATTACHMENTS (*see instructions*)

- ☐ a. The project plans are enclosed in this SVN submittal (see block 17).
- ☐ b. The activity Select Option funded through the Bipartisan Infrastructure Bill (also known as the Infrastructure Investment and Jobs Act).
- ☐ c. All required state, local and federal approvals were acquired prior to starting construction in USACE jurisdiction.
- ☐ d. After construction of the activity is completed, a complete Certificate of Compliance will be submitted to USACE.

22. IS THERE ANOTHER LEAD FEDERAL AGENCY:

☐ YES ☐ NO

23. STATEMENT OF AUTHORIZATION *(see instructions)*

I certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE

24. SIGNATURES *(see instructions)*

I hereby certify that the information in this Self-Verification Notification is complete and accurate. As the applicant or their duly authorized agent, I certify the activity was completed in accordance with the terms and conditions of the GP. This includes all applicable terms, general conditions, and activity-specific GP criteria. I agree to allow the duly authorized representatives of the Corps of Engineers Regulatory Program and other regulatory or advisory agencies to enter upon the premises of the project site at reasonable times to evaluate inspect and photograph site conditions. This consent to enter the property is superior to, takes precedence over, and waives any communication to the contrary. For example, if the property is posted as “no trespassing” this consent specifically supersedes and waives that prohibition and grants permission to enter the property despite such posting.

SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Instructions for Preparing a
Department of the Army
General Permit (GP) Self-Verification

Blocks 1 through 3. To be completed by the Corps of Engineers.

Block 4. Applicant' Name. Enter the name and the e-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the self-verification, please attach a sheet of paper with the necessary information marked Block 4.

Block 5. Address of Applicant. Please provide the full address of the party or parties responsible for the self-verification. If more space is needed, attach an extra sheet of paper marked Block 5.

Block 6. Applicant Telephone Number(s). Please provide the telephone number where you can usually be reached during normal business hours.

Blocks 7 through 9. To be completed, if you choose to have an agent.

Block 7. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, consultant, or any other person or organization. Note: An agent is not required.

Blocks 8 and 9. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where they can be reached during normal business hours.

Block 10. Proposed General Permit Activity Name or Title. Please provide a name identifying the proposed GP activity, e.g., Windward Marina, Rolling Hills Subdivision, or Smith Commercial Center.

Block 11. File Number(s) of Previous USACE Actions on the Site Please provide any known USACE file number. If the activity does not have a known USACE file number, you may state N/A.

Block 12. Name of Waterbody. Please provide the name (if it has a name) of any stream, lake, marsh, or other waterway to be directly impacted by the GP activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 13. Proposed Activity Coordinates. Please enter the latitude and longitude of where the proposed GP activity is located. Indicate whether the project location provided is the center of the project or whether the project location is provided as the latitude and longitude for each of the "corners" of the project area. If there are multiple sites, please list the latitude and longitude of each site (center or corners) on a separate sheet of paper and mark as Block 13.

Block 14. Proposed Activity Street Address. If the proposed activity is located at a site having a street address (not a box number), enter it in Block 14.

Block 15. General Permit Activity Type. Please select all GP activity types that apply to the proposed activity. A list of GP activity types can be found in Section III of the GP.

Block 16. Summary of Project Impacts. Please provide ALL proposed impacts, both temporary and permanent in duration, that are located in Waters of the United States. The area of impact shall be provided in square feet (SF). When applicable, impacts that result in conversion of stream bank or shoreline must also be identified in linear feet (LF). Dredging or the discharge of dredged or fill material shall also include the volume, cubic yards (CY), of material removed from or placed into Waters of the U.S. If more entries are required, please attach a table matching the desired format in Block 16.

Block 17. Project Plans. Please verify that items a-g are included in the project plans. Three types of illustrations are necessary to properly depict the proposed work. These illustrations or drawings are identified as a Vicinity Map, a Plan View (Aerial view) and a Cross Section Map. For linear projects (e.g. roads, subsurface utility lines, etc.) gradient drawings (longitudinal profile) should also be included. Plans must accurately depict the existing conditions and all aspects of the proposed activity located in waters of the U.S. Please submit one copy of all drawings formatted to print on 8½ x 11 inch or 11 x 17 inch plain white paper. Use the fewest number of sheets necessary for your drawings or illustrations. Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross section). While illustrations need not be certified engineering sheets; they should be clear, accurate, contain all necessary information, and depict all proposed work. Each submission must also include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current wetland delineation manual and regional supplement published by USACE.

Block 18. Avoidance & Minimization. Please verify that items a-d have been implemented for the proposed activity.

Block 19. Due Diligence. Please complete all the fields and submit documentation to USACE to demonstrate compliance with the above requirements. This Documentation may include emails, letters, meeting notes, phone call log, project narrative, project plans, a species list from the NOAA Section 7 Mapper, a completed copy of the IPAC determination keys, etc. Documentation should be limited to what is necessary to demonstrate how the proposed activity meets each requirement. Refer to the MA GP, Appendix A, for specific guidance on the identification of previously identified historic properties and previously unidentified historic properties. Endangered Species: *The applicant must be designated as the non-federal representative for the purposes of Section 7 consultation to select the Rangewide D-Key options. Otherwise, the applicant shall select the following option when IPAC indicates the NLEB is present: "The activity IS located within the NLEB Species Range (PCN Required)."

Block 20. Aquaculture Activities. Please verify that items a-d have been obtained or completed prior to commencing work in waters of the U.S.

Block 21. Additional Information/Attachments. Please verify that items a-d have been completed prior to commencing work in waters of the U.S.

Block 22. Lead Federal Agency. Please identify if there is another lead federal agency involved with the proposed activity. Enter the lead federal agency name (e.g., the Federal Emergency Management Agency, FEMA) and the agency's designated person of contact for the activity.

Block 23. Statement of Authorization. The applicant shall sign this section for all activities. If an agent is to be employed, the agent shall sign this section.

Block 24. Signatures. The SVN must be signed by the person proposing to undertake the GP activity, and if applicable, the authorized party (agent) that prepared the SVN. The signature of the person proposing to undertake the GP activity shall be an affirmation that the party submitting the SVN possesses the requisite property rights to undertake the GP activity.

US Army Corps of Engineers®
New England District

APPENDIX D: PCN APPLICATION CHECKLIST

The following information shall be submitted for all PCNs for USACE to properly evaluate your application. Some applications may require more information and this checklist is offered as a tool to assist applicants with submitting a complete application.

SECTION 1: GENERAL APPLICATION INFORMATION

1. ☐ Complete the Pre-Construction Notification document (Appendix B).
2. ☐ Specify which local/state/federal authorizations are required for the project and if any have been obtained or applied for at the time of USACE application submittal.
3. ☐ Identify all funding sources the project will receive or has received to date. Provide any relevant information in the application submission.
4. ☐ Is this part of a larger project that is being implemented in phases? If so, describe the project schedule and how each phase will be implemented.
5. ☐ Describe the existing conditions on the site and the general land use in the vicinity of the project at the time application submittal.
6. ☐ Provide any historic information available that you may have of project area, e.g., existing USACE permit numbers, the names under which the permits were obtained if the permit numbers are unknown, construction dates and proof of prior existence (aerials, photos, town hall records, affidavits, state or local permits, etc.) to verify that the project predates regulation and is "vested".[19]
7. ☐ The anticipated start and end dates for construction.

SECTION 2: WETLAND DELINEATION

8. ☐ Data used to support aquatic resource boundary determinations (delineation forms, delineation map(s) that show the locations of each aquatic resource in the project area, aerial and ground photographs, LIDAR imagery, national wetland inventory maps, soil maps, national hydrography dataset maps, floodplain maps, historical imagery, etc.).
9. ☐ Photographs of the wetland(s) and/or waterway(s) where impacts are proposed. Photos at low tide are preferred for work in tidal waters.
10. ☐ Indicate the relationship of the project area to waters of the U.S., i.e., adjacent wetlands, tidal influence or hydraulic connectivity through culverts, or other conveyances, etc.
11. ☐ At minimum the delineation map/figure should include the following:
    a. Contour lines showing topography.
    b. North arrow.
    c. Bar and text scale.
    d. Legend.
    e. Drawn project boundary.
    f. High tide line, mean high water, mean low water, ordinary high water mark, and/or wetland boundaries.
    g. Captions with a unique name for each aquatic resource and the area or length of the aquatic resource within the project area.

[19] Vested is exempt (someone or something) from a new law or regulation.

h. Appropriate landmarks and features (e.g., culverts, special aquatic sites, etc.).
i. Points showing the paired upland and wetland delineation locations for tidal and non-tidal wetlands only.

SECTION 3: AVOIDANCE & MINIMIZATION

12. ☐ Describe specific measures taken to avoid impacts to aquatic resources or describe why aquatic resources could not be avoided while achieving the project purpose and need.
13. ☐ For impacts to aquatic resources that could not be avoided, describe specific considerations/ measures taken to minimize the area of proposed impacts to aquatic resources in designing the project.
14. ☐ Describe specific measures taken to avoid and minimize the proposed direct, indirect, and secondary impacts to aquatic resources and their functions through construction techniques and timing.
15. ☐ If applicable, provide a restoration plan that describes how all temporary fills and structures will be removed and the area restored to pre-impact conditions (see GC 22).
16. ☐ If applicable, provide an Invasive Species Control Plan (see GC 29). For sample control plans, see www.nae.usace.army.mil/missions/regulatory/invasive-species.
17. ☐ If applicable, describe how the proposed wetland/waterbody crossing is compliant with GC 31, Stream Work and Crossings, and Wetland Crossings.

SECTION 4A: PROJECT IMPACTS

18. ☐ Describe the overall project and the activities located in Waters of the U.S. (WOTUS) that you are seeking authorization for.
19. ☐ Identify the following for project impacts in WOTUS:
    a. ☐ Direct, indirect, secondary impacts[20] within WOTUS.
    b. ☐ The size of each impact (square feet or acres, or linear feet).
    c. ☐ For discharges of fill material (§404), specify the volume of fill material to be discharged (cubic yards).
    d. ☐ The impact duration from each activity, permanent or temporary (X days).

SECTION 4B: PROJECT PLANS

20. ☐ Submit project plans that depict all impacts in WOTUS. On the project plans, applicants shall provide:

General Information

    a. ☐ Plan view and typical cross-section view sheets that show the existing and proposed conditions. These illustrations should each be identified with a figure number, date of the map, the project title, the name of the applicant and the type of illustration (vicinity map, plan view, or cross section).
    b. ☐ Drawings, sketches, or plans that are legible, reproducible (color is encouraged, but features must be distinguishable in black and white), drawn to scale, and no larger than 11”x17” and 10 MB when submitted in digital format. Numeric and graphic/bar scales must agree, and plan details must be measurable using a standard engineer’s scale on printed plans. Reduced plans are not acceptable.
    c. ☐ The north arrow and remove miscellaneous non-wetland or water project related features such as conduits, utility poles, guardrails, etc.

[20] See definitions section for the definitions of direct, indirect, secondary impacts.

d. ☐ Clearly draw the overall limits of work, staging areas, disposal sites, access routes, and any permittee responsible mitigation sites. These areas may include both aquatic resources and upland areas.
e. ☐ Names or numbers of all roads in the site's vicinity and ownership and numbers of abutting parcels.
f. ☐ Datum in plan and elevation views. The horizontal datum shall be in the NAD 83 Massachusetts State Plane Coordinate System (INSERT) in U.S. survey feet. The vertical data in coastal projects shall be referenced to either MLLW or the North American Vertical Datum of 1988 (NAVD 88). Both the distance and depth units shall be U.S. survey feet and specified on the project plans.

Aquatic Resources & Project Impacts

g. ☐ Delineation of all aquatic resource types on site including salt marsh; other special aquatic sites (vegetated shallows, mudflats, riffles and pools, coral reefs, and sanctuaries and refuges); other waters, such as lakes, ponds, vernal pools, natural rocky habitat (tidal only), and perennial, intermittent, and ephemeral streams.
h. ☐ Identify the substrate type (cobble/gravel, organic detritus, sand/shell, silt, mud) and the approximate percentage of each substrate type on site. Grain sizes shall be based on Wentworth grain size classification scale for granules, pebbles, cobbles, and boulders. Sediment samples with a content of 10% or more of pebble-gravel-cobble and/or boulder in the top layer (6-12 inches) should be delineated and material with epifauna/macroalgae should be differentiated from bare pebble-gravel-cobble and boulder.
i. ☐ The direction of ebb and flood in tidal waters and direction of flow in non-tidal waters.
j. ☐ In tidal waters, the project boundary distance from special aquatic sites identified in 20g above if within 25 feet from that resource.
k. ☐ USACE jurisdictional boundaries including ordinary high-water mark (OHWM), high tide line (HTL), mean high water (MHW). Other boundaries include mean low water (MLW), mean lower low water (MLLW), as applicable.
   - Non-tidal: OHWM and/or wetland boundaries.
   - Tidal (structures/work only): MHW, MLW.
   - Tidal (Fill and Structures/work): HTL, MHW, MLW.
   - Tidal (Dredging/Beach Nourishment): HTL, MHW, MLW, MLLW.
l. ☐ Identification of each aquatic resource with a unique name (ex. Wetland 1, Wetland 2, Tributary 1, Beaver Brook, Atlantic Ocean) and the size of each aquatic resource within the project area (square feet or acres).
m. ☐ Impacts to each aquatic resource with captions denoting the size of each impact (square feet, acres, or linear feet) and the duration of the impact (ex. Permanent, Temporary (X days).

SECTION 4C: PROJECT PLANS - SPECIFIC PROJECT INFORMATION

21. ☐ For projects involving Navigation, Structures, Dredging, and/or Beach Nourishment, the applicant shall also address the following:

Navigation

a. ☐ Identify the locations of adjacent Federal navigation project (FNP) and/or state/local navigation projects on the project plans.
b. ☐ Specify the distance between the FNP and proposed project boundary, the authorized depths of the FNP, and state plane coordinates of seaward end(s) of project structures near an FNP.

Structures

a. ☐ Identification of the piling type (steel, timber, concrete) and diameter to be removed and/or installed.
b. ☐ Specify the minimal height of the structures' frame over saltmarsh. To meet the SV threshold, piers must be ≤4 feet in width and this minimal height must achieve a 1.5:1 ratio (i.e., a 4-foot-wide pier is 6 feet above a saltmarsh).
c. ☐ For floats, the methods of securing them (piles, bottom anchors) and for keeping them off substrate (skids, stops) at low water. To meet the SV threshold, a minimum depth of 18-inches of water should be maintained below a floating dock/structure at lower tide levels.

Dredging

a. ☐ The area (SF, acre) and volume (CY) of material to be dredged waterward of MHW for each dredge location.
b. ☐ Dredge boundaries.
c. ☐ Bathymetry for existing, proposed, and historical (include dates and USACE permits) dredge depths.
d. ☐ The likely final angle of repose of the side cuts based on the physical characterization of the material to be dredged and based upon the high/ medium/low, wave or current energy of the location.
e. ☐ Label area whether the dredging is new, maintenance, improvement, or a combination.
f. ☐ Location of the disposal site (include location sheet). NOTE: For projects proposing open water, nearshore disposal, or beach nourishment, contact USACE as early as possible for sampling and testing protocols. Sediment testing, including physical (e.g., grain-size analysis), chemical and biological testing may be required. Sampling/testing of sediments without such contact should not occur and if done, will be at the applicant's risk.
g. ☐ The methods and areas used to retain or prevent dredged material from running back into the wetland or waterway. Provide the capacity of the storage area and points of runback, including the overflow route, into the aquatic system.
h. ☐ For open-water disposal, explain why inland or beneficial reuse sites are not practicable.
i. ☐ Show the finished top elevation of the disposal site.

Beach Nourishment

a. ☐ For beach nourishment, identify the disposal footprint, existing and proposed nourishment profiles (multiple profiles are appropriate if the site is more than 150 feet long or non-contiguous), total fill area (SF) and volume (CY), fill area and volume waterward of the HTL, and delineation of dunes, banks, existing beach vegetation, and contours.
b. ☐ For beach nourishment identify the substrate type (fine sand, sand, cobble, boulder) and/or grain-size of existing material.

SECTION 5: STRUCTURES

22. ☐ For projects with the removal of existing pilings identify the number, type (steel, timber, concrete) and diameter of pilings to be removed and the methodology for removal (cut off at mud line, pulling, vibratory, etc.).
23. ☐ For projects with the installation of new pilings identify the number, type (steel, timber, concrete) and diameter of pilings to be installed and the methodology for installation (vibratory hammer, impact hammer etc.).
24. ☐ Identify any existing structures and moorings in waters adjacent to the proposed activity, their dimensions, and the distance to the limits and coordinates of any proposed mooring field or reconfiguration zone. For reconfiguration zone and mooring fields, provide the coordinates for all

corners based on the Massachusetts State Plane Coordinate System. Specify the maximum number of slips and/or moorings within proposed reconfiguration zones or anchorage areas.

25. ☐ The dimensions of the structure or work and extent of encroachment waterward of MHW and from affixed point on the shoreline or upland.
26. ☐ Shoreline of adjacent properties and property boundary offset for structures. In narrow waterbodies, the distance to opposite shoreline, waterway width, and structures across from proposed work.
27. ☐ For new commercial boating facilities, anchorage areas or reconfiguration zones, provide a description of the type of vessels that would use the facility, and any plans for sewage pump-out facilities, fueling facilities and contingency plans for oil spills.
28. ☐ See Sections 4A-C above.

SECTION 6: AQUACULTURE

29. ☐ Identify the coordinates for lease area corners and gear configuration area on the project plans.
30. ☐ Identify the proposed aquaculture gear type (buoys, floats, racks, trays, nets, lines, tubes, cages, containers, and other structures). Provide the impacts for each aquaculture gear type (see Section 4A 19a-d).
31. ☐ For a GP 18 to be valid, applicants must have (a) their MA DMF Aquaculture Certification letter for licensed shellfish aquaculture sites, (b) documentation that the applicant has coordinated with the U.S. Coast Guard regarding USCG Private Aids to Navigation standards, (c) their MEPA Certificate (if required), and (d) documentation that the applicant has contacted their local authorities (ex. harbormaster, select board, shellfish constable) for authorization of their facility.
32. Provide information on site the operation, maintenance, and access. Will the site be accessed via boat, kayak, etc.? Will cages be removed in the winter? How often will gear be checked on? Is there an operations plan for the proposed aquaculture area?
33. ☐ See Sections 4A-C above.

SECTION 7: DREDGING

34. ☐ Sampling plan requests for new, improvement or maintenance dredging must submit completed **Dredged Material Evaluation checklist found at Dredged Material Evaluation Checklist, Sampling and Analysis Plan Requirements from Applicant (army.mil)** and identify the method of handling/transporting the dredged material.
35. ☐ Identify grain-size of material to be dredged (e.g., silty sand) and provide any existing sediment grain size and bulk sediment chemistry data from the proposed project or nearby projects. Include information on any recent spills of oil and/or other hazardous materials and/or nearby outfalls. Document the information source, e.g., EPA database, the harbormaster or fire chief. If there are none, state “none”.
36. ☐ See Section 4A, 4B and 4C, Dredging 21(a-i) above.

SECTION 8: WETLAND/WATERBODY CROSSINGS

37. ☐ For the stream crossing, identify the crossing methodology on the project plan (e.g., dam and pump, dry, wet, etc.). Submit a waterway crossing sequencing plan with the application.
38. ☐ If the project includes a permanent crossing of a tidal waterway, your project design should be modified to match the velocity, depth, cross-sectional area, and substrate of the existing waterbody adjacent to the crossing and provide documentation (hydraulic analysis including low lying property analysis) that the size of the crossing will not restrict tidal flow over the full natural tide range and will not adversely affect abutting infrastructure.

39. ☐ If the work includes a permanent crossing of a non-tidal stream, your project design should be modified to match the culvert gradient of the existing stream channel profile, provide clearance for ≥1.2 times bank full width and conveyance should be embedded ≥1-2 feet for box culverts and pipe arches or ≥1-2 feet and at least 25 percent for rounded pipes/culverts in accordance with the Massachusetts Stream Crossing Standards. Provide the basis for any variation to this requirement.
40. ☐ If the work includes a permanent crossing of a non-tidal stream, the structure should be designed to include a natural bottom substrate within the conveyance that matches the characteristics of the substrate in the natural stream channel and the character of the banks (mobility, slope, stability, confinement, grain and rock size). The conveyance should be designed with a minimum openness ratio ≥0.82-feet (0.25-meters). For how to calculate openness ratio and stream simulation ecological approach for road and stream crossings, see https://www.nae.usace.army.mil/Missions/Regulatory/Stream-and-River-Continuity/.

SECTION 9: COMPENSATORY MITIGATION

41. ☐ Does the project require Compensatory Mitigation[21] for impacts to Waters of the U.S.? (See Section V in the 2023 Massachusetts General Permit)
42. ☐ If the project requires mitigation, does the selected compensatory mitigation option (i.e., In-Lieu Fee, permittee-responsible mitigation) deviate from the order of the options presented in §332.3(b)(2)-(6)? If so, please explain why. https://www.ecfr.gov/current/title-33/chapter-II/part-332/section-332.3
43. ☐ For any compensatory mitigation that involves preservation, the applicant must use a site protection instrument to preserve the parcel in perpetuity. (Conservation Easement, Deed Restriction, etc.) https://www.mass.gov/service-details/conservation-restriction-review-program.

SECTION 10: HISTORIC PROPERTIES & NOTIFICATIONS TO SHPO, THPOs, BUAR

44. ☐ Notify the SHPO, Massachusetts Historical Commission, of the Project via Certified Mail and include proof of delivery or receipt in the application package (See Appendix A).
45. ☐ As applicable, notify the THPOs, Narragansett Indian Tribe, Wampanoag Tribe of Gay Head (Aquinnah), and Mashpee Wampanoag Tribe, of the Project via email OR mail and include proof of delivery or receipt in the application package (See Appendix A).
46. ☐ As applicable, notify the BUAR via email (*strongly preferred*) OR mail and include proof of delivery or receipt in the application package (See Appendix A).
47. ☐ Include responses to this notification in the permit application.
48. ☐ As applicable, information on historic properties (Tribal and Archaeological) within the project area should be provided in the permit application.

SECTION 11: ENDANGERED SPECIES & ESSENTIAL FISH HABITAT

49. ☐ Provide a USFWS Information for Planning and Consultation (IPaC) Official Species List from https://ecos.fws.gov/ipac and the email of the individual who generated the list (see GC 10 of the 2023 Massachusetts General Permit for more information).
50. ☐ Provide a species list from the NMFS Section 7 Endangered Species Act mapper at https://noaa.maps.arcgis.com/apps/webappviewer/index.html.
51. ☐ Provide a species list from the NMFS Essential Fish Habitat Mapper at https://www.habitat.noaa.gov/apps/efhmapper/?page=page_3.

[21] Your mitigation proposal must be consistent with the December 29, 2020 Compensatory Mitigation Standard Operating Procedures at https://www.nae.usace.army.mil/Portals/74/docs/regulatory/Mitigation/Compensatory-Mitigation-SOP-2020.pdf and 2008 Mitigation Rule.

52. ☐ If the project will generate turbidity, describe the extent of turbidity and if erosion controls will be used to contain turbidity. If turbidity controls are not operationally feasible, explain the basis for your conclusion and identify any other measures that you will implement to minimize resuspension of sediment.
53. ☐ Identify the substrate type and any aquatic resources that will be affected by the proposed action. (SAV, salt marsh, sand, silt/clay, rocky/hard bottom)
54. ☐ For projects which will include the installation of pilings/sheet-piles, identify the substrate at the project site (sand, cobble, silt/mud/clay), the installation method (vibratory hammer, impact hammer, combination) and indicate whether the following "soft start" procedures at beginning of the workday and after a 30-minute period of rest will be deployed:
    a. ☐ Vibratory Pile Installation: pile driving will be initiated for 15 seconds at reduced energy followed by a one-minute waiting period. This sequence of 15 seconds of reduced energy driving, one-minute waiting period will be repeated two additional times, followed immediately by pile-driving at full rate and energy.
    b. ☐ Impact Pile Installation: pile driving will commence with an initial set of three strikes by the hammer at 40% energy, followed by a one-minute wait period, then two subsequent 3-strike sets at 40% energy, with one-minute waiting periods, before initiating continuous impact driving.
55. ☐ If the project involves dredging, describe any dredge history, number of dredge events to be covered by the permit, erosion/sediment controls, dredge type, intake structures (mesh screen size), dredged material disposal site.
56. ☐ For project activities associated with structures, identify the number, type (drill barge, work boat, tugboat, etc.), and size of any temporary vessels that will be used. Specify measures that will be implemented to ensure vessels are not berthed in shallow water or will "ground out" at low tide.
57. ☐ For aquaculture projects identify whether any component of the gear is seasonal (will be removed annually) or will be in place year-round. If gear will be present year-round and will be variably managed (e.g., floating in summer, bottom in winter) identify month/date for such configurations.
58. ☐ For aquaculture projects identify whether the project will involve use of an existing vessel or new vessel. Identify the length for all work vessels and identify the distance round trip from vessel berthing location and aquaculture area.
59. ☐ For project activities associated with docking structures (either commercial, industrial, or recreational) identify the number, type (motorized/non-motorized, jet-ski, sailboat, kayak, canoe, other that will be berthed there and the sizes of each.
60. ☐ Information required for Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act:
    a. Results of an eelgrass survey completed per the INSERT.
    b. Essential Fish Habitat Assessment to determine project-related impacts to essential fish habitat, using guidance developed by the National Marine Fisheries Service.
61. ☐ A document containing the following information (requirements of 50 CFR §600.920(e)(3)):
    a. Description of proposed action.
    b. Analysis of potential adverse effects on essential fish habitat.
    c. Conclusions regarding the effects of the action on essential fish habitat.
    d. If applicable, proposed mitigation.
    e. Analysis of alternatives to the proposed action.
    f. Other:

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DOCUMENT A00832

FEDERAL HIGHWAY ADMINISTRATION

CATEGORICAL EXCLUSION (CE) DETERMINATION PROJECT NARRATIVE

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U.S. Department of Transportation
Federal Highway Administration

massDOT

Categorical Exclusion (CE) Determination Project Narrative

Project Information

Project Name: Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive (Phase 1)

Route or Road Name: Chauncy Street (Route 106)

MassDOT Project Number: 613052

City/Town: Mansfield, MA

Project Cost/Programming: $7,715,000

MassDOT District: 5

Project Manager or Preparer: Guatam Sen

Project Description

The "Project Corridor" is located in the northern part of Mansfield, Massachusetts within the Town's commercial center and consists of an 1,800-foot stretch along Chauncy Street (Route 106), an 800-foot stretch along Route 140 (Commercial Street), and a 400-foot stretch along Copeland Drive (the Project corridor; Figure 1 – Locus Map). The Project corridor includes the intersection at Chauncy Street and Route 140 and the intersection at Chauncy Street and Copeland Drive. Chauncy Street follows an east-west alignment through Mansfield, connecting to Foxborough to the north and west, and to Easton to the east. Chauncy Street provides the primary connection point from the Mansfield MBTA Commuter Rail station to Route 140, I-95 and I-495, and as such is a significant route for commuters to and from both the train station and highways.

The Project includes roadway widening and related drainage improvements, a shared use path along the southern side of Chauncy Street with ADA compliant ramps, reconstruction of sidewalks along the northern side of Chauncy Street with ADA compliant ramps, new signs, and pavement markings, as well as geometric modifications to include turn lanes and an upgraded traffic signal system at the intersection of Chauncy Street and Copeland Drive, and the intersection of Chauncy Street and Route 140. In general, the pavement rehabilitation strategy for the project area is intended to be mill and overlay with areas of full depth reconstruction.

In addition to improvements along the Project Corridor, the Project also includes coordination of signal timing at the following intersections with Route 140. Work at these intersections is limited to signal timing coordination. No changes to equipment or land disturbances are proposed:

- School Street,
- Norfolk Street,
- West Street,
- Forbes Boulevard, and,
- Fisher Street.

Specific proposed improvements along the Project Corridor include:

- Provide one 11-foot travel lane in both directions along Chauncy Street within the Project Corridor.
- Provide an 8-foot-wide shared use path on the south side of Chauncy Street within the Project Corridor, including the Chauncy Street and Route 140 Intersection.
- Rehabilitate pavement by means of pavement milling and a double layer overlay in addition to full depth box widening in various locations.
- Reconstruct a variable-width cement concrete sidewalk along the northern side of the Project Corridor.
- Install new accessible ramps with detectable warning panels and new sidewalks at the intersection and all driveways. Proposed ramps and sidewalks will meet MassDOT and ADA requirements.
- Provide crosswalks across all intersecting side streets.
- Make improvements to the existing drainage system including adjusting the existing system and structures, as necessary, to address any drainage concerns and accommodate the proposed widening including Best Management Practices to the maximum extent practicable. Improvements including installation of deep-sump catch basins, two leaching basins, and a water quality swale.
- Provide sufficient corner radii for heavy vehicles.
- Replace the existing traffic signal, including mast arm mounted signal heads on all approaches, full actuation with video detection for vehicles and bicycles, pedestrian countdown indications, pushbuttons, and emergency pre-emption. Backplates with reflective strip and LED lenses will be provided for all proposed signal heads. Pedestrian phase timing and vehicle clearance times will be based on the latest MassDOT guidance.
- Widen the Copeland Drive intersection to extend left-turn lanes and provide an exclusive right-turn lane for Chauncy Street (Route 106) eastbound and westbound.
- Widen the roadway to provide an exclusive left-turn lane on the Chauncy Street eastbound approach to the Route 140 intersection.
- Provide lag operations for the Chauncy Street (Route 106) westbound left-turn movement and the Copeland Drive left-turn movements, as preferred by the Town of Mansfield.
- Provide a yield-controlled channelized right turn lane on the Copeland Drive southbound approach to the Chauncy Street intersection.
- Provide new pavement markings and signs. All signs will be MUTCD compliant.
- Relocate utility poles in areas of widening and new sidewalk construction to maintain sufficient roadway offsets.

A. Purpose and Need

The purpose of the Project is to improve traffic and safety for all users along Chauncy Street, Route 140, and Copeland Drive. The Project includes improvements based on a Road Safety Audit (RSA) performed at the intersection on January 24, 2019. The Chauncy Street (Route 106) corridor, Copeland Drive, and Route 140 intersections have safety and operational deficiencies which require improvements for safe and efficient

operation for all users, including motor vehicles, bicycles, and pedestrians. The proposed improvements were developed to address the existing deficiencies and are based on an examination of existing conditions, known deficiencies, future traffic volumes, safety review, RSA, and discussions with MassDOT and the Town of Mansfield.

B. Alternatives

Concept alternatives were developed and build conditions capacity analyses were conducted for the corridor and intersections to address operational and safety deficiencies recommended from the Road Safety Analysis (RSA) and Safety Review. The provision of bicycle accommodation along the corridor and improving traffic operations and safety along the corridor and at both intersections for turning vehicles were goals of the project.

No-Build Option

The No-Build Option, which would effectively result in no action being taken by the Town or MassDOT, results in Chauncy Street remaining in the same condition as present day existing conditions. The Project Corridor would continue to experience an increase in traffic volume, and traffic operations that are expected to degrade when compared to existing conditions.

Corridor Concepts

Two concepts were initially developed for the corridor that included widened shoulders accommodating bicycles, which met MassDOT criteria for bicycle accommodation at the time.

Concept 1 provided a single lane in each direction, with the proposed roadway essentially occupying the same width as the existing roadway.

Concept 2 provided a single lane in each direction but added a two-way left turn lane. The Town of Mansfield indicated a strong preference for Concept 2 to accommodate left turns into the closely spaced abutting businesses along Chauncy Street between Route 140 and Copeland Drive.

> **Concept 2a (the preferred concept)** To avoid the significant land takings of abutting properties and businesses necessary to implement the preferred concept of adding two-way left turn lanes, and widening of the roadway shoulders to accommodate bicycles, the proposed pedestrian and bicycle accommodations were reconsidered. As a result, the preferred concept includes a typical 5-foot sidewalk on the north side of Chauncy Street and an 8-foot bi-directional path (shared use path) on the south side.

Intersection Concepts (Chauncy Street and Route 140)

All concept alternatives include enhanced pedestrian accommodations at the intersection, with varied lane and signal phasing configurations aimed at improving traffic operations.

Option 1 addresses the need for an additional eastbound lane and exclusive lane movements while maintaining split phasing for Route 106. The Chauncy Street eastbound approach currently provides one shared lane for left turns and through vehicles along with one shared lane for through and right turn vehicles. Under Option 1, this approach would be modified to provide a three-lane approach with separate lanes for exclusive left, through and right turn movements. Split phasing will remain as exists today; therefore, a protected only phase will be provided for the westbound approach, followed by a protected only phase for the eastbound approach. The inclusion of an exclusive right turn lane will allow additional right turn capacity as an overlap to the northbound protected left turn phase.

Option 2 is identical to Option 1 in geometric configuration but considers the removal of a split phase for the eastbound and westbound approaches. Phasing would include protected phasing for Chauncy Street eastbound and westbound left-turning vehicles, followed by a shared phase for Chauncy Street eastbound and westbound through and right-turn movements. This option improves many movements while degrading the westbound left turn movement during both the AM and PM peak periods.

Option 3 (the preferred option) considers a shared left-turn/through lane, through lane and an exclusive right-turn lane eastbound configuration while maintaining the split phasing described in Option 1 since the eastbound left-turn volume is relatively low for an exclusive left-turn lane.

Option 3 is the preferred option as it addresses the need for an eastbound exclusive right-turn lane while maintaining two lanes of through traffic by widening Chauncy Street to provide a three lane eastbound approach consisting of a shared left-turn/through lane, through lane, and an exclusive right-turn lane. The raised center median would not require widening and the eastbound/westbound split phasing would also be maintained which maximizes operational safety.

Option 4 provides the same geometric configuration as Option 3 and maintains the eastbound and westbound split phase as described in Option 1. In addition, Option 4 provides two left-turn lanes, two through lanes, and a channelized right-turn lane for the northbound approach. The additional northbound left-turn lane will be provided to allow for a shorter northbound left-turn lag phase, which in turn allows for a shorter overall cycle length.

Option 5 provides the same geometric configuration as Option 3 and maintains the eastbound and westbound split phase as described in Option 1. In addition, Option 4 provides two left-turn lanes, two through lanes, and a channelized right-turn lane for the southbound approach. The additional southbound left-turn lane will be provided to allow for a shorter southbound left-turn lead phase, which in turn allows for a shorter overall cycle length.

Intersection Concepts (Chauncy Street and Copeland Drive)

The alternatives outlined below were compared to determine the option which best meets the project purpose of improving traffic operations and safety for all users at the intersection of Chauncy Street and Copeland Drive.

Option 1A addresses the lack of left turn lanes by widening Chauncy Street and Copeland Drive to provide exclusive left-turn lanes on each approach to the intersection. All left turn lanes would operate under a protected left turn phase.

Option 1B is identical to Option 1A in geometric configuration but considers the provision of protected/permitted phasing for the exclusive left turn lanes. Left turning vehicles would have a short, protected phase, after which left turns would continue to be allowed under permissive operation while the through lanes are given a green indication. This improves operation for all the left turn movements and the Copeland Drive northbound and southbound through movements during the morning and afternoon peak periods, when compared with Option 1A.

Option 1C is identical to Option 1A in geometric configuration and considers the provision of protected/permitted phasing for the left turn lanes, similar to Option 1B, with the exception of the Chauncy Street eastbound left turn lane. This lower-volume movement would operate under permissive only operation.

This option slightly improves the operation for the Chauncy Street westbound through movement during the morning and afternoon peak periods but slightly degrades the operation for the Chauncy Street eastbound left

turn movement during both peak periods, when compared with Option 1B.

Option 2A addresses the lack of left turn lanes and additionally improves capacity at the intersection by widening Chauncy Street to provide an exclusive left-turn lane, a through lane, and an exclusive right turn lane on both Chauncy Street approaches to the intersection. This option widens Copeland Drive to provide a shared left-turn/through lane and through/right-turn lane on each Copeland Drive approach to the intersection. The Chauncy Street eastbound exclusive left turn lane would operate under permissive only and the Chauncy Street westbound exclusive left turn land would operate under protected/permissive.

The option experiences improved operations compared to Options 1A, 1B, and 1C. However, Option 2A would require an additional egress lane on Copeland Drive northbound and southbound to accommodate the two through lanes. The right-of-way is insufficient to accommodate an additional lane on both legs of Copeland Drive.

Option 2B (the preferred option) maintains the Option 2A lane configuration for Chauncy Street with an exclusive left turn lane, exclusive through lane, and exclusive right turn lane in each direction. The Copeland Drive configuration would be the same as the Option 1 scenarios with an exclusive left-turn lane and a shared through/right-turn lane. The left turn phasing would be similar to Option 1C with protected/permitted phasing for the left turn lanes, with the exception of the Chauncy Street eastbound left turn lane. This movement would operate under a permissive only operation.

This option would experience improved operations when compared with Options 1A, 1B, and 1C, however, Option 2A operations would experience less delay and overall queuing then Option 2B. Option 2B is the preferred option as it provides safety improvements with exclusive left turn lanes on each approach and also considers geometric constraints that limit the ability for widening Copeland Drive to provide the two through lanes proposed under Option 2A.

Roundabout Option

The Chauncy Street and Copeland Drive intersection features closely spaced businesses. Construction of a single lane roundabout would require acquisition of a large part of the Honey Dew Donuts shop property located on the southeast corner of the intersection, which would significantly impede the site circulation and the business's operation. Roundabout construction would also require acquisition of two other properties at the intersection and possible demolition of buildings. MassDOT guidelines for a multilane roundabout accommodating a WB-50 design vehicle require a minimum inscribed circle diameter of 150 feet. Geometric constraints and the Town's desire to maintain a traffic signal at the Chauncy Street and Copeland Drive intersection prohibit consideration of a roundabout at the intersection.

C. Existing Conditions, Environmental Impacts, and Mitigation Measures

Chauncy Street is functionally classified as an Urban Principal Arterial. Chauncy Street is under MassDOT jurisdiction from Route 140 to the east of the 243 Chauncy Street driveway, and under Town jurisdiction between the 243 Chauncy Street driveway and the Copeland Drive Intersection. Copeland Drive is an Urban Minor Arterial under MassDOT jurisdiction, and Route 140 is classified as an Urban Principal Arterial under MassDOT jurisdiction The intersection of Chauncy Street and Copeland Drive is also under MassDOT jurisdiction.

Currently, Chauncy Street accommodates one 15-foot single lane of travel in each direction, divided by a double

yellow center line, with two-to-three-foot shoulders. Sidewalks are provided along both sides of Chauncy Street, except to the west of the Copeland Crossing Apartments driveway on the north side of the Project Corridor. Chauncy Street and Copeland Drive intersect to form a four-legged intersection under traffic signal control. Copeland Drive provides a signal travel lane in each direction, divided by a double yellow center line.

Chauncy Street and Route 140 intersect to form a four-legged intersection under traffic signal control. Route 140 runs in the north-south direction separated by a raised median as wide as 36 feet. The northbound and southbound approaches to the intersection consist of a one-foot left shoulder, a 12-foot wide exclusive left-turn lane, two 12-foot-wide through lanes, and a right-turn lane which widens to 22 feet channelized by a triangular grass island. An 8-foot shoulder is provided in the northbound direction between the outer through lane and the asphalt triangular channelizing island, and a 12-foot shoulder is provided in the southbound direction between the outer through lane and the asphalt channelizing island.

Channelized right turn lanes in both directions are under yield control and yield lines are not provided. Bicycle accommodations are not provided on Route 140. A marked, signalized crosswalk is provided across the south leg of the Chauncy Street / Route 140 intersection. A marked, unsignalized crosswalk is provided connecting the southeast corner of the intersection to the island across the northbound channelized right turn lane.

Sloped granite curbing is provided throughout the Chauncy Street / Route 140 intersection. Pavement at the intersection is in good condition. Pavement markings are overall in good condition along Route 106, with cracked markings and some faded areas in need of restriping. Pavement markings are in fair condition along Route 140 with many faded markings in need of restriping. Utility poles are offset between 15 & 18 inches from the existing edge of pavement and located on the south side of Route 106, with one utility pole located in the median south of the Route 140 intersection.

Land use in the Project Corridor is primarily commercial, with small, forested areas located primarily around the Chauncy Street and Route 140 intersection. Copeland Crossing Apartments is located north of Chauncy Street at the corner of Chauncy Street and Route 140 and is accessible via Chauncy Street. One entrance to the United States Postal Service (USPS) building is also located off Chauncy Street and is accessible through Giles Place. Businesses located along the Project corridor include CVS, Advance Auto Parts, Dominos, as well as several other small business and restaurants.

Mitigation measures will include erosion and sedimentation controls and stabilization of any disturbed area. Erosion and sedimentation (E&S) controls will be installed and maintained by the contractor where activities are proposed within 100-feet of Resource Areas. The E&S controls will provide a limit of work barrier in the vicinity of Resource Areas, while preventing silt and sediment from migrating into or towards the Resource Areas. Erosion and sediment controls will be selected by the contractor, and may include compost-filled filter tubes, silt fencing, straw wattle and/or turbidity curtains where appropriate. Stabilization will occur on disturbed areas and will consist of placing loam and seeding the areas with seed mixes.

1. Wetlands and Waterways

On July 25, 2023 BETA Group, Inc. (BETA) conducted a Site visit to delineate jurisdictional boundaries within and along the Project Corridor within 100 feet of the limit of work.

Portions of the Project are located on streambank (inland Bank), streambed (Land Under Water), and within 100 feet of wetlands and waterways (buffer zone to inland Bank and Bordering Vegetated Wetlands), all of which are protected and/or jurisdictional under the Massachusetts Wetlands Protection Act (M.G.L. 131, Section 40) and its implementing regulations at 310 CMR 10.00 (Figure 2 – Environmental Resources Map). Work within

these resource areas will require filing of a Notice of Intent with the Mansfield Conservation Commission and the Massachusetts Department of environmental Protection. The following impacts are anticipated as a result of the Project:

- 41 linear feet (21 linear feet of permanent / 20 linear feet of temporary) of impact to streambank (inland Bank) of an unnamed stream
- 196 square feet (108 sf permanent / 88 sf temporary) of impact to streambed (Land Under Water) of an unnamed stream.

The Project also will impact federally jurisdictional Waters of the United States ("Waters of the U.S."). Authorization for this Project is required under Section 404 of the Clean Water Act. No permit is needed under Section 401, as the Project does not exceed thresholds at 314 CMR 9.00. A Pre-Construction Notification form will be submitted to the US Army Corp of Engineers for approval under the Massachusetts General Permit, as the Project includes a culvert extension that does not meet the Stream Crossing Standards described under General Condition 19 of the General Permit.

2. Threatened and Endangered Species

The Project is located outside the limits of State-mapped Natural Heritage & Endangered Species Program (NHESP) Priority Habitat and Estimated Habitat mapped areas and Areas of Critical Environmental Concern. No NHESP Certified or Potential Vernal Pools, US Army Corps of Engineers Special Aquatic Sites (salt marsh, tidal flats, vegetated shallows, etc.), Essential Fish Habitat, or Areas of Critical Environmental Concern are present within or near the Site.

According to the U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Conservation (IPaC) online mapping tool the monarch butterfly (*Danaus plexippus*), a candidate species, and the northern long-eared bat (*Myotis septentrionalis*), an endangered species, (NLEB) may occur within the Project Area.

On 11/30/2022 the USFWS issued a decision to reclassify the NLEB as endangered, with an effective date of 1/30/2023. This decision includes stringent regulations and Avoidance and Minimization Measures (AMMs) to protect the bat from jeopardy of going into extinction. The rule and its associated regulations would apply to areas considered within the range of the northern long-eared bat (as shown in IPaC) unless the species is not considered present within a Project Area as determined through completion of a presence/ absence surveys conducted in accordance with USFWS guidelines.

Based on the FHWA's Programmatic Biological Opinion, USWFS has determined that the Project will (may affect, not likely to adversely affect / will not affect the NLEB). MassDOT's consultation documentation is included in Appendix A.

3. Section 4(f) Properties

Based on available Publicly-Owned Open Space data and the Project's Plans, there is no protected open space in or along the Project Corridor. The nearest publicly-owned property is North Common Park located approximately 1 mile east of the Project Corridor and no impacts to this parcel are anticipated. Accordingly, the Project will not affect publicly-owned parcels subject to Section 4(f) of the Department of Transportation Act or Article 97 of the MA Executive Office of Environmental Affairs Land Disposition Policy. No properties Subject to Section 4(f) of the DOT Act associated with recreational and wildlife use are present in the vicinity of the Site.

As discussed below, the Project will entail impacts to privately-owned historic parcels that may be subject to

review under Section 4(f) of the DOT Act. MassDOT Highway Division's Environmental Services may determine that the easement proposed to the property at 200 Chauncy Street is subject to evaluation under Section 4(f) of the DOT Act due to the Site's listing as a historic property. If required, it is anticipated that MassDOT will make a "no effect" or "de minimis" impact determination regarding the proposed Permanent Utility Easement (13-PUE-16-T) on this property. This determination may be based on the conclusion that the subject easement will not adversely affect the activities, features, or attributes that make the property eligible for Section 4(f) protection. Given the current status, as described below, however, no determination may be needed.

All proposed easements associated with the Project are listed on the attached Right-of-Way (ROW) Summary Sheets

4. Historic Properties

The Project will be reviewed by the MassDOT Cultural Resource Unit (CRU) to identify potential impacts to historical, cultural, and archaeological resources. It is anticipated that this Project will have no adverse effect to cultural, historical, and archaeological resources within the vicinity of the Project Area.

According to Massachusetts Historical Commissions online mapping service, MACRIS Maps, there is one historic resources located along the Project Corridor. This property, the Nelson Paine House (MNF.92), listed by the Massachusetts Historical Commission (MHC), is located at 200 Chauncy Street. Based on the information in the MACRIS system, the Nelson Paine House is located at the eastern limit of Project Corridor and has not been demolished (Figure 3: Historic Resource Map). Through a review of historic aerials, however, it appears that this structure was demolished between 1980 and 1995.

The Project proposed a 790 square foot permanent utility easement (13-PUE-16-T) on this Property.

5. Noise

The Project is not a Type I action requiring a noise assessment. It does not involve the construction of a highway on a new location; alteration of an existing highway where there is either a substantial horizontal alteration or a substantial vertical alteration; the addition of a through traffic lane(s); the addition of an auxiliary lane, except for when the auxiliary lane is a turn lane; the addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; restriping existing pavement for the purpose of adding a through traffic lane or an auxiliary lane; or, the addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot, or toll plaza.

6. Right-of-Way Requirements

Work will be necessary along the sidelines of the roadways, on private property, to accommodate the roadway, traffic signals, utility poles, sidewalk, and shared path construction. The project includes forty-one (41) permanent easements and no takings. More specifically, easements are broken down as follows:

- 41 permanent easements to accommodate overhead wires, roadway widening, shared use path, utility poles, guy wire, culvert, headwall, guardrail, highway signs, grading, loam and seeding, and driveway work.

In addition, there will be sixteen (16) temporary construction easement (right of entry) at all adjacent properties for surface restoration including placing loam and seed. The right of way summary sheets are attached.

7. Other Environmental Impacts

Environmental Justice Communities

Census 2020 Environmental Populations data indicates the presence of Minority Environmental Justice Populations 0.4 miles from the Project Area (Figure 4 – Environmental Justice Map). Given the nature of the Project, the proposed work is not anticipated to have any negative effects on the Environmental Justice Populations identified above. The proposed improvements to the Chauncy Street corridor will improve pedestrian, bicycle and motorist interactions in the area, and specifically aims to improve non-motorized forms of transportation that are oftentimes the only feasible forms of transportation for low-income individuals.

Oil and Hazardous Materials

The Federal Superfund National Priorities List (NPL) at EPA's website at did not reveal any Superfund sites within or along the Project Corridor. The nearest Superfund site is the 40-acre Hatheway & Patterson Superfund Site located 1 mile to the east of the Project. The Massachusetts Underground Storage Tank (UST) Facility Search was also reviewed and revealed an underground storage tank (UST) associated with the Global Montello Group that exists at 189 Chauncy Street, an existing gas station northeast of the Chauncy Street and Copeland Ave intersection.

According to MassGIS data and information accessed via the MassDEP Bureau of Waste Site Cleanup website, there are reported releases subject to the Massachusetts Contingency Plan (310 CMR 40.0000) located within or adjacent to the Project Area (Figure 6 – Hazardous Materials Map) as follows:

- Closed Sites: Mobil Station 01 731 (RTN: 4-0000914); and
- Closed Sites with Use Limitations: Osco Store #18-362 (RTN: 4-0012459) and Intersection of Chauncy and Giles (RTN: 4-0014150).

National Pollutant Discharge Elimination Systems (NPDES)

The Project will be subject to the filing of a Notice of Intent with the Environmental Protection Agency (EPA) under the NPDES Construction General Permit due to ground-disturbing activities in excess of one (1) acre. This will require the contractor to prepare a Stormwater Pollution Prevention Plan (SWPPP) to ensure that construction-period stormwater discharges follow best management practices and do not result in degradation of the environment due to release of sediment-laden stormwater.

D. Public Outreach

A 25% Design Public Hearing (DPH) was held via a Virtual Public Hearing webinar on March 2, 2023 (link Mansfield – Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive | Mass.gov.) This meeting was held to present the proposed intersection improvements on Chauncy Street (Route 106) and Route 140 to Copeland Street. The transcript from the 25% DPH and written comments received on the Project are included in Appendix A.

The DPH was well attended, and residents provided both verbal and written comments on the Project. The comments that were most heard pertained to the safety of pedestrians crossing the road, if the intersection will allow right on red, and when the Phase 2 of the Project will occur. Below is a list of additional comments provided by the Public:

- Residents were interested in different aspects of the installation of utilities, if the utilities will be underground, if the current utilities within the roadway have been updated recently, and if utilities will be able to be altered after the Project is completed.

- There were questions regarding the turning lanes that will be installed, including: why there will be a center turning lane, if the right slip turn lane can be eliminated, and about the widening of the road to accommodate the turning lanes.
- Other comments offered included: a question regarding if the roadway will be brought down to gravel for the Project, and questions about funding for the project.

E. Permitting and Regulatory Review

Permit/Review	Agency	Status	Comments
Section 7 of ESA - NLEB 4(d)	USFWS	IPAC Consistency Statement DATE	See Section C.2
Wetlands Protection Act Notice of Intent	Town of Mansfield Conservation Commission	In Progress	See Section C.1.
Section 106	MassDOT CRU	In Progress	See Section C.4
Section 404	USACE	In Progress	See Section C.1.
NPDES CGP Coverage	EPA	To Be Submitted by Contractor	See Section C.7.

Appendix A – Supporting Documentation

- Figure 1 – Site Locus
- Figure 2 – Environmental Resources Map
- Figure 3 – Historic Resources Map
- Figure 4 – Environmental Justice Map
- Figure 5 – FEMA Resources Map
- Figure 6 – Hazardous Materials Map
- ROW Summary Sheets
- 25% DPH Transcript and Notice of Public Meeting
- Section 106 and Section 4(f) determination – SHPO Correspondence – To be provided by DOT

Categorical Exclusion (CE) Determination Checklist

Starting with Section 1, answer the questions by checking Yes or No.

After each of the following sections, there will be instructions that direct the preparer to continue to the next appropriate section of the checklist. The source(s) of the information used should be listed at the bottom of the response to each question and supporting documentation should be attached to the checklist. The preparer should refer to MassDOT's *Categorical Exclusion Project Narrative and Checklist Detailed Instructions* for further information and guidance on completing this checklist.

SECTION 1-CATEGORICAL EXCLUSIONS	YES	NO
1. Is the project on the list of CEs?	☒	☐

If "Yes," the preparer should check the CE that is being considered and then complete Section 2 below. If "No," the preparer should complete Section 2 below.

List of Categorical Exclusions

Categorical Exclusions in 23 CFR 771.117(c) (The "C" List)

1. ☐ Activities that do not involve or lead directly to construction, such as planning and research activities; grants for training; engineering to define the elements of a proposed action or alternatives so that social, economic, and environmental effects can be assessed; and Federal-Aid system revisions that establish classes of highways on the Federal Aid highway system. A feasibility study would be an example of this CE.
2. ☐ Approval of utility installations along or across a transportation facility.
3. ☐ Construction of bicycle and pedestrian lanes, paths, and facilities. Examples include walkways, sidewalks, shared-use paths and facilities, and small passenger shelters provided no new disturbance will occur.
4. ☒ Activities included in MassDOT's highway safety plan under 23 USC 402.
5. ☐ Transfer of Federal lands pursuant to 23 U.S.C. 107(d) and/or 23 U.S.C. 317 when the land transfer is in support of an action that is not otherwise subject to FHWA review under NEPA.
6. ☐ Installation of noise barriers or alterations to existing publicly-owned buildings to provide noise reduction. Examples include maintenance and/or replacement of existing noise wall panels and/or posts.
7. ☐ Landscaping. Examples include herbicidal spraying; mowing or brush removal/trimming projects; and beautification or facility improvement projects (*e.g.*, landscaping, curb and gutter replacement, installation of park benches, or decorative lighting).
8. ☐ Installation of fencing, signs, pavement markings, small passenger shelters, traffic signals, and railroad warning devices where no substantial land acquisition or traffic disruption will occur. Examples include the installation or maintenance of signs, pavement markings/raised pavement

markers/sensors, traffic calming activities, new or replacement right-of-way fencing, and general pavement marking or "line painting" projects.

9. ☐ The following actions for transportation facilities damaged by an incident resulting in an emergency declared by the Governor of Massachusetts and concurred by the Secretary of the United States Department of Transportation (the Secretary), or a disaster or emergency declared by the President pursuant to the Robert T. Stafford Act (42 U.S.C. 5121):

   (a) Emergency repairs under the FHWA Emergency Relief Program (23 U.S.C. 125); and

   (b) The repair, reconstruction, restoration, retrofitting, or replacement of any road, highway, bridge, tunnel, or transit facility, including ancillary transportation facilities (such as pedestrian/bicycle paths and bike lanes), that is in operation or under construction when damaged and the action:

   (i) Occurs within the existing right-of-way and in a manner that substantially conforms to the preexisting design, function, and location as the original (which may include upgrades to meet existing codes and standards as well as upgrades warranted to address conditions that have changed since the original construction); and

   (ii) Is commenced within a two-year period beginning on the date of the declaration.

10. ☐ Acquisition of scenic easements. Examples include conservation easements and mitigation easements.

11. ☐ Determination of payback under 23 USC 156 for property previously acquired with Federal Aid participation.

12. ☐ Improvements to existing rest areas and truck weigh stations. Examples include resurfacing of existing parking areas, truck stop electrification, and construction/installation of alternative energy facilities at existing facilities.

13. ☐ Ridesharing activities. Examples include transportation corridor fringe parking facilities and park and-ride lots.

14. ☐ Bus and rail car rehabilitation.

15. ☐ Alterations to facilities or vehicles in order to make them accessible for elderly and handicapped persons.

16. ☐ Program administration, technical assistance activities, and operating assistance to transit authorities to continue existing service or increase service to meet routine changes in demand.

17. ☐ The purchase of vehicles whose use can be accommodated by existing facilities or by new facilities which themselves are categorically excluded. An example would be the purchase or conversion of vehicles to alternative fuel uses.

18. ☐ Track and rail bed maintenance and improvements when carried out within the existing right-of-way.

19. ☐ Purchase and installation of operating or maintenance equipment to be located within the transit facility and with no significant impacts off the site.

20. [Not Applicable]

21. ☐ Deployment of intelligent transportation systems.

22. ☐ Projects, as defined in 23 U.S.C. 101, that would take place entirely within the existing operational right-of-way. Examples include:

☐ Tower lighting.

☐ Guardrail installation and replacement (including median cable barriers) where roadway ditches and backslopes will not be relocated.

☐ Improvements to existing MassDOT maintenance facilities.

☐ Construction of new MassDOT maintenance facilities within an existing operational right-of-way.

☐ Work on pedestrian and vehicle transfer structures and associated utilities, buildings, and terminals.

(For CE C-22, see Categorical Exclusion Determination Project Narrative and Checklist Detailed Instructions).

23. Federally-funded projects:

☐ (a) That receive less than $5 million of Federal funds (as adjusted annually by the Secretary to reflect any increases in the Consumer Price Index prepared by the Department of Labor); or

☐ (b) With a total estimated cost of not more than $30 million (as adjusted annually by the Secretary to reflect any increases in the Consumer Price Index prepared by the Department of Labor) and Federal funds comprising less than 15 percent of the total estimated project cost.

(For CE C-23, see Categorical Exclusion Determination Project Narrative and Checklist Detailed Instructions).

24. ☐ Localized geotechnical and other investigation to provide information for preliminary design and for environmental analyses and permitting purposes, such as drilling test bores for soil sampling; archaeological investigations for archaeology resources assessment or similar survey; and wetland surveys. (This CE only applies to stand alone projects, not for environmental surveys being conducted as part of a project with an environmental document).

25. ☐ Environmental restoration and pollution abatement actions to minimize or mitigate the impacts of any existing transportation facility carried out to address water pollution or environmental degradation. These actions include retrofitting and construction of stormwater treatment systems to meet Federal and State requirements under Sections 401 and 402 of the Federal Water Pollution Control Act (33 USC 1341; 1342).

26. ☒ Modernization of a highway by resurfacing, restoration, rehabilitation, reconstruction, adding shoulders, or adding auxiliary lanes or parking lanes. Examples include:

☐ Construction of highway safety and truck escape ramps.

☒ Construction of bicycle lanes and pedestrian walkways, sidewalks, shared-use paths, or facilities and trailhead parking that do not otherwise qualify for a CE C-1 designation.

☒ Beautification or facility improvement projects (*e.g.*, landscaping, curb and gutter

installation and replacement, ADA ramps/curb ramps, installation of park benches, or decorative lighting).

☒ Implementation of Complete Street elements to improve safety and/or pedestrian, bicycle, transit, vehicular, or freight mobility.

27. ☐ Highway safety or traffic operations improvement projects, including the installation of ramp metering control devices and lighting. Examples include lane reduction changes, provided that traffic analyses are completed.

28. ☐ Bridge rehabilitation, reconstruction, or replacement or the construction of grade separation to replace existing at-grade railroad crossings.

29. ☐ Purchase, construction, replacement, or rehabilitation of ferry vessels (including improvements to ferry vessel safety, navigation, and security systems) that would not require a change in the function of the ferry terminals and can be accommodated by existing facilities or by new facilities which themselves are within a CE.

30. ☐ Rehabilitation or reconstruction of existing ferry facilities that occupy substantially the same geographic footprint, do not result in a change in their functional use, and do not result in a substantial increase in the existing facility's capacity. Example actions include work on pedestrian and vehicle transfer structures and associated utilities, buildings, and terminals.

Categorical Exclusions in 23 CFR 771.117(d) (The "D" List)

1. to 3. [Reserved]

4. ☐ Transportation corridor fringe parking facilities.

5. ☐ Construction of new truck weigh stations or rest areas.

6. ☐ Approvals for disposal of excess right-of-way or for joint or limited use of right-of-way, where the proposed use does not have significant adverse impacts.

7. ☐ Approvals for changes in access control.

8. ☐ Construction of new bus storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and is located on or near a street with adequate capacity to handle anticipated and support vehicle traffic.

9. ☐ Rehabilitation or reconstruction of existing rail and bus buildings and ancillary facilities where only minor amounts of additional land are required and there is not a substantial increase in the number of users.

10. ☐ Construction of bus transfer facilities when located in a commercial area or other high activity center in which there is adequate street capacity for projected bus traffic.

11. ☐ Construction of rail storage and maintenance facilities in areas used predominantly for industrial or transportation purposes where such construction is not inconsistent with existing zoning and where there is no significant noise impact on the surrounding community.

12. ☐ Acquisition of a particular parcel or a limited number of parcels for hardship or protective purposes where the acquisition will not limit the evaluation of alternatives, including shifts in alignment for planned construction projects, which may be required in the NEPA process. No project development on such land may proceed until the NEPA process has been completed. An example is right-of-way acquisition only for a bikeway/pedestrian facility (no construction).

SECTION 2-CE AND UNUSUAL CIRCUMSTANCES QUESTIONS		YES	NO
2.	Does the project induce significant impacts to planned growth or land use for the area?	☐	☒
3.	Does the project require the relocation of significant numbers of people?	☐	☒
4.	Does the project have a significant impact on any natural, cultural, recreational, historic, or other resource?	☐	☒
5.	Does the project involve significant air, noise, or water quality impacts?	☐	☒
6.	Does the project have a significant impact on travel patterns?	☐	☒
7.	Does the project involve substantial controversy on environmental grounds?	☐	☒
8.	Does the project have a significant impact on Section 4(f) properties or on historic properties?	☐	☒
9.	Is the project inconsistent with any Federal or state requirement or administrative determination relating to the environmental aspects of the action?	☐	☒

If the answer for any of the questions within Section 2 is "Yes," then the project does not qualify as a CE and an EA or EIS is required. If the answer for all the questions within Section 2 is "No," the preparer should complete Section 3 below.

SECTION 3-SEGMENTATION QUESTIONS		YES	NO
10.	Is the action a linear project?	☒	☐

If the answer is "Yes," the preparer should complete Questions 11 through 13. If the answer is "No," the preparer should not respond to Questions 11 through 13 and advance to Section 4 below.

11.	Does the project have independent utility?	☒	☐
12.	Does the project connect logical termini?	☒	☐
13.	Does the project allow further consideration of alternatives for other reasonably foreseeable transportation improvements?	☒	☐

If any of the answers for Questions 11, 12, and 13 is "No," then the project does not qualify as a CE and consultation between MassDOT and FHWA is required. If the answers for Questions 11, 12, and 13 are "Yes," the preparer should complete Section 4 below.

U.S. Department of Transportation
Federal Highway Administration

massDOT

Categorical Exclusion Determination Project Narrative and Checklist

MassDOT Project No. 613052

SECTION 4-PROGRAMMATIC CE CONDITION QUESTIONS		YES	NO
14.	Does the project involve the permanent acquisition of more than minor amounts of right-of-way or involve non-residential or residential displacements?	☐	☒
15.	Does the project have a substantial environmental impact from the intended future use of land involved in the sale, transfer, or lease of state-owned property?	☐	☒
16.	Does the project have a finding of adverse effect on historic properties?	☐	☒
17.	Does the project have a disproportionately high and adverse impact on minority or low income populations?	☐	☒
18.	Is the project a Type I project requiring a noise analysis?	☐	☒
19.	Does the project require the use of Section 4(f) properties necessitating the preparation of an Individual Section 4(f) Evaluation?	☐	☒
20.	Does the project require the use of Section 6(f) properties?	☐	☒
21.	Does the project require an Army Corps of Engineers Section 10 permit or Individual Section 404 permit?	☐	☒
22.	Does the project require a U.S. Coast Guard bridge permit?	☐	☒
23.	Does the project adversely affect Federally-listed threatened or endangered species or critical habitat?	☐	☒
24.	Does the project involve a floodplain encroachment other than for functionally dependent uses or actions that facilitate open space use?	☐	☒
25.	Does the project involve construction in, across, or adjacent to a river component designated or proposed for inclusion in the National System of Wild and Scenic Rivers?	☐	☒
26.	Does the project convert prime or unique agricultural land to nonagricultural uses?	☐	☒
27.	Does the project affect a known Superfund site?	☐	☒
28.	Does the action involve any changes in access control?	☐	☒
29.	Does the project involve the construction of temporary access or closure of existing road, bridge, or ramps?	☐	☒

U.S. Department of Transportation
Federal Highway Administration

Categorical Exclusion Determination Project Narrative and Checklist

MassDOT Project No. 613052

If the answers to Question 14 through 29 are "No" then the project qualifies as a Programmatic CE. If any of the answers to Questions 14 through 28 are "Yes" then the project cannot be classified as a Programmatic CE and an Individual CE approval from FHWA is required. If the answer to Question 29 is "Yes", the preparer should complete Question 30 below.

		YES	NO
30.	Does the project meet the following conditions for construction of temporary access or closure of existing road, bridge, or ramps? • Provisions have been made for access by local traffic and are posted; • There will be no adverse effects on through-traffic dependent business; • The temporary access or closure of existing road, bridge, or ramps will not interfere with a local special event or festival; • The temporary access or closure of existing road, bridge, or ramps will not substantially change the environmental consequences of the project; or • There is no substantial controversy associated with the temporary access or closure of existing road, bridge, or ramps.	☐	☐

If the answer to Question 30 is "Yes"," then the project qualifies as a Programmatic CE. The checklist and all supporting information should be submitted to the MassDOT Project Manager.

If the answer to Question 30 is "No", then the project cannot be classified as a Programmatic CE and an Individual CE approval from FHWA is required. The preparer should attach to this checklist all supporting information to clearly establish that there is little or no potential for significant impact. The Individual CE and supporting information will be submitted to the FHWA Massachusetts Division for approval.

I concur with this categorical exclusion determination:

_____ _____

Director of Environmental Services
(or designee)

Date

For Individual CEs, the FHWA Division Administrator's signature is also required.

_____ _____

Division Administrator

(or designee)

Date

FHWA Comments/Conditions:

U.S. Department of Transportation
Federal Highway Administration

massDOT

Categorical Exclusion Determination Project Narrative and Checklist

MassDOT Project No. 613052

Massachusetts Department of Transportation Categorical Exclusion Reevaluation

MassDOT is conducting a reevaluation of this CE because one or more of the following circumstances has occurred:

☐ There are substantial changes in the proposed action that are relevant to environmental concerns or;

☐ There are significant new circumstances or information relevant to environmental concerns and that have a bearing on the proposed action or its impacts or;

☐ The project has not commenced (*i.e.*, has not started construction) within three years from the project's CE determination and MassDOT has not re-examined the environmental studies during that time.

A. Date Categorical Exclusion Approved: Click here to enter text.

B. Are the proposed improvements substantially different than those approved for the Categorical Exclusion?

☐ Yes ☐ No Explanation: Click here to enter text.

C. Have there been changes in the project surroundings?

☐ Yes ☐ No Explanation: Click here to enter text.

D. Are the environmental impacts from the proposed improvements substantially different?

☐ Yes ☐ No Explanation: Click here to enter text.

The above information verifies that the current proposed action, when compared to that for which a CE was approved, will not result in substantially different environmental impacts. The CE classification for the proposed action is, therefore, still valid.

_____ _____

Director of Environmental Services
(or designee)

Date

For Individual CEs, the FHWA Division Administrator's signature is also required.

_____ _____

Division Administrator

(or designee)

Date

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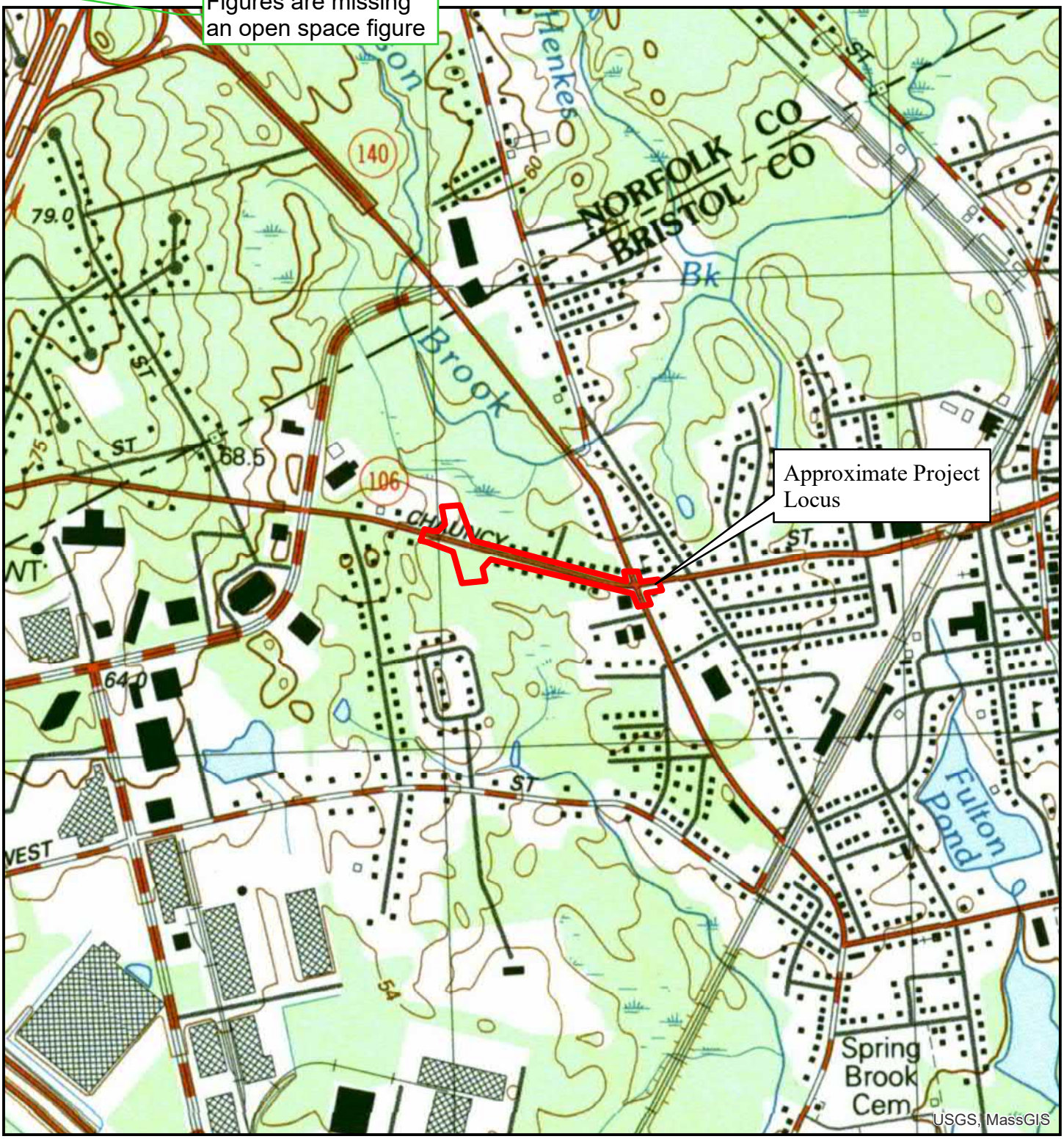

BETA
IMPROVING COMMUNITIES TOGETHER

N
W E
S

0 1,000 2,000 Feet

1 inch = 1,000 feet

Figure 1
Site Locus
Chauncy Street (Route 6)
Mansfield, MA

Data Source: MassGIS USGS Topographic Quadrangle Images (2001)

Proposal No. 613052-131228

Figure 2
Environmental Resources Figure
Chauncy Street (Route 106)
Improvements Phase 1
Mansfield, MA

Environmental Resources Legend
- MassDEP Hydrologic Feature
- Marsh/Bog
- Wooded marsh
- Open Water

Wildlife Habitat Legend
- NHESP Certified Vernal Pool
- NHESP Potential Vernal Pool
- NHESP Priority Habitat of Rare Species
- NHESP Estimated Habitats of Rare Wildlife
- Area of Critical Environmental Concern (ACEC)
- MA DFW Coldwater Fisheries Resources

Drinking Water Protection Areas
- Zone A
- Zone B
- ZONE C
- MassDEP IWPA
- MassDEP Zone I
- MassDEP Zone II
- Outstanding Resource Water

N
W E
S

0 150 300 Feet

1 inch = 150 feet

Data Source: MassGIS USGS Color Ortho Imagery (2014), MassDEP Wetlands (1:12000) (2009), NHESP Potential Vernal Pools (2000), NHESP Certified Vernal Pools, NHESP Priority Habitats of Rare Species (2008), NHESP Estimated Habitats of Rare Species (2008), Areas of Critical Environmental Concern (2009), FEMA National Flood Hazard Layer (2014),

BETA
IMPROVING COMMUNITIES TOGETHER

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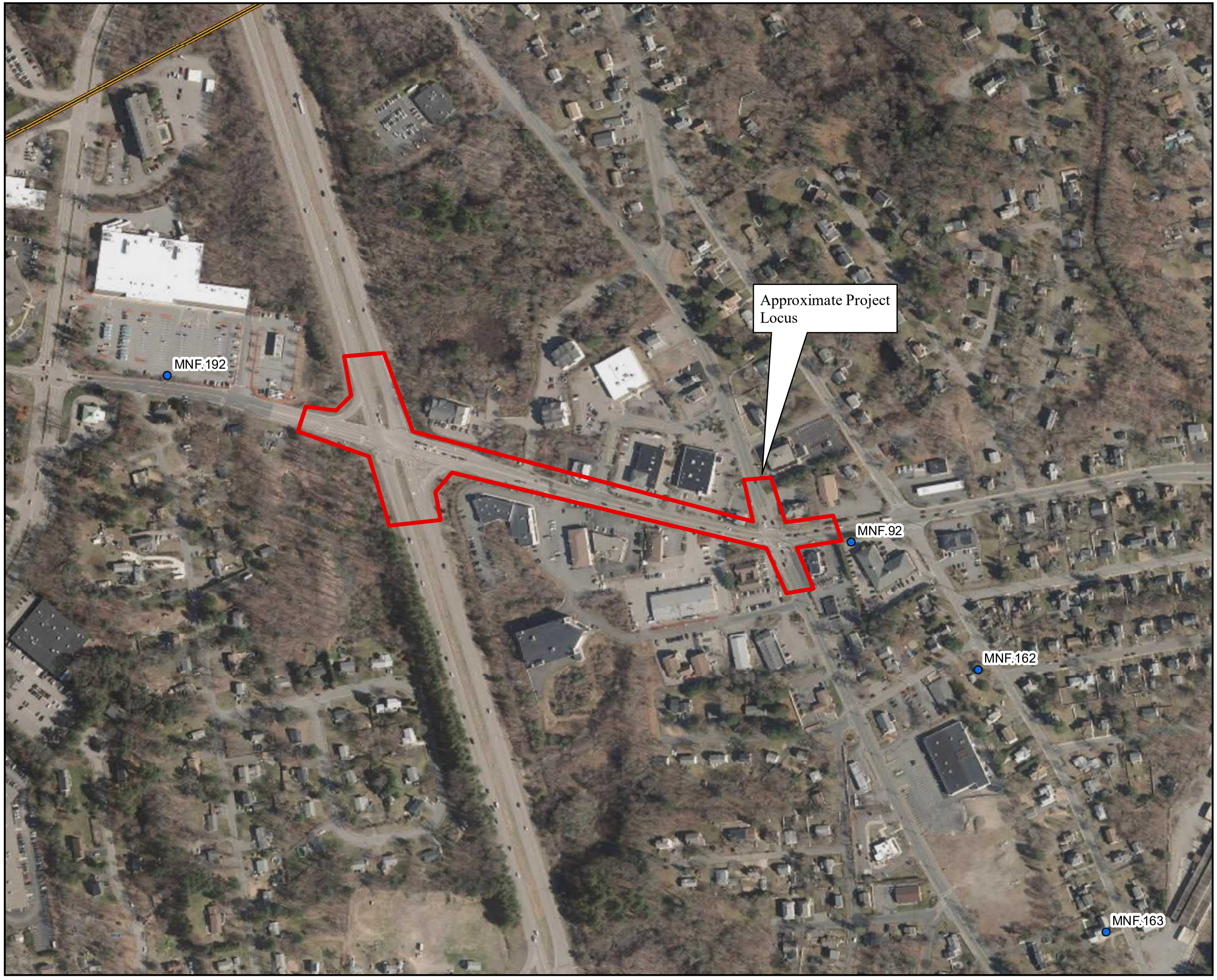
Proposal No. 613052-131228

Figure 3
Historic Resources Map
Chauncy Street (Route 106)
Improvements Phase 1
Mansfield, Massachusetts



Legend

MHC Historic Inventory Points

Legend

- Inventoried Property
- LHD
- MA/HL
- NRHP
- NRHP and LHD
- PR
- Nat'l Register of Historic Places
- Preservation Restriction
- Local Historic District
- NRHP and LHD
- Inventoried Area

N
W E
S

0 300 600 Feet

1 inch = 300 feet

Data Source: MassGIS Orthophoto (2013/2014); MassGIS Data: MHC Historic Inventory

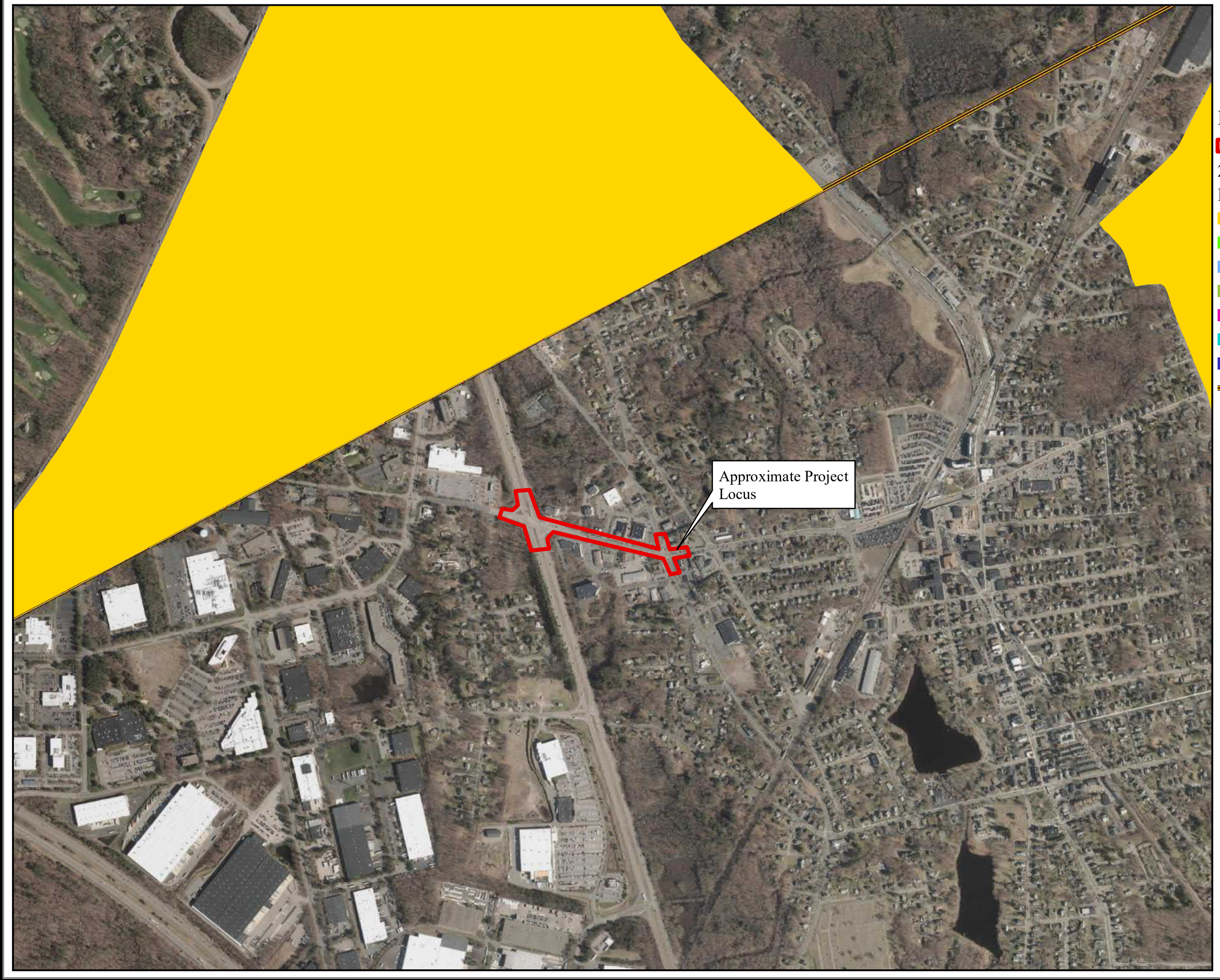
BETA

A00832 - 23

Proposal No. 61305-131228

A00832 - 24

Figure 4
Environmental Justice Map
Chauncy Street (Route 106)
Improvements Phase 1
Mansfield, Massachusetts



Legend

- Project Location

2020 Environmental Justice Block Groups

EJ Criteria

- Minority
- Income
- English isolation
- Minority and Income
- Minority and English isolation
- Income and English isolation
- Minority, Income and English isolation
- Town Boundary

N
W E
S

0 800 1,600 Feet

1 inch = 850 feet

Data Source: MassGIS Orthophoto (2013/2014); MassGIS Data: MHC Historic Inventory

BETA

Proposal No. 613052-131228

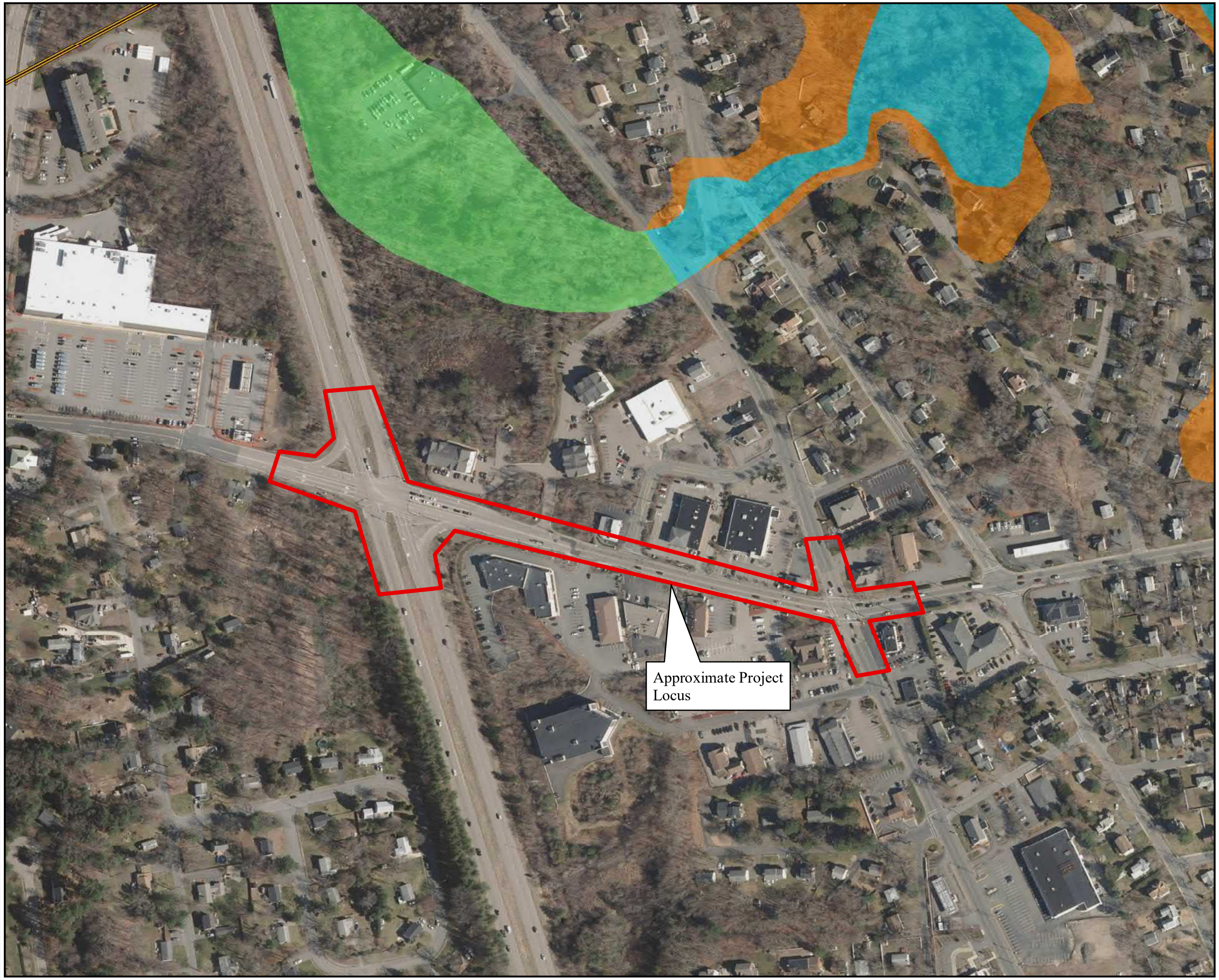


Figure 5
FEMA Resources Map
Chauncy Street (Route 106)
Improvements Phase 1
Mansfield, Massachusetts

Legend

- Project Location

FEMA National Flood Hazard Layer

Flood Zone Designations

- A: 1% Annual Chance of Flooding, no BFE
- AE: 1% Annual Chance of Flooding, with BFE
- AE: Regulatory Floodway
- AH: 1% Annual Chance of 1-3ft Ponding, with BFE
- AO: 1% Annual Chance of 1-3ft Sheet Flow Flooding, with Depth
- VE: High Risk Coastal Area
- D: Possible But Undetermined Hazard
- X: 0.2% Annual Chance of Flooding
- X: 1% Drainage Area < 1 Sq. Mi.
- X: Reduced Flood Risk due to Levee
- Area Not Included
- Area with no DFIRM - Paper FIRMs in Effect

N
W E
S

0 250 500 Feet

1 inch = 250 feet

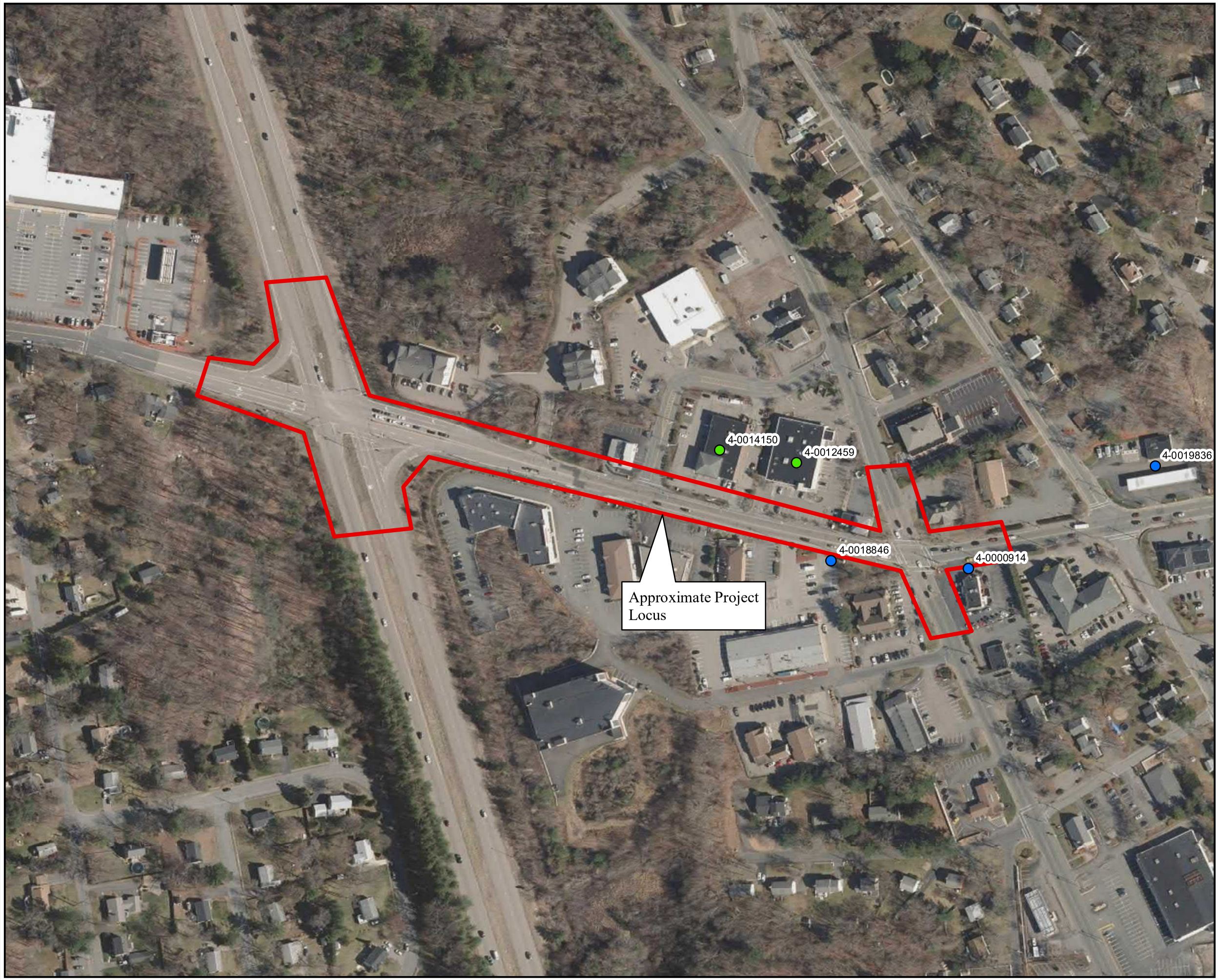
Data Source: MassGIS Orthophoto (2013/2014); MassGIS Data: MHC Historic Inventory

BETA

A00832 - 25

Proposal No. 613052-131228

Figure 6
Hazardous Materials Map
Chauncy Street (Route 106)
Improvements Phase 1
Mansfield, Massachusetts



Legend

MCP - Regulated Sites

Status

- CLOSED
- CLOSED w/ AUL
- OPEN

N
W E
S

0 200 400 Feet

1 inch = 200 feet

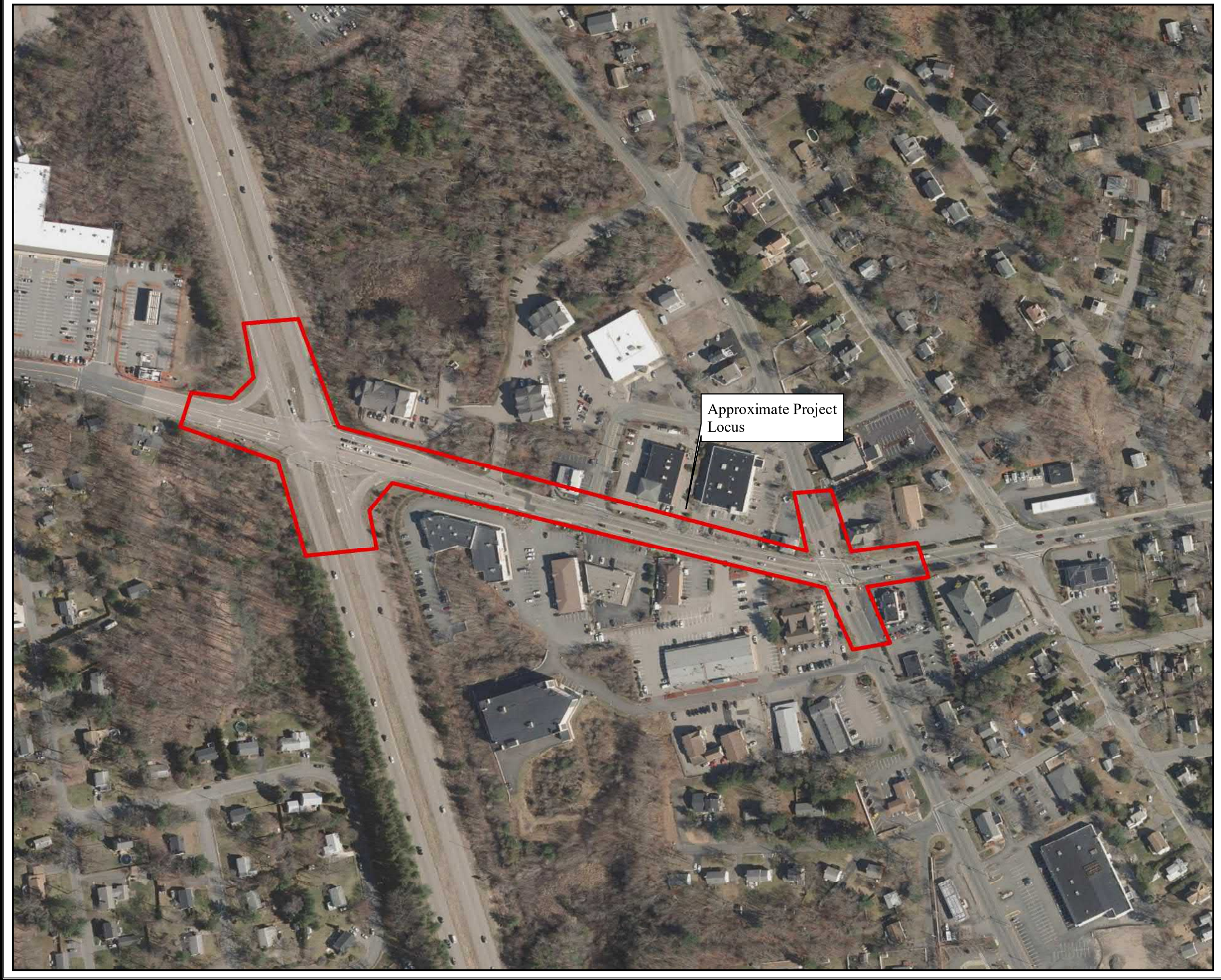
Data Source: MassGIS Orthophoto (2013/2014); MassGIS Data: MHC Historic Inventory

BETA

A00832 - 26

Proposal No. 613052-131228

Figure 7
Protected Open Space Map
Chauncy Street (Route 106)
Improvements Phase 1
Mansfield, Massachusetts



Legend

- OpenSpace (Arcs)
- Federal
- DCR-State Parks & Recreation
- DCRS/DFG
- Department of Fish & Game
- DCR-Urban Parks & Recreation
- DCR-Water Supply Protection
- Department of Agricultural Resources
- Commonwealth of Massachusetts
- County
- Municipal
- Public Non-Profit
- Land Trust
- Conservation Organization
- Non-Profit
- Private
- Other
- Unknown

N
W E
S

0 215 430 Feet

1 inch = 217 feet

Data Source: MassGIS Orthophoto (2013/2014); MassGIS Data: MHC Historic Inventory

BETA

A00832 - 27

PROJECT TOTALS			
AFFECTED PROPERTIES	FEE TAKINGS	PERMANENT EASEMENTS	TEMPORARY EASEMENTS
17	0	41	16

PRELIMINARY RIGHT OF WAY
PARCEL SUMMARY SHEET
SHEET 1 OF 2

PROJECT FILE NO. 613052			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	8	15

MANSFIELD
CHAUNCY STREET (ROUTE 106)

PARCEL NO.	PLAN SHEET NO.	TITLEHOLDER	TITLE REFERENCE				TAKEN		EASEMENT		REMAINING	PROPERTY ADDRESS	FRONTAGE ON ROW PLAN (FT)	TOTAL PROPERTY AREA (S.F.)	REMARKS	LAND RESTRICTIONS FROM DEED
			DEED BOOK	PAGE NO.	L.C. CASE NO.	CERT. NO.	CITY	STATE	TYPE	AREA	TOTAL TAKEN					
13-PUE-1	11	LESTER S. & JAMES M. EPSTEIN	19124	31					PERM	871		360 CHAUNCY STREET	126	20426	OVERHEAD WIRES	
13-4	11	LESTER S. & JAMES M. EPSTEIN	12215	15				1954			1954	167293	756	169247	ROAD WIDENING, SHARED USE PATH	
13-PUE-2	11	LESTER S. & JAMES M. EPSTEIN	12215	15					PERM	1716					OVERHEAD WIRES, UTILITY POLE, GUY WIRE	
13-TE-1	11	LESTER S. & JAMES M. EPSTEIN	12215	15					TEMP	1135					GRADING (MAX 3:1), LOAM & SEEDING	
13-5	12	MANISHA REALTY LLC	22063	258	26023	14688 & 14689		19			19	103836	705	103855	SHARED USE PATH	292 CHAUCY STREET
13-PUE-3	12	MANISHA REALTY LLC	22063	258	26023	14688 & 14689			PERM	2442					OVERHEAD WIRES, UTILITY POLE, GUY WIRE	
13-TE-6	12	MANISHA REALTY LLC	22063	258	26023	14688 & 14689			TEMP	82					GRADING (MAX 3:1), LOAM & SEEDING	
13-6	12	ROSEWOOD REALTY TRUST	13234	164				193			193	492640	1208	492833	SIDEWALK	287 CHAUNCY STREET
13-PUE-4	12	ROSEWOOD REALTY TRUST	13234	164					PERM	114					UTILITY POLE, GUY WIRE	
13-TE-5	12	ROSEWOOD REALTY TRUST	13234	164					TEMP	2100					GRADING (MAX 3:1), LOAM & SEEDING, DRIVEWAY WORK	
13-7	12.13	GEM REALTY TRUST	21367	196				121			121	12969	109	13090	SIDEWALK	273 CHAUNCY STREET
13-D-GR-1	12.13	GEM REALTY TRUST	21367	196					PERM	365					CULVERT, HEADWALL, GUARDRAIL	
13-HS-1	12.13	GEM REALTY TRUST	21367	196					PERM	106					HIGHWAY SIGN	
13-HS-5	12.13	GEM REALTY TRUST	21367	196					PERM	17					HIGHWAY SIGN	
13-TE-2	12.13	GEM REALTY TRUST	21367	196					TEMP	236					GRADING (MAX 3:1), LOAM & SEEDING	
13-TE-7	12.13	GEM REALTY TRUST	21367	196					TEMP	418					GRADING (MAX 3:1), LOAM & SEEDING	
13-PUE-5	12.13	COLLABORATIVE RESOURCES LLC	C6	28					PERM	788		272 CHAUNCY STREET	106	30221	OVERHEAD WIRES, UTILITY POLE	
13-TE-8	12.13	COLLABORATIVE RESOURCES LLC	C6	28					TEMP	664					GRADING (MAX 3:1), LOAM & SEEDING, DRIVEWAY WORK	
13-TE-3	12.13	COLLABORATIVE RESOURCES LLC	C6	28					TEMP	36					GRADING (MAX 3:1), LOAM & SEEDING	
13-8	13	DANGELO INC. #825	0	152	22135	7909		238			238	33065	188	33303	SHARED USE PATH	260 CHAUNCY STREET
13-PUE-6	13	DANGELO INC. #825	0	152	22135	7909			PERM	1698					OVERHEAD WIRES, UTILITY POLE, GUY WIRE	
13-TE-9	13	DANGELO INC. #825	0	152	22135	7909			TEMP	70					GRADING (MAX 3:1), LOAM & SEEDING, DRIVEWAY WORK	
13-9	13	WEC 99J-40 LLC	8616	254				456			456	45665	613	46121	ROADWAY, SIDEWALK	261 CHAUNCY STREET
13-PUE-7	13	WEC 99J-40 LLC	8616	254					PERM	1116					OVERHEAD WIRES, UTILITY POLE	
13-HS-2	13	WEC 99J-40 LLC	8616	254					PERM	20					HIGHWAY SIGN	
13-TE-10	13	WEC 99J-40 LLC	8616	254					TEMP	2221					GRADING (MAX 3:1), LOAM & SEEDING, DRIVEWAY WORK	
13-10	13	254 CHAUNCY STREET LLC	22278	179				313			313	18547	125	18860	SHARED USE PATH	254 CHAUNCY STREET
13-PUE-8	13	254 CHAUNCY STREET LLC	22278	179					PERM	972					OVERHEAD WIRES, UTILITY POLE	
13-11	13.000000	A&E BROTHERS LLC	18852	49				505			505	53726	692	54231	SIDEWALK	243 CHAUNCY STREET
13-PUE-9	13.14	A&E BROTHERS LLC	18852	49					PERM	57					UTILITY POLE, GUY WIRE	
13-TE-11	13.14	A&E BROTHERS LLC	18852	49					PERM	1231					GRADING (MAX 3:1), LOAM & SEEDING, DRIVEWAY WORK	

609844_RW(6076 PARCEL SUMM).DWG Plotted on 15-Jan-2024 1:04 PM

Proposal No. 613052-131228

PROJECT TOTALS			
AFFECTED PROPERTIES	FEE TAKINGS	PERMANENT EASEMENTS	TEMPORARY EASEMENTS
17	0	41	16

PARCEL NO.	PLAN SHEET NO.	TITLEHOLDER	TITLE REFERENCE				TAKEN			EASEMENT			REMAINING	PROPERTY ADDRESS	REMARKS	LAND RESTRICTIONS FROM DEED
			DEED BOOK	PAGE NO.	L.C. CASE NO.	CERT. NO.	CITY	STATE	TYPE	AREA	TOTAL TAKEN	REMAINING				
13-12	13	LARMONT REALTY TRUST	2338	347				2129			2129	80711	266	242 CHAUNCY STREET	SHARED USE PATH	
13-PUE-10	13,14	LARMONT REALTY TRUST	2338	347					PERM	2241					OVERHEAD WIRES, UTILITY POLE, GUY WIRE	
13-HS-3	13,14	LARMONT REALTY TRUST	2338	347					PERM	63					HIGHWAY SIGN	
13-TE-12	13,14	LARMONT REALTY TRUST	2338	347					TEMP	1304					GRADING (MAX 3:1), LOAM & SEEDING, DRIVEWAY WORK, HMA BERM	
13-13	13,14	JT BUILDING & DEVELOPMENT LLC	12238	334			147				147	8652	267	235 CHAUNCY STREET	SIDEWALK	
13-PUE-11	13,14	JT BUILDING & DEVELOPMENT LLC	12238	334					PERM	57					UTILITY POLE, GUY WIRE	
13-PUE-12	13,14	JT BUILDING & DEVELOPMENT LLC	12238	334					PERM	806					OVERHEAD WIRES	
13-PUE-20	13,14	JT BUILDING & DEVELOPMENT LLC	12238	334					PERM	22					GUY WIRE	
13-TE-13	13,14	JT BUILDING & DEVELOPMENT LLC	12238	334					TEMP	432					GRADING (MAX 3:1), LOAM & SEEDING	
13-PUE-16-T	14	RKM REALTY TRUST	9086	92					PERM	790			169	200 CHAUNCY STREET	OVERHEAD WIRES, UTILITY POLE, GUY WIRE	
13-PUE-19	14	TOKEN ENTERPRISES INC	1662	251					PERM	116					OVERHEAD WIRES	
13-PUE-15	14	TOKEN ENTERPRISES INC	1662	251					PERM	261			12	93 COPELAND DRIVE	OVERHEAD WIRES	
13-TE-16	14	BRI INC	2897	217					TEMP	782					GRADING (MAX 3:1), LOAM & SEEDING, DRIVEWAY WORK	
13-PUE-14	14	BRI INC	2897	217					PERM	2253					OVERHEAD WIRES	
13-16	14	BRI INC	2897	217			808				808	17558	282	99 COPELAND DRIVE	SIDEWALK, TRAFFIC SIGNALS	
13-TE-17	14	COBBLE HILL DEV LLC	27897	106					TEMP	304					GRADING (MAX 3:1), LOAM & SEEDING	
13-TE-15	14	COBBLE HILL DEV LLC	27897	106					TEMP	1497					GRADING (MAX 3:1), LOAM & SEEDING	
13-PUE-18-T	14	COBBLE HILL DEV LLC	27897	106					PERM	73					GUY WIRE	
13-PUE-17-T	14	COBBLE HILL DEV LLC	27897	106					PERM	66					UTILITY POLE, GUY WIRE	
13-HS-4	14	COBBLE HILL DEV LLC	27897	106					PERM	24					HIGHWAY SIGN	
13-WM-2	14	COBBLE HILL DEV LLC	27897	106					PERM	40					HYDRANT	
13-19	14	COBBLE HILL DEV LLC	27897	106			263				1880	18184	213	205 CHAUNCY STREET	SHARED USE PATH	
13-15	14	COBBLE HILL DEV LLC	27897	106				1880			1880	18457	249	215 CHAUNCY STREET	SHARED USE PATH	
13-TE-14	14	TURESKY JON D & GAYLE TRS	7809	169					TEMP	577					GRADING (MAX 3:1), LOAM & SEEDING	
13-PUE-13	14	TURESKY JON D & GAYLE TRS	7809	169					PERM	591					OVERHEAD WIRES	
13-14	14	TURESKY JON D & GAYLE TRS	7809	169				186			186	22010	36	100 COPELAND DRIVE	SHARED USE PATH	

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	9	15
PROJECT FILE NO. 613052			

MANSFIELD
CHAUNCY STREET (ROUTE 106)
PRELIMINARY RIGHT OF WAY
PARCEL SUMMARY SHEET
SHEET 2 OF 2

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Proposal No. 613052-131228

VIRTUAL DESIGN PUBLIC HEARING

MARCH 2, 2023

FOR THE PROPOSED

CORRIDOR IMPROVEMENTS ON CHAUNCY STREET (ROUTE 106)
FROM STATE ROUTE 140 TO COPELAND STREET
Project No.: 613052
Project Management

IN MANSFIELD, MASSACHUSETTS

COMMONWEALTH OF MASSACHUSETTS
MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

JONATHAN L. GULLIVER
HIGHWAY ADMINISTRATOR

CARRIE E. LAVALLEE, P.E.
CHIEF ENGINEER

Arlington Reporting Company
(339)674-9100

PRESENTERS

Gautam Sen, Project Manager,
MassDOT - Highway Division
Michael McNutt, Producer and Facilitator,
MassDOT - Highway Division
Roy Kirwa, Producer and Facilitator,
MassDOT - Highway Division
Mark Hicks, Right of Way Bureau,
MassDOT - Highway Division
Craig Sheehan, Community Compliance,
MassDOT - Highway Division
Sandra Serpa, District 5,
MassDOT - Highway Division
Chris Roy, P.E.,
BETA Group, Inc.
Jaklyn Centracchio, P.E., PTOE,
BETA Group, Inc.

SPEAKER INDEX

Name	Page
Gautam Sen, Moderator, MassDOT - Highway Division	6, 9, 21, 25, 26, 27, 28, 29, 30, 32, 33, 34, 35, 36, 37, 39, 40, 41, 43, 44, 45, 46, 47, 48, 49, 50, 51
Roy Kirwa, Producer, MassDOT - Highway Division	6, 9, 24, 25, 26, 27, 29, 30, 31, 32, 33, 34, 35, 37, 38, 39, 40, 41, 42, 43, 44, 49, 51

SPEAKER INDEX

Name	Page
Michael McNutt, Producer, MassDOT - Highway Division	25, 26, 27, 30, 33, 34, 38, 41, 42, 43, 44, 45, 49, 50
Mark Hicks, Right of Way, MassDOT - Highway Division	19
Chris Roy, BETA Group, Inc.	11, 20, 28, 30, 31, 34, 35, 36, 37, 39, 40, 42, 47, 48, 49, 51
Jaklyn Centracchio, BETA Group, Inc.	31, 37, 38
Kevin Dumas, Town Manager, Town of Mansfield	25
Joseph Cerretani, Planning Board, Town of Mansfield	27, 28, 45
Michael Trowbridge, Chair, Mansfield Select Board	33
F. Jay Barrows, State Representative	34, 35, 36, 43, 44
Joshua Reinke, DPW Director, Town of Mansfield	36, 50, 51
Matthew List	30, 32
Sharon Friedman	42, 43
James Turnbull	45, 46, 47, 48

CHAT QUESTIONS/COMMENTS

Name	**Page**
Dana Hanson, District Director, Congressman Jake Auchincloss	26
F. Jay Barrows, State Representative	32, 51
Lisa Estrela-Pedro, SRPEDD	49
Sharon Friedman	32, 41
Annette Shaw	32, 38, 40
James Turnbull	37, 38
Brendan Roche	39, 41
Kelly Crowley	40

EXHIBITS

Description	Page
Notice of Public Hearing/Brochure	54-64
Public Comments	-

1

P R O C E E D I N G S

MODERATOR GAUTAM SEN: It is 7:00. Good evening. My name is Gautam Sen. I am the project manager for the proposed improvements of the Route 106 Corridor project in Mansfield, which will be presented today. I work in the project management section at the Massachusetts Department of Transportation Highway Division headquarters in Boston. Welcome to our live Virtual Design Public Hearing.

During this presentation, we will explain the purpose of the hearing, provide an overview of the right of way procedures, and explain the design. Finally, we will explain how you can submit your comments and questions about this project, many of which can be included in the official hearing transcript.

But, first, I will hand it over to Roy who will explain how to use our meeting platform, Zoom.

ROY KIRWA: Thank you, Gautam.

Hi, everyone. I am one of two MassDOT producers. My other -- my co-producer, Michael McNutt, will also be helping me facilitate and provide

tech support for questions.

For Zoom hearing controls, to ask a question and share comments, please use the Q&A button.

You can use the raise your hand function or button or dial *9 for uses dialing in, and Alt+Y to raise your hand.

If you're unable to access the internet or having technical problems, please call into the meeting at +1-309-205-3325.

And the Webinar ID for this meeting is 842 4258 6862.

Closed captioning is automatically generated by Zoom.

Use the View button in the upper right-hand corner to adjust the meeting view setting to your preference.

Also, if you have any issues with accessing the meeting, please use the following number in the blue box.

Public meeting notes and procedures.

Public record: While this virtual public hearing is not being recorded, MassDOT may choose to retain and distribute the images, audio,

and/or Q&A transcript from this hearing.

All parts of this hearing are considered public record.

If you are not comfortable being recorded, please refrain from the Q&A feature or you may choose to excuse yourself from the hearing. Information from this hearing will be posted on the Mass.gov website.

Important notes: Your microphone and webcam are automatically disabled upon entering the hearing.

This hearing will be open to questions and answers at the end of the presentation.

Please take time to respond to our survey at the end of the presentation. Your feedback is important.

Notice of MassDOT's policy on diversity and civil rights.

All MassDOT activities, including public meetings, are free of discrimination.

MassDOT complies with all federal and state civil rights requirements preventing discrimination based on sex race, color, ancestry, national origin, religion, creed, gender, sexual

orientation, gender identity or expression, or veteran status.

We welcome the diversity from across our entire service area. If you have any questions or concerns, please visit the following site to reach the Office of Diversity and Civil Rights.

Once again, thank you for joining our meeting, and we appreciate your participation.

Back to you, Gautam. You're still muted.

MODERATOR SEN: Okay. Can you hear me?

ROY KIRWA: Yeah.

MODERATOR SEN: Thank you, Roy.

In the handout, you will find documentation which may be useful to you in understanding the project and submitting formal comments in response to this presentation.

This notice a public hearing was also posted in the *Sun Chronicle* and the *Brockton Enterprise* on February 17 And February 24 this year.

A handout has been prepared and posted to the MassDOT website. The hearing was also posted to MassDOT's social media.

Moving forward, the purpose of holding

hearings is to provide a method whereby the Commonwealth of Massachusetts can furnish to the public information concerning the state's highway construction proposals and to provide every interested resident of the area an opportunity to be heard on any proposed project. At the same time, the hearing allows the Commonwealth an additional opportunity to receive information from local sources, which would be of value to the state in making its final decision to what design should be advanced in development.

Let me welcome our attendees from MassDOT who have joined me this evening.

Sandra Serpa, she’s from our District 5 office.

Mark Hicks and Craig Sheehan, they are from our Right of Way Bureau.

Roy Kirwa and Mike McNutt, who will be our producers and facilitators for this evening.

For BETA Group, Incorporated, MassDOT’s consultant for this project, we have Chris Roy. He is the project manager from BETA Group.

And Jaklyn Centracchio, she is the lead traffic engineer from BETA Group.

And, also, we have David Fraser from

Arlington Typing and Mailing. He will be providing a complete transcript of this hearing.

Agenda: We will go over project need, project scope, project impacts, schedule, and then questions and discussion.

Chris?

CHRIS ROY: Thanks, Gautam.

This project locus map illustrates the general area of the project we are presenting this evening.

To the far left of this graphic is the I-95/I-495 interchange, with I-495 running towards the bottom of the page, and I-95 running towards the top of the page.

At the top of the page is the I-95/Route 140 interchange, with Route 140 running from this intersection through the project area.

The next six existing signalized intersections with Route 140 are coordinated and included in this project as follows from north to south: Fisher Street, Forbes Boulevard, Chauncy Street, also known as Route 106, West Street, Norfolk Street, and School Street.

The coordination times for the

intersections will be optimized as part of this project to provide the most efficient traffic operations possible along the Route 140 corridor.

The Chauncy Street intersection will be the only intersection to undergo geometric improvements. These geometric improvements will continue easterly along Chauncy Street up to and including the Copeland Drive intersection.

I will now take a few minutes to review the history of the project.

This project was previously broken into two projects. The Route 106/140 intersection, along with the five other intersections along Route 140, made up one project. And Route 106 from just east of Route 140 to just east of Copland Drive made up the other project.

In 2017, a Road Safety Audit, or RSA, was conducted for the Route 106/Route 140 intersection, and the 25 percent design was submitted in November of 2018.

For the 106 project from Route 140 to Copeland Drive, an RSA was conducted in January 2019. And the 25 percent design was submitted in March 2021.

In December 2022, the two projects were

officially combined into one project.

Why was this project initiated?

I will now review some key factors driving the need for this project.

First, there is a need for improved pedestrian accommodations for certain locations within the project as not all accommodations meet ADA requirements.

The photo in the lower left of this slide shows a sidewalk without a curb cut and without a crosswalk.

Regarding bicycle accommodation, the two top photos show lack of bicycle accommodation along the corridor.

The photo at the bottom right shows antiquated traffic signal equipment at a signalized intersection. The current equipment does not meet current design standards for visibility to vehicles or accessibility of pedestrians.

These factors can lead to safety deficiencies, which is the final point of this slide.

A Road Safety Audit, or RSA, is a formal safety review of a high-crash location that is required for a project to receive Highway Safety

Improvement Program, HSIP, funding. An RSA was triggered for this project because the intersections of Route 106, 140, and 106/Copeland Drive are identified as top 5 percent high-crash locations within the Southeastern Regional Planning and Economic Development District, also known as SRPEDD.

The intersection of Route 106/Copeland Drive is identified as a top 200 intersection cluster.

What do we want to accomplish?

We will review the scope of work by using this cross-section graphic, which shows the improvements from the perspective of the driver, pedestrian, or cyclist.

Through this corridor, the existing pavement width is 36 feet. The proposed roadway width will be 39 feet and will consist of two 11-foot travel lanes, one in each direction; two two-foot shoulders, one on each side; and a 13-foot two-way left-turn lane down the center of the road.

There will be a five-foot cement concrete sidewalk constructed on the north side of the road, which is shown here to the left, and it will be separated from the road by a six-inch-tall granite curb.

On the south side of the road, or the right side on this graphic, an eight-foot shared use path is being proposed with a four-foot-wide buffer and six-inch-tall granite curb used to separate it from traffic. The shared use path will accommodate pedestrians and bicycles in both directions. The roadway will shift a few feet to the north to accommodate the shared use path and buffer.

New pedestrian curb ramps that meet ADA requirements will be constructed at all locations within the sidewalk where roadway crossings are proposed.

This slide shows a rendering of the proposed improvements of the Route 106/140 intersection.

The new roadway pavement is shown in gray.

The new sidewalks/shared use path is shown in beige.

New buffer is shown in the orange-brown color, and new landscaping in blue color.

Pavement markings are shown in both white and yellow, and the proposed traffic signal equipment is shown in black.

Lane configurations at this intersection will generally remain the same with a few exceptions.

A right-turn lane will be added on the eastbound approach.

On the westbound approach, the right-turn lane will flare out and the radius will be enlarged to create a slip ramp with separation from a proposed channelized island.

The traffic signal system will be replaced with all new equipment, including new overhead, mast arm-mounted traffic signals on all approaches and emergency preemption. All the signal equipment will be powder-coated black. Back plates with retroreflective tape will be provided for all proposed signal heads.

Pedestrian-phased timing and vehicle clearance times will be based on the latest MassDOT guidance.

New pavement markings will be provided with defined lane designation markings.

As previously mentioned, this intersection will be coordinated with five other intersections along the Route 140 corridor.

The landscaping on the islands and medians will serve as a gateway into the town.

Just to the east of the 140 intersection, Route 106 will transition into a three-lane section consisting of two 11-foot travel lanes and a 13-foot two-way left-turn lane located in the center.

This is the plan view that coincides with the section view that I just showed you earlier.

The five-and-a-half-foot sidewalk continues along the north side of the road, while the eight-foot shared use path with four-foot-wide buffer continues along the south side of the road.

Currently, there are utility poles on both sides of the road. The poles on the north side belong to Mansfield Electric, and the poles on the south side belong to National Grid. This project will combine the overhead wires from both companies and place and predominantly on the south side of the road.

The roadway will be primarily milled and paved except in areas of widening where full-depth reconstruction will take place.

New pavement markings will then be placed on the new pavement surface, including

crosswalks at the new curb ramp locations as well as new markings for the travel lane lines and arrows.

Stormwater improvements will consist of adjusting existing structures to the new grades, constructing new catch basins along the roadway where needed, and sections of new drainage pipe.

At the eastern end of the project is the Chauncy Street/Copeland Drive intersection. At this intersection, turn lanes will be added to all approaches. Exclusive left-turn lanes will be provided on Chauncy Street and Copeland Drive, in addition to exclusive right-turn pockets on Chauncy Street.

A signalized right-turn slip ramp, separated by channelized island, will be provided on the Copeland Drive southbound approach.

New pavement markings will be provided with defined lane designation markings.

The traffic signal system will be replaced with all new equipment, including new overhead mast arm-mounted traffic signals on all approaches and emergency preemption. Once again, all the signal equipment will be powder-coated black.

I am now going to turn the presentation

over to Mark from MassDOT who will discuss the right of way process.

MARK HICKS: Thank you.

Good evening, everyone. My name is Mark Hicks, and I represent the Right of Way Bureau of MassDOT.

The Right of Way Bureau is responsible for acquiring all the necessary rights in private and public lands for the design, construction, and implementation of this project.

Affected property owners will be contacted by personnel from Right of Way Bureau or consultants representing MassDOT. The procedures used must comply with state and federal regulations governing the acquisition process.

The current design plan indicates federal takings and permanent easements may be required. Other areas may also require temporary construction easements.

Affected property owners' rights are protected under our Massachusetts General Laws, primarily Chapter 79. If a project is receiving federal funds, the property owners' rights are further defined under Title III of the Real Property Act of

1970, as amended.

I will be happy to answer any general questions regarding the right of way process during the open forum for questions. And I will be available after this public hearing for any specific questions that you may have.

Thank you. I will now turn it over back to my colleague

CHRIS ROY: Thanks, Mark.

What are the environmental, cultural resource, and community impacts?

I will now review the expected permitting required for the project.

There is a stream located north of Route 106 to the east of Route 140. In this area, Route 106 will be shifted six feet to the north, which will impact the existing headwall and stream. The headwall will need to be rebuilt. A Notice of Intent will be required. The Mansfield Conservation Commission will hold a public hearing regarding these impacts during the final design.

How will the road user be affected?

In addition to environmental impacts, most projects will impact the community at some level

due to construction activity.

The phasing of the project will be determined by the contractor once it is awarded by MassDOT.

We do not anticipate the need for a detour during the project, and requirements will be included in the contract documents that one lane of traffic must be maintained at all times during construction and that work which will cause significant traffic delays will not be permitted during peak hours in the morning and afternoon. During non-working hours, normal traffic operations will resume with all lanes opened.

In addition to lane closures, there will be some encroachment onto the roadway shoulder. And for any sidewalks within the project limits that need to be closed, a temporary pedestrian detour will be in place.

I'll now turn it back over to Gautam.

MODERATOR SEN: Next slide, please.

Project budget and funding.

Next slide, please. Yes. Thanks, Roy.

We are currently in the 25 percent design stage.

We estimate the total project will cost $8 million, which will come from Federal Aid funding, with the Federal Highway Administration funds 80 percent of the total construction cost. MassDOT funds the remaining 20 percent.

The project must be programmed in the statewide Transportation Improvement Program in the appropriate federal fiscal year in order for MassDOT to solicit bids for eventual construction.

The $8 million estimate does not include any right of way acquisition cost.

The project is expected to be advertised for construction in spring of 2025, and construction is expected to start in summer 2025.

Please keep in mind that the project we are presenting is still in the early design stage. All your questions and comments will be taken into consideration when completing the project design.

Our next steps: estimated schedule.

In June of this year, the 75 percent submission will be reviewed. We will get this 75 percent submission from our design consultant, BETA Group, and we will review the 75 percent submission.

In fall 2023, this year, we will get

100 percent submission for review.

In spring 2024, we expect PS&E will be submitted for our review.

In spring 2025, the project will be advertised for construction.

And in summer 2025, construction is expected to start.

How will we keep you informed?

Next slide, please.

Again, you may access the project website by using your mobile device camera and focusing on the QR code on the slide.

You may also access the project website by using the web address www.mass.gov/massdot-highway-design-public-hearings.

The last page of the handout is a mail-in sheet. If you have any questions or comments, which you would like to submit in writing, you may use this sheet for that purpose. You may email or mail it to the Department within ten days of this date, and it will become part of the official record. I repeat, you may email or mail it to the Department within ten days of this date, and it will become part of the official record.

For mail-in correspondence, address to Carrie Lavallee, P.E., Chief Engineer, at MassDOT, 10 Park Plaza, Boston, MA 02116, Attention: Roadway Project Management, Project File Number 613052.

To email questions, comments concerns, please email to massdotprojectmanagement@dot.state.ma.us, and include a subject line of Attention: Design Public Hearing comments, Project File Number 613052.

Before we move to the public comments, we'd like to invite any state, city, and local officials to speak at this time. Are there any public or elected officials who would like to ask questions or provide comments? Please put your title in the Q&A if it is not in your Zoom name so we can recognize you properly.

Now, I will hand it back to Roy, who will explain how to participate in the Q&A session.

Roy, please.

ROY KIRWA: Thank you, Gautam.

Before I go over Zoom controls, I'll give those town managers or public officials a second to put their names on the Q&A so that we can -- put their names on the Q&A so that we can introduce them.

MICHAEL MCNUTT: We have the town manager.

ROY KIRWA: Yeah, I see him.

Joe, you should be able to unmute.

TOWN MANAGER KEVIN DUMAS: Thank you.

I'm Kevin Dumas, town manager of Mansfield.

I just wanted to be able to say thank you very much for MassDOT, for your cooperation in this important project with Route 140 and Route 106, Phase 1 in Mansfield, and the fact that we also appreciate the cooperation of our project consultant, with BETA. And so, Chris Roy, thank you very, very much. We look forward to continuing partnering with you in this important project, where we have funded the design, but also for the state's cooperation and its commitment to be able to fund this over $4 million project of an improvement in the Town of Mansfield. And we look forward to our continued working relationship, not only with BETA, but with you, MassDOT, in this continued important project scheduled for fiscal 2025.

So thank you so much.

MODERATOR SEN: Okay, Mr. Dumas. It

really means a lot to us. Thank you.

ROY KIRWA: Thank you.

Representative Jay Barrows, I'm giving you permission to unmute if you have any questions or comments to share. I've seen that you unmuted.

MICHAEL MCNUTT: Can you speak? You're unmuted.

Maybe we can go back if he wants to speak during the Q&A.

ROY KIRWA: Yeah, we can circle back.

MICHAEL MCNUTT: He's still muted, so I guess he's not ready to speak.

ROY KIRWA: No, I just turned off his mic.

MICHAEL MCNUTT: Okay.

ROY KIRWA: All right. So then next is Dana Hanson.

"No comments but pleased to note that Dana Hanson, District Director of Congressman Jake Auchincloss, is here. Thank you for this presentation."

MODERATOR SEN: Thank you, Dana.

ROY KIRWA: All right. So, I think that's all we have for town managers, city, state, or

local officials. So we will --

MICHAEL MCNUTT: We did hear from Joe Cerretani.

ROY KIRWA: He already went earlier.

JOSEPH CERRETANI: No, I didn't go yet, but --

ROY KIRWA: Oh, you didn't go? All right.

JOSEPH CERRETANI: No. I appreciate all that -- I'm on the planning board here in Mansfield. And I do appreciate all the work you guys are doing. This is going to be really good for the Town.

I had one question. You mentioned that Route 106, just east of 140, you're going to move the poles to the south side of the roadway, which I think is a good idea. Is it at all feasible to go bury those lines underground during that stretch of roadway?

MODERATOR SEN: A good idea, but it is very expensive.

JOSEPH CERRETANI: Yeah, I know. But if we're going to do it, this is the time to do it because --

MODERATOR SEN: No, you are right, absolutely right. But where is the money? Money's tight. We are at 25 percent design. And it is going to cost $8 million. And I hope I'll be wrong, but when everything is said and done, it may cost more.

JOSEPH CERRETANI: Okay. Well anyways, moving --

MODERATOR SEN: That’s anticipated.

JOSEPH CERRETANI: Moving them to the south side of the roadway is a big improvement. So, I at least appreciate that.

Thank you.

MODERATOR SEN: Thanks. Yeah, we'd love to. You know, everybody wants to go underground with utilities, but it is so expensive.

Chris, did you want to say something?

CHRIS ROY: Yeah, I just wanted to add, and, Gautam, you can correct me if I'm wrong, but the undergrounding of the utilities would -- MassDOT does not -- wouldn't pay for any of that. That would all be the Town.

MODERATOR SEN: Oh, no, absolutely not. We don't have money, like anybody else.

JOSEPH CERRETANI: Okay. Thank you.

MODERATOR SEN: Thanks, Joe.

ROY KIRWA: All right. So, I think that's all we have for that portion of Q&A. So I will segue into Q&A instruction.

So, you can use the raise your hand function to be unmuted for verbal questions. Please use the command Alt plus Y if you're using a phone.

You can use the Q&A button to submit questions and comments using that button.

Please state your name before your question. If you're asking a verbal comment, please share only one question or comment at a time to allow others to participate.

To ask a question via phone, dial *9, and the moderator will call out the last four digits of your phone number and unmute your audio when it's your turn.

Also, please take a few minutes to complete the survey after the meeting to let us know how your experience was with this virtual meeting.

All questions and comments are subject to disclosure for public records. Please use these functions for project-related business only.

All right. So, let's see. I see that,

Mike, could you -- I see we have a raised hand. Could you --

MICHAEL MCNUTT: Yeah, we have Matthew List. I'm going to unmute you and you can speak.

MATTHEW LIST: Thanks. I had a question about the new slip lane at Copeland and Chauncy, that right-turn lane facing south. I know you mentioned it; that would be signalized. I was just wondering how the pedestrian safety would go there because it seems, you know, the other slip lanes we have in Town, they're closer to 140. They tend to make for kind of treacherous pedestrian access. Cars kind of don't slow down. You know, snow doesn't necessarily get cleared from the islands, while people wait to cross. So I just wondered how pedestrian access would function with that new slip lane.

MODERATOR SEN: Chris, do you want to answer this question?

CHRIS ROY: Sure. With that, actually, Roy, if you want to go to that slide?

ROY KIRWA: Yeah. Which one? Here, I'll pull up the one that gives us a preview.

CHRIS ROY: Yeah.

MODERATOR SEN: 11 or 12.

ROY KIRWA: Let's see. So 11 is project -- was it maybe project scope?

CHRIS ROY: No, it was the -- it was the plan right underneath the section. Right. Yeah, right there.

ROY KIRWA: 16?

CHRIS ROY: Yeah.

ROY KIRWA: All right. Is it full screen?

CHRIS ROY: Yeah. So the pedestrian crossing across the right turn, that channelized right-turn lane, it will be -- that right-turn lane will be under stop control. As you can see, there's a black mast arm, if you can see that, for that turn, for that right turn. So, that will be under stop control.

And Jaklyn, correct me if I'm wrong, but there'll be an all-pedestrian phase as part of this signal design, is that correct?

JAKLYN CENTRACCHIO: Correct.

CHRIS ROY: So, there will be a phase when the button is pushed. It would go to all-pedestrian phase and all the vehicular phases will be stopped. It will be red.

MATTHEW LIST: Thank you.

ROY KIRWA: All right. One second. So, following back, following up with Fred Barrows, he appreciates our efforts and no questions at this time.

Thank you, Jay.

Our next question is from Sharon Friedman.

"If the utilities are not going to be buried, what about the new fiber optics?"

MODERATOR SEN: Well, they will be overhead. Yeah. And fiber optics, I mean, basically, the utility company, if they do it before construction, it will be fine. Otherwise, they have to pay for it. And after we are done with the roadway, they cannot come back and dig our roadway for the next five years after the construction is done. So, fiber optics companies, like Verizon or whoever, if they want to put the fiber optics, they have to do it before or contractors go to the construction.

ROY KIRWA: Thank you, Gautam.

Our next question is from Annette Shaw.

"Will the income of the millionaire tax be assessed for this project?"

MODERATOR SEN: I do not know. No

idea. But this project cost, 80 percent comes from the Federal Aid and 20 percent from the MassDOT.

ROY KIRWA: Thank you, Gautam.

MICHAEL MCNUTT: We have a raised hand from Michael Trowbridge. Can you speak, Michael? Can you --

MICHAEL TROWBRIDGE, SELECT BOARD: Yeah. Good evening. Mike Trowbridge. I'm the chair of the select board.

You know, thank you very much, you know, for the foresight with this design. This will, helpfully, help the traffic flow for years to come. Your design definitely helps a very dangerous intersection of Copeland Drive and Route 106.

I looked at the layout. I'm an engineer myself. I think it's going to be a great design.

So, I just wanted to say thank you for all the thought that you put into this.

MODERATOR SEN: Thank you. We really appreciate your comments.

MICHAEL MCNUTT: Thank you. I don't see any other raised hands. If any other people want to speak, raise your hand, but also feel free to throw

a written question or comment in the Q&A, and we'll read that out loud.

ROY KIRWA: I guess we're also waiting for questions to come in. Also, please don't be afraid to fill out the survey that we have for you -- that we have for you after you leave this meeting. We appreciate your ideas and feedback.

MICHAEL MCNUTT: We have a hand from representative Fred Barrows. We will unmute you and allow you to speak. You have the mic. Can you speak?

REPRESENTATIVE F. JAY BARROWS: Yeah. Can you hear me now?

MICHAEL MCNUTT: Yeah, we can hear you.

REPRESENTATIVE F. JAY BARROWS: Thank you.

I might have missed it because I came in just a minute or two late. Are you taking the roadway down to gravel, so we're removing all the existing pavement?

ROY KIRWA: Did you want me to go to a slide, Gautam?

MODERATOR SEN: Please.

ROY KIRWA: Which one?

CHRIS ROY: Try 15 or --

ROY KIRWA: 15, by Chauncy Street?
CHRIS ROY: Yeah.
ROY KIRWA: Okay.
CHRIS ROY: Do you want me to take this one, Gautam?
MODERATOR SEN: I'm sorry?
CHRIS ROY: Do you want me to take this question?
MODERATOR SEN: Yeah, please.
CHRIS ROY: So, for the most part, the roadway will be just milled, milled and paved. And in the places that are full-depth construction, when we take it down to gravel, that that will occur in areas where we're doing widening and closer to the intersections where we have to add turn lanes. Those are the areas where we'll be doing the most widenings. But for the most part, the existing road will be milled and paved.
REPRESENTATIVE F. JAY BARROWS: So, at this point, have we updated any water or sewer that comes through that area or is everything in pretty good shape? Because, again, you mentioned we have a five-year hold of being able to go back in if we needed to do something. So, all the utilities have

been improved that needed to be?

CHRIS ROY: The water, I know the water has been recently done. And I believe the sewer and drainage is in good shape. I don't know if Rick Alves wants to weigh in on that, or Josh.

JOSHUA REINKE: I can weigh in on that.

CHRIS ROY: Josh. Sorry, Josh.

JOSHUA REINKE: No problem. Josh Reinke, DPW director.

So, Chris is right. We did just complete a new water main project on the street about a year-and-a-half ago, so a brand new water main in the street.

The sewer is limited to just right near the Copeland intersection. And that line is fine. There's no issues there.

Drainage, there's actually some drainage upgrades as part of this project.

So, the answer is -- the short answer is yes, all utilities will be in good shape before we lock this road up.

REPRESENTATIVE F. JAY BARROWS: Good. Thank you.

MODERATOR SEN: Thanks, Josh.

ROY KIRWA: We have a question in the Q&A.

"Is there a potential..." Actually, the question is from James Turnbull. "Is there a potential to eliminate the right-turn slip lane at Copeland Drive for a single-stage ped crossing?"

MODERATOR SEN: Is that slide 16?

CHRIS ROY: Yeah, that's the next slide.

ROY KIRWA: This one here?

CHRIS ROY: So, the question was to eliminate the right-turn slip lane for a what?

ROY KIRWA: For a single-stage ped crossing.

CHRIS ROY: A single-stage ped crossing.

JAKLYN CENTRACCHIO: Chris, do you want me to talk to that?

CHRIS ROY: Yeah, go ahead, Jaklyn.

JAKLYN CENTRACCHIO: So, that right-turn slip lane is actually needed for the turning vehicles of trucks. So, if we were to remove that island and create just one crossing across that leg, it would need to be really wide to accommodate the

heavy vehicles.

So, we've taken a look at that movement a lot. And there really appears to be no way around creating that channelized right turn in that second leg of a pedestrian crossing.

ROY KIRWA: Thank you, Jaklyn.

We have a comment from James Turnbull. He said, "Understood. Thank you."

Once again, while we're waiting for questions to come in, please feel free to contact the following email for any follow-up questions or comments. And, also, please fill out that survey that will be in your inbox once this session is over.

MICHAEL MCNUTT: Again, we have a project team here. And they're more than willing to answer any questions. So, if you have a hand, raise your hand, and we can unmute you, or feel free to pop a written question into the Q&A, and we'll answer that live.

ROY KIRWA: We just got something in the Q&A. Our question is from Annette Shaw.

"Will right turns on red be allowed on any of these intersections?"

JAKLYN CENTRACCHIO: I can address that

one, also. Again, sorry, I was introduced at the beginning of the presentation, but my name is Jaklyn Centracchio. I'm the traffic lead for the project. So, I didn't have a place in the presentation, but I'm here now.

So right turn on reds will be evaluated as part of this. It's, yeah, we're going to have to further evaluate it in order to be able to come up with that answer. At this point, it's not likely that we'll allow them because of the, you know, the traffic conditions and the volumes along the corridor. But, again, we're going to look a little more into that before we make a definite answer.

ROY KIRWA: Thank you, Jaklyn.

Our next question -- we just got one question -- one second, Mike. Our next question is from Brendan Roche.

"What was used to determine the need for center dual turn lanes between the intersections or turn land?"

MODERATOR SEN: Jaklyn?

CHRIS ROY: That's -- I can take this one.

We looked at -- we looked at just

having one travel lane down each side of the road, as well as the center turn lane. And due to all of the businesses there and the constant left turns that go into the businesses, and the resulting queuing on each side of the road from these left turns, then there was a decision to go with the center turn lane.

ROY KIRWA: Thank you, Chris.

I guess a follow-up comment from Annette Shaw with the right turn lanes, she says, "Please don't allow them."

CHRIS ROY: The right turn on reds?

ROY KIRWA: Yeah.

CHRIS ROY: Okay.

ROY KIRWA: Next question is from Kelly, Kelly Crowley.

"If the project goes over the $8 million budget, who pays for that?"

MODERATOR SEN: Very good question. Well, in reality, we have three options. One option is if a town can give us the money if we're short funds. The second option is we'll go back to the MPO and ask for more money. And the last option is we have to reduce the project's limit to stay within the budget.

So, which one is going to work? We don't know yet. But we can always try -- we always go to the MPO. And with the help from the town, we may get some extra money. But please do understand that those MPO budgets, they are also very tight. I mean, they are obligated say X amount of money for one specific fiscal year, and they just don't want to go over that money.

So, we have a few options but we really like to stay within the budget and offer the best.

ROY KIRWA: Think you, Gautam.

A follow-up from Brendan Roche with his question. He'd just like to say, "Thank you."

MICHAEL MCNUTT: I did see a hand from Sharon Friedman. You don't have your hand up now, but it was up. If you want to talk, raise your hand, or feel free to put a question in the Q&A box.

MODERATOR SEN: More questions?

ROY KIRWA: We have one from Sharon Friedman.

"If you unmute me, I have a comment."

So, we will unmute Sharon Friedman. Sharon.

MICHAEL MCNUTT: She's at the bottom

there.

ROY KIRWA: You should be allowed to speak now.

MICHAEL MCNUTT: You have the mic. Can you unmute yourself?

SHARON FRIEDMAN: Yeah.

MICHAEL MCNUTT: There you go.

SHARON FRIEDMAN: So, my comment is, with the -- following up with Annette on the no turns on red, if it's done in one intersection, I'd like to see the consideration be made for the entire length of 106, particularly when you have pedestrian crossings. For example, up near the North Main Street, there are always people making turns, even when the pedestrian lights are on. So, it might be worth to do not only signals but signage up and down that whole strip to make it safe for not only other vehicles but for pedestrians and people who are riding bikes.

Thank you.

CHRIS ROY: So, the -- further down on 106, and specifically at that North Main Street intersection, is going to be part of Phase 2, which is 106 Phase 2, which is another design we'll be doing a little later on. And that is something we will

address as we get into that design.

SHARON FRIEDMAN: Thank you. I'm good. Thank you.

MODERATOR SEN: Thank you, Sharon.

Any more questions?

ROY KIRWA: Not right now, but we'll see if we have any other questions come in.

MICHAEL MCNUTT: So, I believe the posted end time for this meeting was 8:30, is that correct?

MODERATOR SEN: Yes, something like that, if I remember.

MICHAEL MCNUTT: Okay. Because we've kind of run out of questions. But if the time was posted at 8:30, we're going to have to leave the meeting open until 8:30 to allow people to -- if they want to enter late.

MODERATOR SEN: What are you going to do in an hour?

MICHAEL MCNUTT: Well, let's keep this going. We have a hand up from Representative Fred Barrows. So I'm going to unmute you. Can you speak? I just gave you the mic.

REPRESENTATIVE F. JAY BARROWS: I'll

get the mute button right, eventually. Sorry.

Will we be able to have access to these slides so that we can send them out and post them on some of our social media accounts to let people know who weren't able to attend tonight?

MODERATOR SEN: Very good question. And the good news is the whole presentation is on our site. If you go to MassDOT public hearings and scroll for the Mansfield project, you will find the deck of this slide in PDF.

REPRESENTATIVE F. JAY BARROWS: Oh, good. Can you do the link --

MODERATOR SEN: We will do that. You want PDF, right?

REPRESENTATIVE F. JAY BARROWS: Yes, please. Yeah.

MODERATOR SEN: Yeah, it is on our site, already posted.

REPRESENTATIVE F. JAY BARROWS: Okay. Great. Thank you.

ROY KIRWA: Thank you.

MICHAEL MCNUTT: We have a hand up from one of the panelists. You don't have to raise your hand. You can just speak

JOSEPH CERRETANI: This is Joe Cerretani from the planning board.

One question: I know this is Phase 1 of this project. Do you have any timelines for Phase 2?

MODERATOR SEN: I do not. My understanding is it has not been approved by MPO yet.

JOSEPH CERRETANI: Okay. Okay, thank you.

MODERATOR SEN: Thanks.

Thanks, Josh. Yeah, I mean that's -- I mean, if they scan the QR code, that will take them to our site, MassDOT site.

Thanks, Josh.

MICHAEL MCNUTT: We still have 18 attendees in this meeting. So, would anyone like to ask any last-minute questions while we have the project team here?

We have James Turnbull. I will allow you to speak.

JAMES TURNBULL: Hi, folks. How are you? Thanks for answering my questions earlier. Gautam, it's good to see you too.

Just as a resident in that area, I just

really appreciate your work. We've been trying to get work done on this intersection for what seems like ten years now. I was on a couple of the town boards as well. So, I just want to voice my support.

Copeland Drive at Chauncy is a very complicated intersection. I think the turning lanes that you're providing are much needed. And I think it seemed like the best solution with the kind of the geometry issues you have out there.

Is there -- has any consideration been made to straightening out the geometry on 106, because that seems, as you're driving down the corridor, that seems like one of the issues there? I'm just interested in what you folks had to say about just the width of the turning lanes, the width we're using to install the turning lanes compared to potentially making a geometry improvement at that intersection. It seems like --

MODERATOR SEN: Good to hear from you.

Well, the reality is the right of way.

JAMES TURNBULL: Yeah. Yeah.

MODERATOR SEN: In this day and age, it’s not easy to take lands from anybody.

JAMES TURNBULL: Yeah.

MODERATOR SEN: Chris, do you have something to add?

JAMES TURNBULL: No, just really kind of interested in the development. It seems like -- I know there's two newer developments on the corners there. And it seems like you're doing a good job at reducing the right of way.

So, I guess the other question is just with access from the Honey Dew Donuts on the corner there. It looks like we're reducing the curb cuts there. Is that going down to one or two driveways? I think they have like four right now existing.

MODERATOR SEN: Yeah, we lose some parking space.

CHRIS ROY: Yeah, if you could bring the slide, was it 16 I think?

MODERATOR SEN: Yeah.

CHRIS ROY: And I agree with you, Gautam. It's the right of way that is the issue about --

MODERATOR SEN: Oh, yeah. I mean, in this day and age, you just cannot -- I think that is the right thing. If I own it, if, you know, you guys come and say, "Okay. We'll take land from your

house," I will not be a happy camper.

CHRIS ROY: So, yeah, so we're cutting down the curb cuts so that you have the one curb cut -- actually, both, in both cases there, they're the furthest point -- they're further away from the intersection, so Copeland drive down near the -- where the angled parking is, and then the other curb cut is past the building, past Honey Dew, where you see the sidewalk narrowing.

JAMES TURNBULL: Yeah, cause I -- just, right now, I think that's one of the -- one of the issues operationally at the intersection is you have cars going every which way, at least during the morning peak. You try going in and out of that property there, you know, kind of cutting across the turning lanes and everything that, you know, could be used for the capacity at the intersection. So, it's good to see that the access is kind of being -- is being managed there.

MODERATOR SEN: Yeah.

JAMES TURNBULL: Thanks for answering my questions. I'm pretty much done at this point.

MODERATOR SEN: Thanks.

CHRIS ROY: Gautam, just one comment on

what you said earlier. The Phase 2, I had seen on the MassDOT website that Phase 2 was on the '27 TIP. Does it have to go through another process before it actually gets officially programmed?

MODERATOR SEN: I believe so. But let me find it out before I say anything else. Let me find it out, and I'll get back to you.

CHRIS ROY: Okay.

ROY KIRWA: Yeah, it was actually Lisa Estrela-Pedro brought that up.

"The Mansfield Chauncy Street Route 106 project improvements, Phase 2 is programmed in federal fiscal year 2027 in the federal fiscal year 2023 through 2027 TIP."

And then she follows up and says, "Yes, it is programmed."

MODERATOR SEN: Thanks. Oh, she is with the MPO.

MICHAEL MCNUTT: Roy, do you want to go back to the slide where people can get the contact information? Can you kind of go over that maybe?

ROY KIRWA: Yeah, that one.

Yeah, so there's still 15 attendees here. If you remember a question you forgot to ask

here or you want to send something in writing, here's the contact information to do that. You can do it by email. You can do physical mail. And then there's a link at the bottom for project updates. And you can also utilize the QR code if you have a mobile device. This is a really good way of asking questions.

MODERATOR SEN: It is always easy to send an email if somebody has comments or concerns. I mean, it makes life easy.

MICHAEL MCNUTT: Okay, so we did advertise the meeting to -- for 8:30 as an end time. So, we do have to keep it open, but not everyone here -- not all the panelists has to stay, maybe just me, Roy, maybe --

MODERATOR SEN: I will stay.

MICHAEL MCNUTT: You'll stay? Yeah. But we definitely don't need the full -- because there's only seven attendees. This is sort of like a technicality where we, you know, we advertise something so we have to have it open. If someone does come in, we'll just probably direct them to this slide and tell them to put whatever questions they have in writing.

JOSHUA REINKE: Thank you, guys. I'm

going to jump off. If anyone wants to ask questions of the Mansfield DPW, they can go to Mansfieldma.com or call our office over there. We'll certainly help out with any questions.

Thank you for the presentation tonight.

ROY KIRWA: Thank you for your time, Josh.

MODERATOR SEN: Thanks, Josh.

JOSHUA REINKE: Thanks. Bye.

CHRIS ROY: Thanks, Josh.

MODERATOR SEN: Is everybody signed off or do you still see some people?

ROY KIRWA: We have four in attendance right now -- three. My bad.

ROY KIRWA: We just have a comment from Fred Barrows. He just wanted to say, "I'm signing off," and, "Thank you."

(No further questions or comments. The hearing remained open until 8:30 p.m.)

MODERATOR SEN: Thank you very much for attending this presentation. Going forward, your comments and concerns will be taken into consideration for the design of this project.

Just a reminder, the handout for the

project, which is posted on the MassDOT website, summarizes the information we have presented tonight. The handout also contains a form that you can complete and send it if you had any additional questions or comments.

Thank you for attending. The meeting is now closed.

(Conclusion of Virtual Design Public Hearing.)

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C E R T I F I C A T E

I, Judith A. Luciano, do hereby certify that the foregoing record is a true and accurate transcription of the proceedings in the above-captioned matter to the best of my skill and ability.

Judith A. Luciano

Judith A. Luciano

**** ALL NAMES NOT PROVIDED WERE SPELLED PHONETICALLY TO THE BEST OF MY ABILITY**

Arlington Reporting Company
(339)674-9100

VIRTUAL DESIGN PUBLIC HEARING

MARCH 2, 2023

FOR THE PROPOSED

CORRIDOR IMPROVEMENTS ON CHAUNCY STREET (ROUTE 106) FROM STATE ROUTE 140 TO COPELAND DRIVE
Project No. 613052

Project Management

IN THE TOWN OF MANSFIELD, MASSACHUSETTS

COMMONWEALTH OF MASSACHUSETTS
MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

JONATHAN GULLIVER
HIGHWAY ADMINISTRATOR

CARRIE E. LAVALLEE, P.E.
CHIEF ENGINEER

THE COMMONWEALTH OF MASSACHUSETTS
MASSACHUSETTS DEPARTMENT OF TRANSPORTATION – HIGHWAY DIVISION
NOTICE OF A PUBLIC HEARING
Project File No. 613052

A Live Virtual Design Public Hearing will be hosted on the MassDOT website below to present the design for the proposed CORRIDOR IMPROVEMENTS ON CHAUNCY STREET (ROUTE 106) FROM STATE ROUTE 140 TO COPELAND DRIVE project in **Mansfield, MA**.

WHEN: **March 2, 2023 at 7:00 PM**

PURPOSE: The purpose of this hearing is to provide the public with the opportunity to become fully acquainted with the proposed CORRIDOR IMPROVEMENTS ON CHAUNCY STREET (ROUTE 106) FROM STATE ROUTE 140 TO COPELAND DRIVE project. All views and comments submitted in response to the hearing will be reviewed and considered to the maximum extent possible.

PROPOSAL: The project includes roadway widening and related drainage improvements, a shared use path along the southern side of Chauncy Street (Route 106) with ADA compliant ramps, reconstruction of sidewalks along the northern side of Chauncy Street (Route 106) with ADA compliant ramps, new signs, and pavement markings, as well as geometric modifications to include turn lanes and upgraded traffic signal systems at 2 locations: 1) the intersection of Chauncy Street (Route 106) and Commercial Street (Route 140) and 2) the intersection of Chauncy Street (Route 106) and Copeland Drive. The project also includes coordination plan upgrades for the 3 adjacent traffic signals along Commercial Street (Route 140) south of Chauncy Street (Route 106) and for the 2 adjacent traffic signals along Commercial Street (Route 140) north of Chauncy Street (Route 106) located in the Town of Mansfield.

A secure right-of-way is necessary for this project. Acquisitions in fee and permanent or temporary easements may be required. **MassDOT and the Town of Mansfield are responsible for acquiring all needed rights in private or public lands.** MassDOT's and The Town's policies concerning land acquisitions will be presented in the hearing.

Project inquiries, written statements and other exhibits regarding the proposed undertaking may be submitted to Carrie E. Lavallee, P.E., Chief Engineer, via e-mail to MassDOTProjectManagement@dot.state.ma.us or via US Mail to Suite 7550, 10 Park Plaza, Boston, MA 02116, Attention: **Project Management, Project File No. 613052**. Statements and exhibits intended for inclusion in the public hearing transcript must be emailed or postmarked no later than ten (10) business days (14 calendar days) after the hearing is hosted on the MassDOT website listed below.

This hearing is accessible to people with disabilities. MassDOT provides reasonable accommodations and/or language assistance free of charge upon request (e.g interpreters in American Sign Language and languages other than English, live captioning, videos, assistive listening devices and alternate material formats), as available. For accommodation or language assistance, please contact MassDOT's Chief Diversity and Civil Rights Officer by phone (857-368-8580), TTD/TTY at (857) 266-0603, fax (857) 368-0602 or by email (MassDOT.CivilRights@dot.state.ma.us). Requests should be made as soon as possible and prior to the hearing, and for more difficult to arrange services including sign-language, CART or language translation or interpretation, requests should be made at least ten business days before the hearing.

This Live Virtual Design Public Hearing or a cancellation announcement will be hosted on the internet at www.mass.gov/massdot-highway-design-public-hearings.

JONATHAN GULLIVER
HIGHWAY ADMINISTRATOR

CARRIE E. LAVALLEE, P.E.
CHIEF ENGINEER

Dear Concerned Citizen:

The Massachusetts Department of Transportation (MassDOT) is committed to building and maintaining a transportation infrastructure that is both safe and efficient for all who use our roadways, bridges, bicycle facilities and pedestrian paths, while maintaining the integrity of the environment.

As part of the design process for this project, we are conducting this public hearing to explain the proposed improvements, listen to your comments and answer any questions you may have. At the conclusion of the hearing, MassDOT will review all of your comments and, where feasible, incorporate them into the design of the project.

We recognize that road and bridge construction can create inconveniences for the public. MassDOT places a great deal of emphasis on minimizing the temporary disruptive effects of construction.

MassDOT encourages input from local communities and values your opinions. Please be assured that we will undertake no project without addressing the concerns of the community.

Sincerely,

Carrie E. Lavallee, P.E.
Chief Engineer

WHAT IS A PUBLIC HEARING?

WHY A PUBLIC HEARING?

To provide an assured method whereby the Commonwealth of Massachusetts can furnish to the public information concerning the State's highway construction proposals, and to afford every interested resident of the area an opportunity to be heard on any proposed project. At the same time, the hearings afford the Commonwealth an additional opportunity to receive information from local sources which would be of value to the State in making its final decisions to what design should be advanced for development.

WHY NOT A VOTE ON HIGHWAY PLANS?

The hearings are not intended to be a popular referendum for the purpose of determining the nature of a proposed improvement by a majority of those present. They do not relieve the duly constituted officials of a State highway department of the necessity for making decisions in State highway matters for which they are charged with full responsibility.

WHAT DOES A PUBLIC HEARING ACCOMPLISH?

It is designed to ensure the opportunity for, or the availability of, a forum to provide factual information which is pertinent to the determination of the final alternative considered by the state to best serve the public interest, and on which improvement projects are proposed to be undertaken.

It is important that the people of the area express their views in regard to the proposal being presented, so that views can be properly recorded in the minutes of the meeting. These minutes will be carefully studied and taken into consideration in the determination of the final design.

RIGHT OF WAY CONCERNS

A secure Right of Way is required for this project. If your property, or a portion of it, must be acquired by the State or Municipality for highway purposes in the interest of all people of the Commonwealth, your rights are fully protected under the law. Procedures are different depending on whether the State or Municipality is making the acquisitions. Briefly, here are some of the answers to questions you might ask.

State Acquisitions

1. WHO CONTACTS ME?

   Representatives of the Right of Way Bureau of the Massachusetts Department of Transportation's Highway Division. They will explain the impacts and your rights as protected under Massachusetts General Laws Chapter 79.

2. WHAT IS A FAIR PRICE FOR MY PROPERTY?

   Every offer is made to ensure that an equitable value is awarded to you for the property, or to appraise the "damage" to the property as a result of the acquisition. MassDOT appraisers, independent appraisers, MassDOT "Review Appraisers" and a Real Estate Appraisal Review Board may all contribute in arriving at an award of damages. The State also pays a proportionate part of the real estate tax for the current year for fee takings, and interest from the date the property is acquired to the payment date, on all impacts.

3. MUST I ACCEPT THE DEPARTMENT'S OFFER?

   No. If, after the figure established as market value has been offered to the owner, the owner feels he or she is not being offered a fair price, he or she has the right, within three years, to appeal to the courts. Pending a court decision, he or she can be paid on a "pro-tanto" basis (or "for the time being") that in no way prejudices the court appeal.

4. WHAT WILL HAPPEN TO MY HOUSE?

   The owner will have the opportunity to buy back his or her house, provided he or she has a location to which it can be moved, and the proper permits for its removal. If the owner does not wish to repurchase, the house will be advertised for bids. The highest bidder, who must also have a location and permits for removal, will be awarded the house. Otherwise, the structure will be slated for demolition.

5. WHAT HAPPENS IF I MUST RELOCATE?

   In addition to the market value of the property, the Department pays certain relocation benefits for both owners and tenants of acquired residences and businesses who meet eligibility requirements. Assistance in relocation is also provided. Department brochures are available for details on these benefits.

Municipal Acquisitions

1. REASON FOR PROJECT?

The construction of this project will serve the needs of local users as well as those of the greater surrounding communities. The proposed enhancement has been designed to service and provide for the public good.

2. WHO CONTACTS ME?

Representatives of the municipality have already contacted, or will contact you. They will explain the process and procedures used in acquiring any necessary rights required for the proposed project.

3. APPRAISALS, DONATIONS, RIGHTS OF ENTRY?

Impacted Property owners are entitled to an appraisal and Just Compensation, however, municipalities will often seek donations of parcels as this procedure will minimize the acquisition cost for your community.

A Right of Entry is a document that is signed by the owner. It allows the Contractor to perform certain types of temporary work on the owner's land. The work is usually minor in nature and frequently consists of loaming/seeding behind sidewalks, new driveway apron work, grading/sloping, etc.

4. WHAT IS A FAIR PRICE FOR THE ACQUIRED PARCELS?

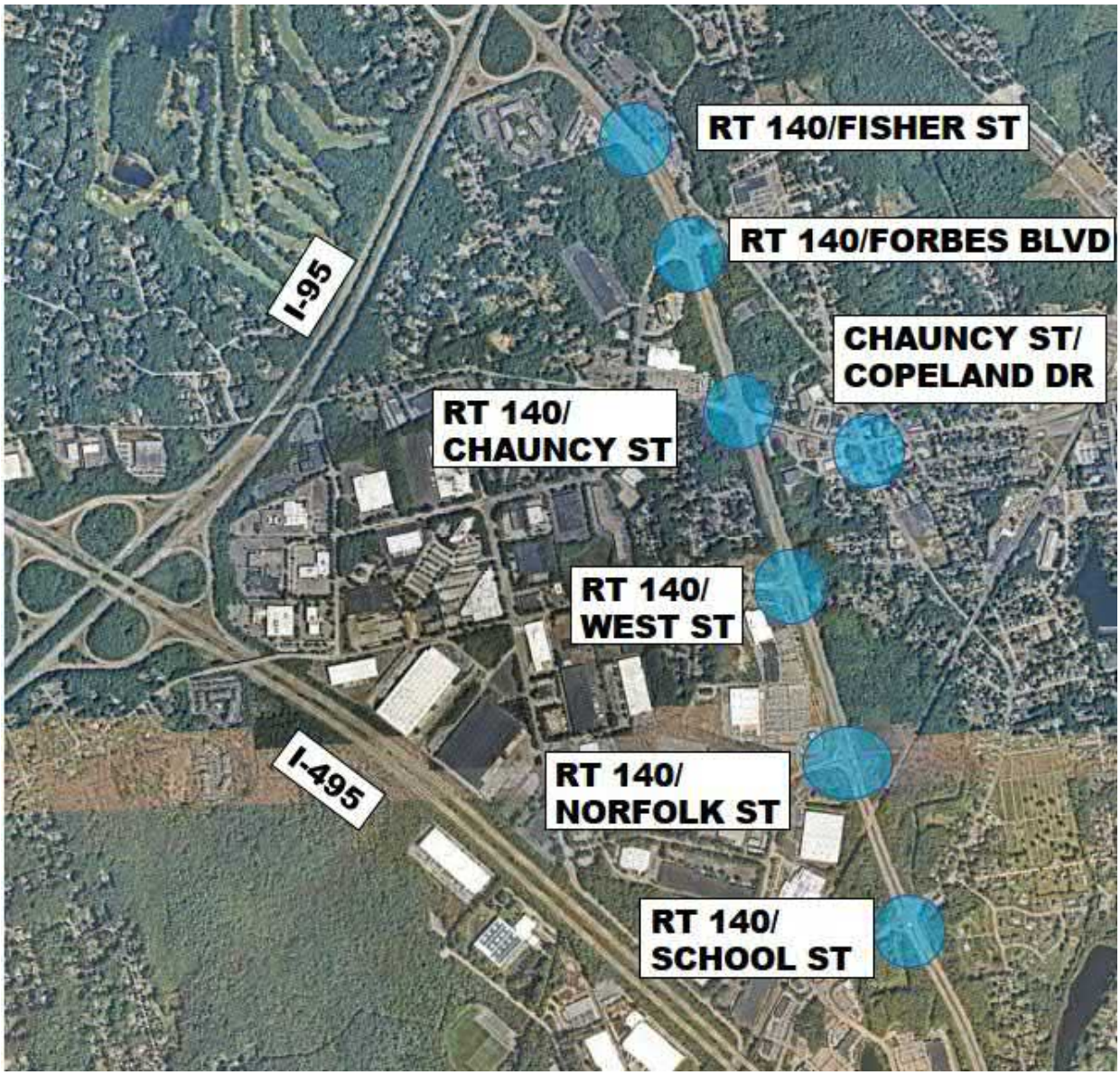
When donations or Rights of Entry are not considered, or completed, every effort will be made to ensure that an equitable value is awarded. Municipal and/or outside appraisers will complete an appraisal and review appraisal. Consideration is given to the type of rights needed, whether in fee, permanent or temporary easements. The appraisal will be the basis for arriving at a fair price (Just compensation), for the rights to be acquired.

5. MUST I ACCEPT THE MUNICIPALITY OFFER?

No, if the owner feels that the offer is not fair the owner may petition the courts. This action does not stop or delay the acquisition. The action must occur within 3 years from the date of the recording of the acquired parcel(s). The owner(s) may be paid pro tanto (for the time being). The pro tanto payment will not prejudice the court's final decision.

PROJECT LOCUS MAP

Signalized Intersection



PROJECT LOCATION

The Massachusetts Department of Transportation Highway Division (MassDOT) is proposing to construct improvements to Chauncy Street (Route 106), from Route 140 to Copeland Drive approximately 1800 feet (0.34 miles).

PROJECT PURPOSE

The purpose of this project is to improve traffic and safety for all users along Chauncy Street (Route 106) from Route 140 to Copeland Drive including both intersections as well as improve traffic signal operations along the Route 140 corridor through traffic signal timing and coordination adjustments.

PROPOSED IMPROVEMENTS

The project includes primarily milling and resurfacing of the road, areas of roadway widening, minor drainage improvements, a shared use path along the southern side of Chauncy Street (Route 106) with ADA compliant ramps, reconstruction of sidewalks along the northern side of Chauncy Street (Route 106) with ADA compliant ramps, new signs, and pavement markings, as well as geometric modifications to include turn lanes and an upgraded traffic signal system at the Chauncy Street/Route 140 and Chauncy Street/Copeland Drive intersections. Utility poles will be relocated to the back of sidewalk, with separate pole sets which currently exist on both sides of Chauncy Street combined to a single pole set on the south side of the roadway.

The Chauncy Street (Route 106) corridor and Chauncy Street (Route 106) and Copeland Drive intersection have safety and operational deficiencies which require improvements for safe and efficient operation for all users, including motor vehicles, bicycles, and pedestrians. The following proposed improvements were developed to address the existing deficiencies:

- Provide one 11-foot travel lane in both directions along Chauncy Street (Route 106) and a 13-foot two-way left-turn lane in the center of the road within the project limits.
- Provide an 8-foot-wide shared use path on the south side of Chauncy Street (Route 106) with a 4-foot buffer within the project limits.
- Provide a 5.5-foot-wide cement concrete sidewalk along the north side of the corridor.
- Install new accessible ramps with detectable warning panels at the intersections. Proposed ramps and sidewalks will meet MassDOT and ADA requirements.
- Provide crosswalks across all intersecting side streets.
- Adjust existing drainage system and structures, as necessary, due to widening to address any drainage concerns.
- Replace the existing traffic signals at both signalized intersections along Chauncy Street, including mast arm mounted signal heads on all approaches, full actuation with video detection for vehicles and bicycles, pedestrian countdown indications, pushbuttons, and emergency pre-emption. All traffic equipment will be powder coated black.
- At the Route 140 intersection, widen to provide an exclusive right-turn lane for Route 106 eastbound and modify to channelized right-turn lane for Route 106 westbound.

- At the Copeland Drive intersection, widen to provide exclusive left-turn lanes on all approaches and exclusive right-turn lanes for Chauncy Street (Route 106) eastbound and westbound. Also, provide a channelized right-turn lane on the Copeland Drive southbound approach.
- Provide lag operations for the Chauncy Street (Route 106) westbound left-turn movement and the Copeland Drive left-turn movements, as preferred by the Town of Mansfield.
- Provide new pavement markings and signs. All signs will be MUTCD compliant.
- Relocate utility poles in areas of widening and new sidewalk construction to maintain sufficient roadway offsets and combine to one pole set.

MAINTENANCE OF TRAFFIC DURING CONSTRUCTION

All roadways within the project will remain open to traffic throughout construction. Widening operations at the intersections will allow one lane to be maintained on all approaches during peak hours. Occasional short traffic disruptions may occur, but every effort will be made to minimize inconvenience to the public. Pedestrian and vehicular access to abutting properties will be maintained at all times, except for brief periods of time during which abutters will be notified in advance.

RIGHT OF WAY IMPACTS

The proposed improvements will require 19 takings, 21 permanent utility easements required for utility pole relocation and aerial rights and 1 permanent drainage easement. In addition, the project will require temporary construction easements affecting most but not necessarily all properties within the project limits.

PROJECT COST

The preliminary construction cost of this project based on 25% design stage is approximately $8,000,000.

PROJECT SCHEDULE

The design plans presented this evening represent a 25% design plans. The project has been programmed in the Statewide Transportation Improvement Plan for Federal Fiscal Year 2025. Project is expected to be advertised for construction in Spring 2025 subject to ROW Certificate is issued and all Environmental Permits are obtained. Construction is anticipated to begin in the Summer of 2025.

THE COMMONWEALTH OF MASSACHUSETTS
MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

FEDERAL AID PROJECT

Mansfield, MA
Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive
Project File No. 613052

This sheet is provided for your comments. Your input is solicited and appreciated. You may e-mail comments directly to MassDOTProjectManagement@dot.state.ma.us or you may mail this sheet with any additional comments to:

Carrie E. Lavallee, P.E., Chief Engineer
MassDOT – Highway Division
10 Park Plaza, Boston, MA 02116-3973
Attn: Project Management

Statements and exhibits intended for inclusion in the public hearing transcript must be emailed or postmarked no later than ten (10) business days after the hearing.

PLEASE TYPE OR PRINT LEGIBLY.

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_____

Name: _____ Title: _____

Organization: _____

Address: _____

_____

Please Fold and Tape

Please Place Appropriate Postage Here

Carrie E. Lavallee, P.E.
Chief Engineer
MassDOT – Highway Division
10 Park Plaza
Boston, MA 02116-3973

RE: Virtual Public Hearing
Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive
TOWN OF MANSFIELD
Project File No. 613052
Attn: Project Management

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DOCUMENT A00844

U.S. FISH AND WILDLIFE SERVICE

NLAA CONCURRENCE VERIFICATION LETTER

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: 06/02/2025 15:57:02 UTC
Project code: 2025-0068327
Project Name: 613052 MANSFIELD- CORRIDOR IMPROVEMENTS ON CHAUNCY ST (ROUTE 106) FROM STR140 TO COPELAND DR

Subject: Not Likely to Adversely Affect Concurrence verification letter for the '613052 MANSFIELD- CORRIDOR IMPROVEMENTS ON CHAUNCY ST (ROUTE 106) FROM STR140 TO COPELAND DR' project under the December 13, 2024, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat, Northern Long-eared Bat, and Tricolored Bat.

To whom it may concern:

This letter records the determination of effects to federally listed (or proposed) bat species anticipated to result from the 613052 MANSFIELD- CORRIDOR IMPROVEMENTS ON CHAUNCY ST (ROUTE 106) FROM STR140 TO COPELAND DR (the Project). This determination is based upon information you entered into the assisted determination key (Dkey) associated with the above referenced Programmatic Biological Opinion/Conference Opinion (PBO/PCO) in the U.S. Fish and Wildlife Service's (Service) Information for Planning and Consultation (IPaC) system on the date listed above to verify that the Project may rely on the concurrence provided in the PBO/PCO to satisfy requirements under section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (16 USC 1536), as amended.

Ensuring Accurate Determinations When Using IPaC:

The Service developed the IPaC system and this Dkey in accordance with the ESA and based on the PBO/PCO. All information submitted by the project proponent into IPaC must accurately represent the full scope and details of the Project.

Failure to accurately represent or implement the Project as detailed in the Dkey invalidates this letter. Answers to certain questions in the Dkey commit the project proponent to implementation of conservation measures that must be followed for the ESA determinations to remain valid. Carefully review this letter, your ESA requirements are <u>NOT</u> yet complete.

Determinations:

Based on the information you provided (Project Description shown below), you have determined that the Project is within the scope and adheres to the criteria of the PBO/PCO, including the adoption of applicable avoidance and minimization measures. Based on your IPaC submission and the PBO/PCO, the Project is consistent with the following effect determinations:

Species	Listing Status	Determination
Northern Long-eared Bat (*Myotis septentrionalis*)	Endangered	NLAA
Tricolored Bat (*Perimyotis subflavus*)	Proposed Endangered	NLAA

The tricolored bat is proposed for listing as endangered under the ESA, but not yet listed. For actions that may affect a proposed species, agencies cannot consult, but they can confer under the authority of section 7(a)(4) of the ESA. Such conferences can follow the procedures for a consultation and be adopted as such if the proposed species is listed. Should the tricolored bat be listed, agencies must review projects that are not yet complete, or projects with ongoing effects within the tricolored bat range that previously received a no effect or not likely to adversely affect (NLAA) determination from the key to confirm that the determination is still accurate.

The Service has 14 calendar days to notify the lead Federal action agency or designated non-federal representative if we determine that the Project does not meet the criteria for a NLAA determination under the PBO/PCO. **If the Service does <u>not</u> notify the lead Federal action agency or designated non-federal representative within that timeframe, you may proceed with the Project under the terms of the NLAA concurrence provided in the PBO/PCO**. This verification period allows Service Field Offices to apply local knowledge to implementation of the PBO, as we may identify a small subset of actions having impacts that were unanticipated. In such instances, Service Field Offices may request additional information that is necessary to verify inclusion of the proposed action under the PBO/PCO.

If the Project is modified, or new information reveals that it may affect the Indiana bat, northern long-eared bat, or tricolored bat in a manner or to an extent not considered in the PBO/PCO, further review to conclude the requirements of ESA section 7(a)(2) may be required.

For Proposed Actions that include bridge/culvert or structure removal, replacement, and/or maintenance activities:

If your initial bridge, culvert, or structure assessment failed to detect Indiana bat, northern long-eared bat, or tricolored bat use or occupancy, yet bats are later detected prior to, or during construction, promptly notify the local Service Field Office within 2 working days of the discovery. In addition, please document whether incidental take occurred, and if so, the type (i.e. kill or harm) and amount (i.e. number of individuals) and submit documentation to the local Service Field Office within 5 working days from the completion of the bridge, culvert, or structure construction (use Appendix E - Post Assessment Discovery of Bats at Bridge/Culvert or Structure Form in the User's Guide). In these instances, potential incidental take of Indiana bats, northern long-eared bats, or tricolored bats may be exempted provided that the take is reported to

the Service. In these instances, potential incidental take of Indiana bats, northern long-eared bats, or tricolored bats may be exempted provided that the take is reported to the Service.

If the Project may affect any other federally listed or proposed species and/or designated critical habitat, additional consultation between the lead Federal action agency and this Service Field Office is required for those species/designated critical habitat. If the Project has the potential to take bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act may also be required. In either of these circumstances, please advise the lead Federal action agency to contact this Service Field Office

The following species may occur in your project area and **are not** covered by this determination:

- Monarch Butterfly *Danaus plexippus* Proposed Threatened

PROJECT DESCRIPTION

The following project name and description was collected in IPaC as part of the endangered species review process.

NAME

613052 MANSFIELD- CORRIDOR IMPROVEMENTS ON CHAUNCY ST (ROUTE 106) FROM STR140 TO COPELAND DR

DESCRIPTION

613052 MANSFIELD- CORRIDOR IMPROVEMENTS ON CHAUNCY STREET (ROUTE 106) FROM STATE ROUTE 140 TO COPELAND DRIVE

The purpose of this project is to improve traffic and safety for all users along Chauncy Street (Route 106) between and including the intersections of Route 140 and Copeland Drive (0.33 miles). Both the Route 106/Route 140 and Route 106/Copeland Street intersections are High Crash Clusters and will be reconstructed as part of the project. Specific improvements will be made to pedestrian and bicycle accommodations and safety along the corridor, while also rehabilitating the roadway pavement. Proposed improvements include pavement reconstruction by mill and overlay with areas of full depth box widening; sidewalk construction including a shared use path accommodating bicycles, and new signs and pavement markings. (This project is Phase 1 of 2, along the Route 106 corridor in Mansfield)
Monarch Butterfly: Proposed Species only. The project action will not jeopardize the continued existence of a proposed species

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.0271811,-71.23199354701383,14z

DETERMINATION KEY RESULT

Based on your answers provided, this project(s) may affect, but is not likely to adversely affect the Indiana bat, northern long-eared bat or tricolored bat, therefore, consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 et seq.) is required. However, also based on your answers provided, this project may rely on the concurrence provided in the Programmatic Biological Opinion/Conference Opinion for Transportation Projects in the Range of the Indiana bat, northern long-eared bat, and tricolored bat, dated December 13, 2024.

QUALIFICATION INTERVIEW

1. Which Federal Agency is the lead federal agency the action?

   A) Federal Highway Administration (FHWA)

2. Does the Action Area intersect the species list area of the Northern long-eared bat?

   Automatically answered
   Yes

3. Does the Action Area intersect the species list area of the tricolored Bat (TCB)?

   Automatically answered
   Yes

4. Does your project's activities include raising the road profile above the tree canopy in documented habitat for the Indiana bat, NLEB, or TCB?

   Note: For the definition of documented habitat, refer to Appendix A: https://www.fws.gov/media/users-guide-range-wide-programmatic-consultation-indiana-bat-and-northern-long-eared-bat

   No

5. Is your project located within a karst area?

   No

6. Will the project include bridge, culvert, or structure removal, replacement, and/or alteration activities?

   Note: For definitions of bridge, culvert, and structure, refer to Appendix A: https://www.fws.gov/media/users-guide-range-wide-programmatic-consultation-indiana-bat-and-northern-long-eared-bat.

   No

7. Do your project’s activities involve tree removal/trimming, temporary lighting, new/additional permanent lighting, ground disturbance, percussives that involves noise/vibration above existing background levels, vibrations, or slash pile burning?

   Yes

8. Is there suitable summer habitat for the Indiana bat, NLEB, or TCB within the project action area?

   Note: See the Service's summer survey guidance for current definitions of suitable habitat [https://www.fws.gov/midwest/endangered/mammals/inba/inbasummersurveyguidance.html].

   Yes

9. Have P/A surveys for the Indiana bat, NLEB, or TCB been conducted within the suitable summer habitat located within your project action area? This refers to mist-netting or acoustic surveys, not bridge assessments.

   Note: See the Service's survey guidance https://www.fws.gov/midwest/endangered/mammals/inba/inbasummersurveyguidance.html

   Yes

   SUBMITTED DOCUMENTS

   - *608053_609255_613052_Mansfield_PA_survey_report_FINAL.pdf https://ipac.ecosphere.fws.gov/project/MWJVNHQF5BD45DZCGYPYV736SU/projectDocuments/158652613*

10. Did the P/A surveys detect Indiana bats, NLEBs, or TCBs?

    Note: If Indiana bats, NLEBs, or TCBs are detected, the action area is considered **documented habitat.**

    No

11. Did the local Service Field Office verify that this P/A survey can be used to determine Indiana bat, NLEB, and TCB are **not likely to be present** within the suitable summer habitat located within your project area?

    Yes

12. Does the Action Area intersect the species list area of the tricolored Bat (TCB)?

    Automatically answered
    Yes

13. Does the Action Area intersect the species list area of the northern long-eared bat (NLEB)?

    Automatically answered
    Yes

PROJECT QUESTIONNAIRE

1. Have you made a No Effect determinations for all other species included on the FWS IPaC generated species list?

   Yes

2. Have you made a May Affect determination for any other species on the FWS IPaC generated list?

   No

AVOIDANCE AND MINIMIZATION MEASURES (AMMS)

This determination key result includes the commitment to implement the following Avoidance and Minimization Measures (AMMs):

GAMM1

Ensure all operators, employees, and contractors working in areas of Indiana bat, NLEB, or TCB suitable habitat are aware of all Transportation Agency environmental commitments, including all applicable AMMs.

DETERMINATION KEY DESCRIPTION: FHWA, FRA, FTA PROGRAMMATIC CONSULTATION FOR TRANSPORTATION PROJECTS AFFECTING IBAT, NLEB, OR TCB

This key was last updated in IPaC on May 30, 2025. Keys are subject to periodic revision.

This decision key is intended for projects/activities funded or authorized by the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and/or Federal Transit Administration (FTA), which may require consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the Endangered Species Act (ESA) and may affect the federally listed endangered Indiana bat (*Myotis sodalis*), northern long-eared bat (*Myotis septentrionalis*), and/or federally proposed endangered tricolored bat (*Perimyotis subflavus*).

This decision key should only be used to verify project applicability with the Service's Programmatic Biological Opinion/Conference Opinion for Transportation Projects in the Range of the Indiana bat, northern long-eared bat, and tricolored bat, dated December 13, 2024. The programmatic consultation limited transportation activities that may affect the covered bat species and addresses situations that are both likely and not likely to adversely affect the covered bat species. This decision key will assist in identifying the effect of a specific project/activity and the applicability of the programmatic consultation. The programmatic consultation is not intended to cover all types of transportation actions. Activities outside the scope of the programmatic consultation, or that may affect ESA-listed species other than the Indiana bat, northern long-eared bat, or tricolored bat, or their designated critical habitat, may require additional ESA Section 7 consultation.

IPAC USER CONTACT INFORMATION

Agency: Massachusetts Department of Transportation
Name: Lindsey Forg
Address: 10 Park Plaza
City: Boston
State: MA
Zip: 02116
Email lindsey.e.forg@dot.state.ma.us
Phone: 8572623378

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Highway Administration

DOCUMENT A00860

MASSACHUSETTS

DEPARTMENT OF ENVIRONMENTAL PROTECTION

NOTICE OF INTENT

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March 4, 2025

Michael Healey, Chair
Mansfield Conservation Commission
6 Park Row
Mansfield, MA 02048

Re: Notice of Intent – Improvements to Chauncy Street (Route 106)
MassDOT Project 613052 - Route 140 to Copeland Drive (Phase 1)
Mansfield, Massachusetts

Dear Mr. Healey and Commissioners:

On behalf of the Massachusetts Department of Transportation – Highway Division (MassDOT), BETA Group, Inc. is submitting a Notice of Intent (NOI) for roadway and safety improvements along an 1,800-foot stretch of Chauncy Street (Route 106), an 800-foot stretch of Commercial Street (Route 140), and a 400-foot stretch of Copeland Drive. Improvements are also proposed at the intersection Chauncy Street and Copeland Drive and the intersection of Chauncy Street and Commercial Street. The Chauncy Street corridor, and the intersections at Commercial Street and Copeland Drive have safety and operational deficiencies which require improvements for safe and efficient operation for all users, including motor vehicles, bicyclists, and pedestrians.

As an agency of the Commonwealth providing essential government functions, MassDOT is exempt from certain municipal requirements including but not limited to wetland bylaws, ordinances and policies, and for paying peer review fees. Additionally, MassDOT is not required to notify abutters per the WPA Regulations at 310 CMR 10.05(4).

Work associated with the Project will take place within Wetland Resource Areas subject to Protection and Jurisdiction under the Massachusetts Wetlands Protection Act and its Regulations at 310 CMR 10.00 (the Act) including Bank and Land Under Water (LUW). The Project has been designed to meet the Performance Standards as set forth by the Act to the extent practicable. The Project is being filed under the Limited Project provision found in the WPA Regulations at 310 CMR 10.53(3)(f) and 10.53(8)(a), and is classified as a redevelopment project under the Stormwater Management Standards. Additionally, some work proposed within buffer zone to Bank and BVW, including conversion of imperious to vegetated surfaces and installation of traffic signals, is considered as a minor exempt activity under 310 CMR 10.02(2)(b)2.f. and o.

The Project will result in permanent and temporary impacts to Bank of an unnamed intermittent stream and LUW associated with the replacement and extension of two 18” side by side culverts to accommodate the proposed roadway cross-section. Specifically, Resource Area impacts include:

- 295 linear feet (lf) of impact to Bank (271 lf temporary / 24 lf permanent); and
- 432 square feet (sf) of impact to LUW

Given the densely developed nature of the Project area, minimal opportunities for mitigation are available, however, construction best management practices are included in the Project to prevent impacts to Wetland Resource Areas during construction, such as the installation of in-water controls, erosion & sediment controls, and inlet protection measures. Following the replacement and extension of the culverts, temporarily impacted areas will be restored to pre-construction conditions.

BETA GROUP, INC.
89 Shrewsbury Street, Suite 300, Worcester, MA 01604
P: 508.756.1600 | W: www.BETA-Inc.com

This NOI has been concurrently submitted to the Massachusetts Department of Environmental Protection (MassDEP) Southeast Regional Office. Checks for the state portion of the Act fee ($237.50) and the local portion of the Act fee ($262.50) are included with this filing. Per the provision of the Act, MassDOT is exempt from abutter notification requirements.

We trust that the following application provides adequate information to facilitate the issuance of an Order of Conditions. Should you have any additional questions, please do not hesitate to contact us.

Very truly yours,
BETA Group, Inc.

Anna Haznar
Scientist

Laura Krause
Senior Project Manager

cc: Chris Roy, BETA Group Project Manager
Melissa Lenker, MassDOT Highway Division
Erica Larner, MassDOT Highway Division
Kevin Thompson, MassDOT Highway Division
MassDEP Southeast Region, Division of Wetlands

Job No: 23.10326.21

Mansfield, Massachusetts

Improvements to Chauncy Street (Route 106) Route 140 to Copeland Drive (Phase 1)

MassDOT Project Number #613052

March 2025

NOTICE OF INTENT

89 Shrewsbury Street
Suite 300
Worcester, MA 01604
508.756.1600
www.BETA-Inc.com

Improvements to Chauncy Street (Route 106) Route 140 to Copeland Drive (Phase 1)

Mansfield, Massachusetts

MassDOT Project Number #613052

NOTICE OF INTENT

Prepared by: BETA GROUP, INC.
Prepared for: MassDOT Highway Division

March 2025

TABLE OF CONTENTS

WPA FORM 3 – NOTICE OF INTENT
LIST OF OWNERS
PROJECT NARRATIVE
1.0 Introduction 1
2.0 Site Description 2
2.1 Project Locus 2
2.2 Wetland Resource Areas 3
2.3 Buffer Zones 5
2.4 NHESP-Mapped Habitat and Other Sensitive Areas 5
3.0 Work Description 5
3.1 Construction Sequence 6
3.2 Work within Protected Resource Areas 7
3.2.1 Inland Bank (310 CMR 10.54) 7
3.2.2 Land Under Water Bodies and Waterways (310 CMR 10.56) 7
3.3 Work in Buffer Zone 8
4.0 Mitigation Measures 8
4.1 Erosion and Sedimentation Controls 9
4.2 Water Controls and Dewatering 9
4.3 Mitigation 9
4.4 Proposed Landscaping 9
4.5 Stormwater Management 10
5.0 Alternatives Analysis 10
5.1 No Build Option 10
5.2 Corridor Alternatives 11
5.2.1 Alterative 2.1 11
5.2.2 Alterative 2.2 11
5.2.3 Alterative 2.3 – The Preferred Alternative 11
5.3 Culvert Type Alternatives 11
5.3.1 Alternative 3.1 12
5.3.2 Alternative 3.2 – The Preferred Alternative 12
6.0 Regulatory Compliance 12
6.1 Stream Crossing Standards Compliance 12
6.2 Massachusetts Wetlands Protection Act Regulations-310 CMR 10.00 13

6.2.1 Inland Bank - Performance Standards - 310 CMR 10.54 (4) 13
6.2.2 Land Under Water - Performance Standards - 310 CMR 10.56 (4) 14
7.0 Summary 14

LIST OF FIGURES

Figure 1 Site Locus
Figure 2 Environmental Resources
Figure 3 FEMA FIRMette

LIST OF APPENDICES

Appendix A Wetland Delineation Report
Appendix B Photographic Documentation
Appendix C Stormwater Report and Checklist
Appendix D As-Built Plan - Corner of Chauncy Street and Route 140
Appendix E Project Plans
Appendix F Landscape Plans

WPA Form 3 – Notice of Intent

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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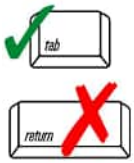
City/Town

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Note: Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

A. General Information

1. Project Location (**Note:** electronic filers will click on button to locate project site):

Chauncy Street | Mansfield | 02048
a. Street Address | b. City/Town | c. Zip Code

Latitude and Longitude: Start: 42.03152 -71.23469
End: 42.03070 -71.22737

N/A Roadway ROW
f. Assessors Map/Plat Number | g. Parcel /Lot Number

2. Applicant:

Erica | Larner
a. First Name | b. Last Name

Massachusetts Department of Transportation - Highway Division
c. Organization

10 Park Plaza
d. Street Address

Boston | MA | 02116
e. City/Town | f. State | g. Zip Code

857-268-1729 | | erica.n.larner@dot.state.ma.us
h. Phone Number | i. Fax Number | j. Email Address

3. Property owner (required if different from applicant): ☒ Check if more than one owner

a. First Name | b. Last Name

Massachusetts Department of Transportation - Highway Division
c. Organization

10 Park Plaza
d. Street Address

Boston | MA | 02116
e. City/Town | f. State | g. Zip Code

h. Phone Number | i. Fax Number | j. Email address

4. Representative (if any):

Anna | Haznar
a. First Name | b. Last Name

BETA Group, Inc.
c. Company

701 George Washington Hwy
d. Street Address

Lincoln | RI | 02865
e. City/Town | f. State | g. Zip Code

401-333-2382 | | ahaznar@beta-inc.com
h. Phone Number | i. Fax Number | j. Email address

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

$500 | 237.50 | 262.50
a. Total Fee Paid | b. State Fee Paid | c. City/Town Fee Paid

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Mansfield
City/Town

A. General Information (continued)

6. General Project Description:

Roadway and pedestrian improvements to Chauncy Street, the Chauncy Street / Copeland Drive intersection, and the Chauncy Street /Route 140 intersection to address the existing safety and operational deficiencies. Work will include a culvert extension and replacement to accommodate the proposed roadway cross-section. The remainder of the work will only occur within buffer zone only.

7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

1. ☐ Single Family Home
2. ☐ Residential Subdivision
3. ☐ Commercial/Industrial
4. ☐ Dock/Pier
5. ☐ Utilities
6. ☐ Coastal engineering Structure
7. ☐ Agriculture (e.g., cranberries, forestry)
8. ☒ Transportation
9. ☐ Other

7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

1. ☒ Yes ☐ No If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types)

310 CMR 10.53(3)(f) and 10.53(8)
2. Limited Project Type

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

8. Property recorded at the Registry of Deeds for:

N/A - roadway layout
a. County

b. Certificate # (if registered land)

c. Book

d. Page Number

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

1. ☐ Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
2. ☒ Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File Number
Document Transaction Number
Mansfield
City/Town

B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☒ Bank	24 (perm), 271 (temp) 1. linear feet	2. linear feet
b. ☐ Bordering Vegetated Wetland	1. square feet	2. square feet
c. ☒ Land Under Waterbodies and Waterways	115 (perm), 317 (temp) 1. square feet 3. cubic yards dredged	2. square feet

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. ☐ Bordering Land Subject to Flooding	1. square feet 3. cubic feet of flood storage lost	2. square feet 4. cubic feet replaced
e. ☐ Isolated Land Subject to Flooding	1. square feet 2. cubic feet of flood storage lost	3. cubic feet replaced
f. ☐ Riverfront Area	1. Name of Waterway (if available) - **specify coastal or inland**	

2. Width of Riverfront Area (check one):

☐ 25 ft. - Designated Densely Developed Areas only

☐ 100 ft. - New agricultural projects only

☐ 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: _____ square feet

4. Proposed alteration of the Riverfront Area:

a. total square feet _____ b. square feet within 100 ft. _____ c. square feet between 100 ft. and 200 ft. _____

5. Has an alternatives analysis been done and is it attached to this NOI? ☐ Yes ☐ No

6. Was the lot where the activity is proposed created prior to August 1, 1996? ☐ Yes ☐ No

3. ☐ Coastal Resource Areas: (See 310 CMR 10.25-10.35)

Note: for coastal riverfront areas, please complete **Section B.2.f**. above.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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MassDEP File Number

Document Transaction Number

Mansfield
City/Town

B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. ☐ Land Under the Ocean	1. square feet 2. cubic yards dredged	
c. ☐ Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. ☐ Coastal Beaches	1. square feet	2. cubic yards beach nourishment
e. ☐ Coastal Dunes	1. square feet	2. cubic yards dune nourishment

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
f. ☐ Coastal Banks	1. linear feet	
g. ☐ Rocky Intertidal Shores	1. square feet	
h. ☐ Salt Marshes	1. square feet	2. sq ft restoration, rehab., creation
i. ☐ Land Under Salt Ponds	1. square feet 2. cubic yards dredged	
j. ☐ Land Containing Shellfish	1. square feet	
k. ☐ Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above 1. cubic yards dredged	
l. ☐ Land Subject to Coastal Storm Flowage	1. square feet	

4. ☐ Restoration/Enhancement

If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.

a. square feet of BVW

b. square feet of Salt Marsh

5. ☒ Project Involves Stream Crossings

a. number of new stream crossings

1 - Partial replacement and extension
b. number of replacement stream crossings

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

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Document Transaction Number

Mansfield
City/Town

C. Other Applicable Standards and Requirements

☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section C and complete Appendix A: Ecological Restoration Limited Project Checklists – Required Actions (310 CMR 10.11).

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm.

   a. ☐ Yes ☒ No

   If yes, include proof of mailing or hand delivery of NOI to:

   Natural Heritage and Endangered Species Program
   Division of Fisheries and Wildlife
   1 Rabbit Hill Road
   Westborough, MA 01581

   August 1, 2021
   b. Date of map

   If *yes*, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.2.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

   c. Submit Supplemental Information for Endangered Species Review*

      1. ☐ Percentage/acreage of property to be altered:

         (a) within wetland Resource Area _____ percentage/acreage

         (b) outside Resource Area _____ percentage/acreage

      2. ☐ Assessor's Map or right-of-way plan of site

2. ☐ Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work **

   (a) ☐ Project description (including description of impacts outside of wetland resource area & buffer zone)

   (b) ☐ Photographs representative of the site

* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see https://www.mass.gov/ma-endangered-species-act-mesa-regulatory-review).
Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

** MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File Number
Document Transaction Number
Mansfield
City/Town

C. Other Applicable Standards and Requirements (cont'd)

(c) ☐ MESA filing fee (fee information available at https://www.mass.gov/how-to/how-to-file-for-a-mesa-project-review).
Make check payable to "Commonwealth of Massachusetts - NHESP" and ***mail to NHESP*** at above address

*Projects altering **10 or more acres** of land, also submit:*

(d) ☐ Vegetation cover type map of site

(e) ☐ Project plans showing Priority & Estimated Habitat boundaries

(f) OR Check One of the Following

1. ☐ Project is exempt from MESA review.
Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, https://www.mass.gov/service-details/exemptions-from-review-for-projectsactivities-in-priority-habitat; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

2. ☐ Separate MESA review ongoing. a. NHESP Tracking # b. Date submitted to NHESP

3. ☐ Separate MESA review completed.
Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?

a. ☒ Not applicable – project is in inland resource area only b. ☐ Yes ☐ No

If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Cohasset to Rhode Island border, and the Cape & Islands:

Division of Marine Fisheries -
Southeast Marine Fisheries Station
Attn: Environmental Reviewer
836 South Rodney French Blvd.
New Bedford, MA 02744
Email: dmf.envreview-south@mass.gov

North Shore - Hull to New Hampshire border:

Division of Marine Fisheries -
North Shore Office
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Email: dmf.envreview-north@mass.gov

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.

c. ☐ Is this an aquaculture project? d. ☐ Yes ☒ No

If yes, include a copy of the Division of Marine Fisheries Certification Letter (M.G.L. c. 130, § 57).

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Mansfield
City/Town

C. Other Applicable Standards and Requirements (cont'd)

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?

   a. ☐ Yes ☒ No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.

   b. ACEC

5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?

   a. ☐ Yes ☒ No

6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?

   a. ☐ Yes ☒ No

7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?

   a. ☒ Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:

      1. ☐ Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)

      2. ☒ A portion of the site constitutes redevelopment

      3. ☐ Proprietary BMPs are included in the Stormwater Management System.

   b. ☐ No. Check why the project is exempt:

      1. ☐ Single-family house

      2. ☐ Emergency road repair

      3. ☐ Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

D. Additional Information

☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

Online Users: Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

1. ☒ USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)

2. ☒ Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Mansfield
City/Town

D. Additional Information (cont'd)

3. ☒ Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.

4. ☒ List the titles and dates for all plans and other materials submitted with this NOI.

Improvements of Chauncy Street (Route 106), Route 140 to Copeland Drive (Phase 1)
a. Plan Title

BETA Group, Inc.
b. Prepared By

Chris Roy, PE
c. Signed and Stamped by

February 10, 2025
d. Final Revision Date

Varies
e. Scale

Stormwater Management Report, O&M Plan, and Project Narrative.
f. Additional Plan or Document Title

February 2025
g. Date

5. ☒ If there is more than one property owner, please attach a list of these property owners not listed on this form.

6. ☐ Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.

7. ☐ Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.

8. ☒ Attach NOI Wetland Fee Transmittal Form

9. ☒ Attach Stormwater Report, if needed.

E. Fees

1. ☐ Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

114324
2. Municipal Check Number

2/3/2025
3. Check date

114323
4. State Check Number

2/3/2025
5. Check date

BETA Group, Inc
6. Payor name on check: First Name

7. Payor name on check: Last Name

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Mansfield
City/Town

F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of Applicant	2. Date: 2/25/2025
3. Signature of Property Owner (if different)	4. Date
5. Signature of Representative (if any)	6. Date: 2/6/2025

For Conservation Commission:
Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:
One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:
If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

A. Applicant Information

1. Location of Project:

Chauncy Street	Mansfield
a. Street Address	b. City/Town
114323	$237.50
c. Check number	d. Fee amount

2. Applicant Mailing Address:

Erica	Larner		
a. First Name	b. Last Name		
Massachusetts Department of Transportation - Highway Division			
c. Organization			
10 Park Street			
d. Mailing Address			
Boston	MA	02116	
e. City/Town	f. State	g. Zip Code	
857-268-1729		erica.n.larner@dot.state.ma.us	
h. Phone Number	i. Fax Number	j. Email Address	

3. Property Owner (if different):

a. First Name	b. Last Name		
Massachusetts Department of Transportation - Highway Division			
c. Organization			
10 Park Street			
d. Mailing Address			
Boston	MA	02116	
e. City/Town	f. State	g. Zip Code	
h. Phone Number	i. Fax Number	j. Email Address	

B. Fees

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).

Fee should be calculated using the following process & worksheet. ***Please see Instructions before filling out worksheet.***

Step 1/Type of Activity: Describe each type of activity that will occur in wetland resource area and buffer zone.

Step 2/Number of Activities: Identify the number of each type of activity.

Step 3/Individual Activity Fee: Identify each activity fee from the six project categories listed in the instructions.

Step 4/Subtotal Activity Fee: Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

Step 5/Total Project Fee: Determine the total project fee by adding the subtotal amounts from Step 4.

Step 6/Fee Payments: To calculate the state share of the fee, divide the total fee in half and subtract $12.50. To calculate the city/town share of the fee, divide the total fee in half and add $12.50.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Category 2e	1	$500.00	$500.00

Step 5/Total Project Fee:

Step 6/Fee Payments:

Total Project Fee:	$500.00 a. Total Fee from Step 5
State share of filing Fee:	$237.50 b. 1/2 Total Fee **less $**12.50
City/Town share of filling Fee:	$262.50 c. 1/2 Total Fee **plus** $12.50

C. Submittal Requirements

a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

Department of Environmental Protection
Box 4062
Boston, MA 02211

b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.

To MassDEP Regional Office (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)

BETA

PO Box 9
Albion, RI 02802
401.333.2382
www.BETA-Inc.com

BRISTOL COUNTY SAVINGS BANK
53-7085/2113

114323

February 3, 2025

PAY Two Hundred Thirty Seven and 50/100 Dollars

AMOUNT 237.50

TO COMMONWEALTH OF MASSACHUSETTS
Dept of Environmental Protection
Box 4062
Boston, MA 02211

VOID AFTER 90 DAYS

Beth Scanlon
AUTHORIZED SIGNATURE MP

Security features. Details on back.

⑈114323⑈ ⑆211370859⑆ 150440940⑈

BETA

PO Box 9
Albion, RI 02802
401.333.2382
www.BETA-Inc.com

BRISTOL COUNTY SAVINGS BANK
53-7085/2113

114324

February 3, 2025

PAY Two Hundred Sixty Two and 50/100 Dollars

AMOUNT 262.50

TO Town of Mansfield, MA

VOID AFTER 90 DAYS

Beth Scanlon
AUTHORIZED SIGNATURE MP

Security features. Details on back.

⑈114324⑈ ⑆211370859⑆ 150440940⑈

LIST OF OWNERS

Attachment to WPA Form 3 - List of Owners

Massachusetts Department of Transportation - Highway Division

10 Park Plaza, Boston, MA 02116

The Town of Mansfield

6 Park Row, Mansfield, MA 02048

PROJECT NARRATIVE

1.0 INTRODUCTION

On behalf of the Massachusetts Department of Transportation (MassDOT) Highway Division, BETA Group, Inc. (BETA) is submitting a Notice of Intent (NOI) for the work associated with corridor improvements along an 1,800-foot stretch of Chauncy Street, an 800-foot stretch of Route 140 (Commercial Street), and a 400-foot stretch of Copeland Drive in Mansfield, Massachusetts (the Site). Improvements are also proposed at the intersection of Chauncy Street and Copeland Drive and the intersection of Chauncy Street and Route 140. The Chauncy Street corridor and the intersections at Route 140 and Copeland Drive have safety and operational deficiencies which require improvements for safe and efficient operation for all users, including motor vehicles, bicyclists and pedestrians. The proposed improvements were designed to address the existing deficiencies and are based on an examination of existing conditions, known deficiencies, future traffic volumes, and discussions with MassDOT and Mansfield Town officials.

Proposed activities will occur within inland Bank and Land Under Water (LUW) of an unnamed intermittent stream, as well as the buffer zone to Bank and Bordering Vegetated Wetlands (BVW). These areas subject to Protection and Jurisdiction under the Massachusetts Wetlands Protection Act, M.G.L. Chapter 131, Section 40 (the Act) and its Regulations, 310 CMR 10.00 (WPA Regulations). Temporary and permanent Resource Area impacts proposed in association with the Project include 295 linear feet (lf) (271 lf temporary / 24 lf permanent) of impact to Bank and 432 square feet (sf) (317 temporary / 115 permanent) of impact to LUW. The Project is being filed under the Limited Project provision found in the WPA Regulations at 310 CMR 10.53(3)(f)[1] and 10.53(8). Additionally, some work proposed within buffer zone to Bank and BVW, including conversion of imperious to vegetated surfaces and installation of traffic signals, is considered as a minor exempt activity under 310 CMR 10.02(2)(b)2.f. and o. (see Section 3.3).

Corridor improvements being proposed to accomplish the goals of the Project generally include the following (collectively – the Project):

- Provide an 8-foot-wide cement concrete shared use path on the south side of Chauncy Street within the project limits and at both intersections;
- Reconstruct existing cement concrete sidewalk along the corridor;
- Install new accessible ramps with detectable warning panels and new sidewalks at the intersections and all driveways. Proposed ramps and sidewalks will meet MassDOT and ADA requirements;
- Provide crosswalks across all intersecting side streets;
- Provide one 11-foot travel lane in both directions along Chauncy Street within the project limits;
- Widen roadway to provide exclusive left-turn lanes on the Chauncy Street approaches to the Copeland Drive intersection and to provide an exclusive right-turn lane for Chauncy Street eastbound and westbound;
- Widen roadway to provide an exclusive right-turn lane on the Chauncy Street eastbound approach to the Route 140 intersection;
- Rehabilitate pavement by means of pavement milling and a double layer overlay in addition to full depth box widening in various locations;
- Provide new pavement markings and signs;
- Install traffic signalization improvements;

[1] 310 CMR 310.53(3)(f) "Maintenance and improvement of existing public roadways, but limited to widening less than a single lane, adding shoulders, correcting substandard intersections, and improving inadequate drainage systems."

- Make improvements to the existing drainage system including Best Management Practices to the maximum extent practicable;
- Replace two 18-inch side by side culverts carrying an intermittent stream under Chauncy Street (61 lf of the eastern culvert and 62 lf of the western culvert) up to where it enters a vault to restore streamflow and extend both culverts by 10 lf to the north of Chauncy Street to accommodate roadway widening.
- Installation of erosion and sedimentation controls; and
- Landscaping.

The Project requires additional Environmental Permits and Reviews. Specifically:

- Work below Ordinary High Water Mark (OHWM) of the unnamed intermittent stream requires US Army Corps of Engineers (USACE) Authorization under the Massachusetts General Permits. The project requires a Pre-Construction Notification Form (PCN) as work to extend the existing stream crossing will not meet the Stream Crossing Standards. The PCN will be submitted to the USACE subsequent to the submission of this NOI.

- A Categorical Exclusion (CE) Checklist is required to fulfill MassDOT's requirements under the National Environmental Policy Act (NEPA) due to the use of federal funding.

The Project does not require dredging or impacts greater than 5,000 sf of impacts to Waters of the Commonwealth, therefore the Project's Order of Conditions will serve as the 401 Water Quality Certification. In addition, the Project is not Subject to Chapter 91 as the unnamed intermittent stream is not navigable, or Massachusetts Environmental Policy Act (MEPA) Review, and the Project is not located within Natural Heritage and Endangered Species Program (NHESP) Mapped Habitat.

2.0 Site Description

2.1 Project Locus

Chauncy Street follows an east-west alignment through the northern portion of the Town of Mansfield (Figure 1 – Site Locus) and is functionally classified as an Urban Principal Arterial. Chauncy Street is under MassDOT jurisdiction from Route 140 to just east of the 243 Chauncy Street Driveway, and under Town jurisdiction east of the 243 Chauncy Street Driveway to the Copeland Drive intersection. Copeland Drive is an Urban Minor Arterial and Route 140 is an Urban Principal Arterial, both under MassDOT jurisdiction. The intersection of Chauncy Street and Copeland Drive is also under MassDOT jurisdiction.

Land use in the vicinity of the Project is primarily commercial, with small, forested areas located primarily around the Chauncy Street and Route 140 intersection. Copeland Crossing Apartments is located north of Chauncy Street at the corner of Chauncy Street and Route 140 and is accessible via Chauncy Street. One entrance to the United States Postal Service (USPS) building is also located off Chauncy Street and is accessible through Giles Place. Businesses located along the Project corridor include CVS, Advance Auto Parts, Dominos, as well as several other small businesses and restaurants.

Chauncy Street accommodates one 15-foot single lane of travel in each direction, divided by a double yellow center line, with two-to-three-foot shoulders. Granite curbing and a mix of concrete and asphalt material sidewalks are provided along both sides of Chauncy Street, except to the west of the Copeland Crossing Apartments driveway on the north side of Chauncy Street. Wheelchair ramps are not present, although crosswalks are marked at all four legs of the Chauncy Street and Copeland Drive intersection. At

the Chauncy Street and Route 140 intersection a marked, signalized crosswalk is provided across the south leg of the intersection, and a marked, unsignalized crosswalk is provided connecting the southeast corner of the intersection to the island across the northbound channelized right turn lane. Parking is prohibited on both sides of Chauncy Street.

Pavement along the Project corridor is generally in fair condition with a considerable number of cracks. Pavement markings are overall in good condition along Chauncy Street and both intersections with cracked markings and some faded areas in need of restriping. Utility poles are located on the north and south sides of Chauncy Street directly at the back of curb in some locations and offset between 15 & 18 inches from the existing edge of pavement in other locations. One utility pole is located in the median south of the Route 140 intersection. Overhead wires cross Chauncy Street in multiple locations within the Project Corridor. Within the Chauncy Street roadway, subsurface gas, water, sewer, and telephone lines are present and connect to various business along Chauncy Street. Existing stormwater features consist of curb and gutter conveyance which directs stormwater runoff to closed drainage systems consisting of catch basins, manholes, and culverts (see Stormwater Report and Checklist in Appendix C).

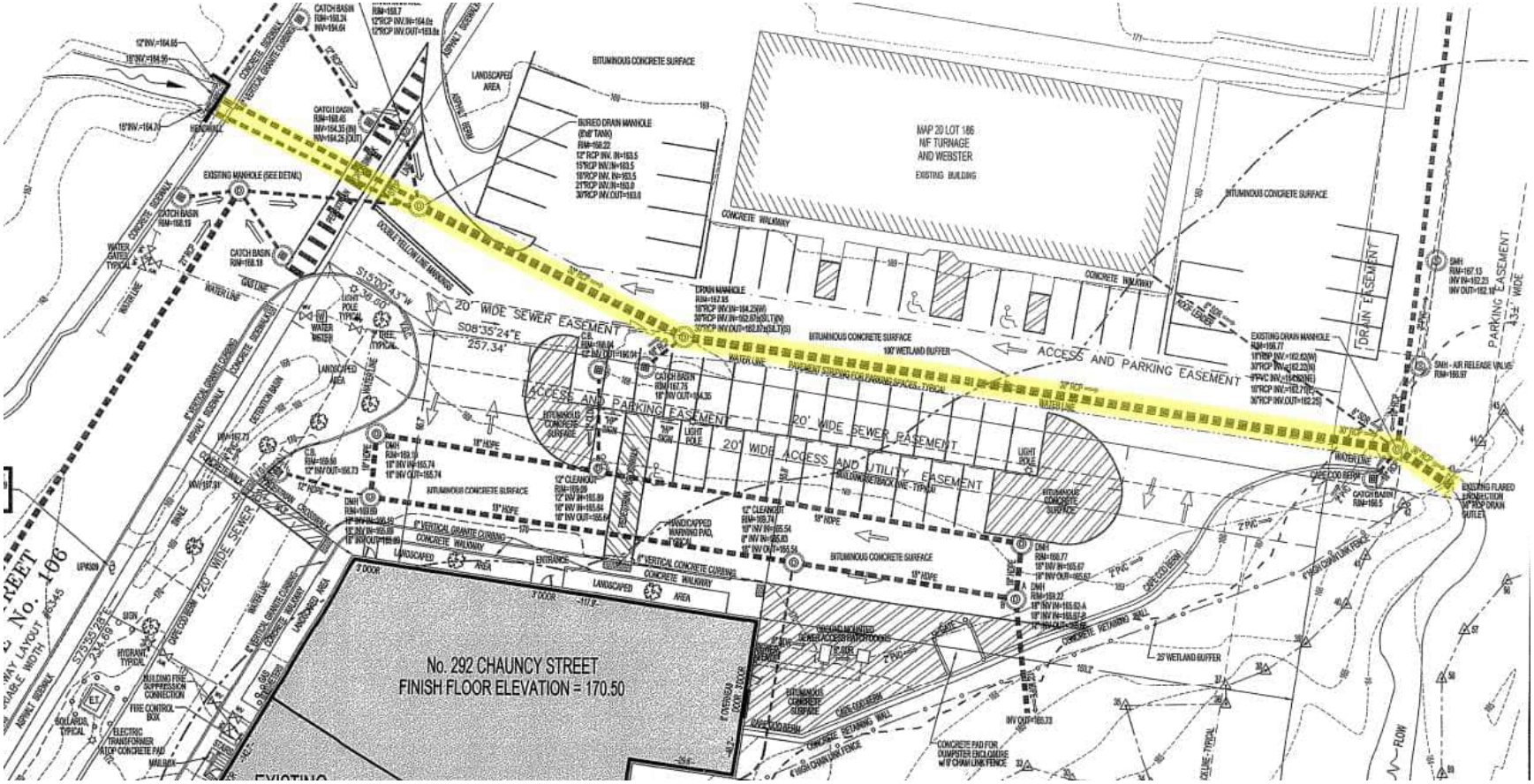
An L-shaped headwall between Stations 29+50 and 30+00 conveys an unnamed intermittent stream southerly under Chauncy Street via two 18" side by side corrugated metal pipe (CMP) culverts for ± 62 lf until it enters a vault and continues through a single 30" reinforced concrete pipe (RCP) culvert for 304 lf. The span of the two 18" CMP culverts is 3 feet, and the span of the 30" RCP culvert is 2.5 feet.

2.2 WETLAND RESOURCE AREAS

A Site inspection was conducted by BETA Group Inc.'s Wetland Scientists to identify and delineate the boundary of Wetland Resource Areas on and in the immediate vicinity of the Site on July 25, 2023. Wetland Resource Area boundaries were identified and delineated in accordance with methods developed by the Massachusetts Department of Environmental Protection's *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act: Second Edition*, dated 2022, as well as definitions set forth in the state Wetland Regulations, 310 CMR 10.00.

Existing Wetland Resource Areas within, or immediately adjacent to, the limit of work includes inland Bank (to unnamed intermittent stream – B1, B2, and B3 Series Bank), and BVW (WF1, WF2, WF3, WF4, and WF5 series). An L-shaped headwall between Stations 29+50 and 30+00 conveys an unnamed intermittent stream to the south under Chauncy Street via two 18" side by side CMP culverts for ± 62 lf until it enters a vault and continues through a single 30" RCP culvert for 304 lf under a commercial driveway / parking area before discharging south of 292 Chauncy Street. The stream channel at this location is generally 2 to 4 feet wide and the water depth observed during the Site inspection was approximately 6 to 12 inches. Substrate upgradient of the two 18" side by side culverts was mucky but within the culverts there was no native substrate.

An as-built of the culverts is included in Appendix D and below for reference. A description of Resource Areas subject to Protection under the Act is included in Appendix A – Wetland Delineation Report.



As-built of the culverts conveying the intermittent stream under Chauncy Street.

A00860 - 27
Proposal No. 613052-131228

2.3 BUFFER ZONES

The WPA applies a 100-foot buffer zone to Bank and BVW. Where within the buffer zone, the Project consists primarily of existing paved roadway and sidewalks, the roadway right of way, stormwater management features, and landscaped areas. Adjacent Wetland Resource Areas will be protected from work within buffer zones via the proper installation of erosion and sedimentation controls as described in Section 4.1.

2.4 NHESP-MAPPED HABITAT AND OTHER SENSITIVE AREAS

According to the latest MassGIS data, the Project is not located within NHESP mapped Priority Habitat of Rare Species or Estimated Habitat of Rare Wildlife, nor is it within or adjacent to a cold-water fisheries resources. The Project is not located within an Area of Critical Environmental Concern (ACEC), or within 200 feet of NHESP mapped Certified or Potential Vernal Pools. In addition, the Site is not located within Surface Water Protection Areas (Zone A, B, or C), Outstanding Resource Waters, or groundwater Wellhead Protection Areas (Zone I, II, or Interim) associated with a public water supply. Finally, FEMA-mapped floodplains are present north of the Project, however, the Project does not extend within the 100-year floodplain.

3.0 WORK DESCRIPTION

Based on examination of existing conditions, anticipated future traffic volumes, and discussions with MassDOT and the DPW, the following activities will be conducted to support the Project in addressing the existing operational and safety deficiencies:

- Provide one 11-foot travel lane in both directions along Chauncy Street within the Project Corridor.
- Provide an 8-foot-wide shared use path on the south side of Chauncy Street within the Project Corridor, including the Chauncy Street and Route 140 Intersection.
- Rehabilitate pavement by means of pavement milling and a double layer overlay in addition to full depth box widening in various locations.
- Reconstruct a variable-width cement concrete sidewalk along the northern side of the Project Corridor.
- Install new accessible ramps with detectable warning panels and new sidewalks at the intersection and all driveways. Proposed ramps and sidewalks will meet MassDOT and ADA requirements.
- Provide crosswalks across all intersecting side streets.
- Make improvements to the existing drainage system including adjusting the existing system and structures, as necessary, to address any drainage concerns and accommodate the proposed widening including Best Management Practices to the maximum extent practicable. Improvements include the installation of deep-sump catch basins, one leaching basin, and a water quality swale.
- Provide sufficient corner radii for heavy vehicles.
- Replace the existing traffic signals, including mast arm mounted signal heads on all approaches, full actuation with video detection for vehicles and bicycles, pedestrian countdown indications, pushbuttons, and emergency pre-emption. Backplates with reflective strip and LED lenses will be provided for all proposed signal heads. Pedestrian phase timing and vehicle clearance times will be based on the latest MassDOT guidance.
- Widen the Copeland Drive intersection to extend left-turn lanes and provide an exclusive right-turn lane for Chauncy Street (Route 106) eastbound and westbound.

- Widen the roadway to provide an exclusive left-turn lane on the Chauncy Street eastbound approach to the Route 140 intersection.
- Provide lag operations for the Chauncy Street (Route 106) westbound left-turn movement and the Copeland Drive left-turn movements, as preferred by the Town of Mansfield.
- Provide a yield-controlled channelized right turn lane on the Copeland Drive southbound approach to the Chauncy Street intersection.
- Replace two 18-inch side by side culverts carrying an intermittent stream under Chauncy Street (61 lf of the eastern culvert and 62 lf of the western culvert) up to where it enters a vault and extend both culverts by 10 lf north of Chauncy Street to accommodate roadway widening.
- Provide new pavement markings and signs. All signs will be MUTCD compliant.
- Relocate utility poles in areas of widening and new sidewalk construction to maintain sufficient roadway offsets.

Removal of hedges and six trees will occur within the Project Corridor as shown on the Project Plans in Appendix E to accommodate roadway widening and sidewalk installation. On the north side of Chauncy Street two 8" dbh trees are proposed for removal east of the driveway to the Copeland Crossing Apartments and four 6" dbh trees are proposed for removal in front of 261 Chauncy Street (CVS Pharmacy). Additionally, a tree (size unknown) will be removed at 215 Chauncy Street (Chase Bank) at the northeast corner of the intersection of Chauncy Street and Copeland Drive, and landscaped hedges will be removed from in front of 273 Chauncy Street (Monarch Realty Group) and CVS Pharmacy.

3.1 CONSTRUCTION SEQUENCE

The construction sequence for the Chauncy Street Improvements Project will be determined by the contractor, however, the anticipated construction sequence, equipment proposed, and staging areas associated with the Project are provided below.

3.1.1 SITE PREPARATION

- Mobilize equipment, materials, and personnel;
- Install erosion and sedimentation control measures to protect downgradient resource areas and demarcate the limit of work, including installation of a turbidity curtain prior to commencement of work associated with replacement and extension of the culverts;
- Ensure compliance with any pre-construction conditions outlined in the Order of Conditions, the Authorization Letter from USACE, and any other required permits.

3.1.2 CONSTRUCTION

- Install any traffic control elements;
- Construct roadway improvements including utilities, drainage, sidewalk, and pavement improvements.
- Construct the replacement and extension of the two 18" side by side culverts with installation of the turbidity curtain and water controls to occur prior to the start of construction.

3.1.3 PROJECT CLOSE-OUT

- Restore and stabilize the work area, including removing turbidity, erosion, and sedimentation control measures;
- Demobilize following construction; and
- Monitor the Site.

3.2 WORK WITHIN PROTECTED RESOURCE AREAS

The MassDOT Healthy Transportation Policy Directive requires all state transportation projects to increase bicycling, transit and walking options as a means to promote multimodal access for transportation. Given the location of Resource Areas and drainage features in proximity to the Site, the Project will result in unavoidable impacts to Areas Subject to Protection and Jurisdiction under the Act to meet this directive. However, the Project has been designed to minimize these impacts.

The Project will include the replacement and extension of two side by side 18" diameter CMP culverts that carry an existing stream to a vault in order to accommodate the widened roadway and to restore streamflow as the two existing culverts are in poor condition. This work will result in temporary impacts to the Banks and LUW of one (1) intermittent stream. Table 1 below summarizes proposed impacts to Resource Areas.

Table 1. Resource Area Impacts

Resource	Temporary Impact	Permanent Impact
Bank	271 LF	24 LF
LUW	317 SF	115 SF

Work within Resource Areas generally consists of installation of water controls and the proposed extension of the two side by side CMP culverts. The Project will avoid the use of heavy machinery within LUW and Bank to the extent practicable. Removal of the existing structure will be completed from the adjacent slope, upgradient from the Resource Areas.

3.2.1 INLAND BANK (310 CMR 10.54)

The Project will result in impacts to Bank of an unnamed intermittent stream totaling 295 linear feet (24 linear feet of permanent / 271 linear feet of temporary). Permanent impacts to the eastern and western Bank result from the culvert extensions on the north side of Chauncy Street. The existing L-shaped headwall will be replaced with a new linear headwall located 10 feet further north and parallel to Chauncy Street to accommodate the proposed widening. The proposed widening of Chauncy Street in this location is necessary to improve the operations at the Giles Place intersection. Due to the current configuration of the headwall, permanent impact to the eastern Bank (13 lf) will be greater than impact to the western Bank (11 lf).

Of the 271 lf of temporary Bank impact, 246 lf is associated with the replacement of the two 18" side by side CMP culverts from the existing headwall to a vault, with 122 lf associated with the western culvert and 124 lf associated with the eastern culvert. The remaining 25 lf of temporary impacts result from construction access to install the new headwall, grading following construction, and installation of water controls and erosion & sediment controls. Temporarily impacted Bank will be restored as described in Section 4.3 of this narrative.

3.2.2 LAND UNDER WATER BODIES AND WATERWAYS (310 CMR 10.56)

A total of 432 square feet (115 sf permanent / 317 sf temporary) of impact to Land Under Water (LUW) is proposed to construct the culvert extensions on the north side of Chauncy Street. Permanent impacts to LUW result from the culvert extensions and new headwall installation 10 feet north of the existing

headwall as necessary to allow for roadway improvements and pedestrian accommodations along Chauncy Street.

Of the 317 sf of temporary LUW impact, 185 sf is associated with the replacement of the two 18" side by side CMP culverts from the existing headwall to a vault, with 92 sf associated with the western culvert and 93 sf associated with the eastern culvert. The remaining 132 lf of temporary impacts result from construction staging and placement of water controls within the streambed to complete the culvert extensions. No heavy equipment is anticipated to be placed within the streambed; however, dewatering will likely be required as determined by the contractor. Following construction, all equipment will be removed from the stream, and temporarily impacted LUW will be restored as described in Section 4.3 of this narrative.

3.3 Work in Buffer Zone

Work proposed in buffer zone to Bank and BVW will primarily occur within the existing roadway footprint, sidewalk, and landscaped areas. Most of Chauncy Street from Route 140 to Giles Place is located with buffer zone. Specifically, work in the buffer zone includes roadway widening, changes to roadway geometry, and pavement resurfacing; construction of the shared use path and sidewalks; installation of traffic signals; installation of guardrails; construction of drainage features; tree removal, tree trimming, and landscaping; and installation of erosion controls.

Some work proposed within buffer zone is considered as a minor exempt activity under 310 CMR 10.02(2)(b)2, specifically:

- Near Stations 25 and 26, an existing paved island in the intersection of Chauncy Street with Route 140 is proposed to be landscaped and is minor exempt under 310 CMR 10.02(2)(b)2.f.[2] as erosion and sediment controls will be installed upgradient of BVW.
- Installation of all traffic signals proposed within buffer zone is minor exempt activity under 310 CMR 10.02(2)(b)2.o[3] as traffic signals are over 10 feet from a resource area, excess excavated soils will be removed, and disturbed soils will be stabilized.

Temporarily impacted buffer zone areas will be stabilized with loam and seed. The Project was designed to result in the least possible impacts to Wetland Resource Areas and buffer zones practicable, while still accomplishing the goals of roadway safety and pedestrian improvements.

4.0 Mitigation Measures

The Project was developed to avoid, minimize and mitigate impacts to Wetland Resource Areas, wildlife habitat, and other sensitive areas. Measures provided to mitigate temporary and unavoidable permanent impacts will allow the Project to comply with the General Performance Standards set forth in the Act and to contribute to their interests. Impacts to Areas Subject to Protection have been mitigated through restoration of temporarily impacted areas and stormwater management improvements.

[2] 310 CMR 10.02(2)(b)2.f. "The conversion of impervious to vegetated surfaces, provided erosion and sedimentation controls are implemented during construction"

[3] 310 CMR 10.02(2)(b)2.o. "Installation, repair, replacement or removal of signs, signals, sign and signal posts and associated supports, braces, anchors, and foundations along existing paved roadways and their shoulders, provided that work is conducted as far from resource areas as practicable, and is located a minimum of ten feet from a resource area, any excess soil is removed from the project location, and any disturbed soils are stabilized as appropriate"

Temporary impacts to Bank will be restored in-kind by grading to preconstruction elevation and seeding with a native seed mix. Following construction, temporary LUW impact areas will be restored in place using material removed from the streambed during construction.

4.1 Erosion and Sedimentation Controls

The attached Project Plans in Appendix E provide details and descriptions of the stormwater, erosion, and sedimentation protection measures. Erosion and sedimentation controls will be installed and maintained by the contractor where activities are proposed within 100-feet of Wetland Resource Areas. Where work is in the buffer zone, the proposed controls will provide a limit of work barrier while also preventing silt and sediment from migrating into or towards Wetland Resource Areas. Erosion and sediment controls will be selected by the contractor and may consist of compost-filled filter tubes, straw wattles, erosion control blankets, coir logs, turbidity curtains, and/or silt fencing where appropriate.

The erosion and sedimentation controls will be installed in accordance with the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas, March 1997. As per the standard, the contractor will be responsible for obtaining coverage under the NPDES Construction General Permit. A Stormwater Pollution Prevention Plan (SWPPP) will be submitted prior to any land disturbance. Per the SWPPP, the contractor will monitor and assess conditions and identify problems in the field during and after construction activities.

4.2 Water Controls and Dewatering

The replacement and extension of culverts will require the implementation and maintenance of temporary water controls within the intermittent stream so that the work can be completed in dry conditions. It is anticipated that the two culverts will be extended and replaced one at a time so that flow can be bypassed through one culvert while work occurs at the other. The water control method for the Project could include use of sandbags and a plastic liner with a flow bypass.

Dewatering of the work area will be completed to avoid an increase in turbidity over the baseline conditions. It is anticipated that the work area will be dewatered via pumping to a settling tank or dewatering system that filters the water prior to discharge back to the stream. The dewatering method and water controls will be contractor -designed and will be included in the prepared SWPPP which will be completed by the contractor prior to the start of work.

4.3 Mitigation

Temporarily impacted Bank will be restored to match existing grades and seeded with a riparian seed mix. Banks will be restored to pre-construction conditions through the re-establishment of existing grades/slopes, application of a native seed mixture, and use of addition measures such as coir logs and erosion control blankets as needed. Temporarily impacted LUW will be restored in place to preconstruction conditions using native material removed from the stream during construction.

4.4 Proposed Landscaping

The proposed landscaping elements depict the planting of species appropriate for the conditions along the Project Corridor. Proposed landscaping includes plantings within the roadway islands of the Chauncy Street and Route 140 intersection as shown on the Landscape Plan in Appendix F. The selected species include flowering shrubs and herbaceous vegetation, which will increase pollinator habitat along the Corridor. Temporarily disturbed areas along the Project corridor will be loam and seeded or mulched to match preconstruction conditions.

4.5 STORMWATER MANAGEMENT

The Stormwater Checklist and a Stormwater Report have been completed and submitted with this NOI, Appendix C. As described in the Stormwater Report, according to the Stormwater Management Standards (310 CMR 10.05(6)(k-q)), the Project constitutes a Redevelopment Project[4] because the work will substantially occur within an existing paved roadway. Widening the width of a single lane at Route 140 is proposed but qualifies as redevelopment, as it constitutes an improvement of substandard intersections.

Redevelopment projects are required to meet Standards 1 and 7 through 10 fully; and Standards 2 through 6 only to the maximum extent practicable. The Contractor will be responsible for developing a Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan. The proposed work will result in a net increase in impervious area by 16,535 sf, which will result in minor increases in the volume and rate of stormwater runoff. No changes will occur to the roadway corridor that would alter surface drainage patterns.

Existing stormwater runoff from the project corridor and surrounding areas is generally collected through a series of curbside catch basins into several closed drainage systems. Stormwater collected in these systems is conveyed to an unnamed intermittent stream and a closed drainage system that is conveyed beyond the Project survey limits.

The existing closed drainage systems will be modified to meet with the proposed design, which includes the installation of new deep sump catch basins and lateral drainage lines. Additional stormwater improvements include the installation of several offline leaching basins on the west side of Copeland Drive and retrofitting the existing grassed swale in the Route 140 median to the north of the Route 106 intersection to be a water quality swale. The proposed stormwater management system modifications will provide an improvement to the existing conditions, while primarily maintaining existing drainage patterns and discharge locations.

5.0 ALTERNATIVES ANALYSIS

Concept alternatives were developed for the corridor and intersection to address operational and safety deficiencies while reducing Resource Area impacts. The provision of bicycle accommodations along the corridor and improving traffic operations and safety along the corridor and at both intersections for turning vehicles were goals of the project. Due to Resource Area impacts being associated with improvements within the Project corridor, not at the intersections, this alternative analysis focuses on corridor improvement alternatives.

5.1 NO BUILD OPTION

The No-Build Option, which would effectively result in no action being taken by MassDOT, results in Chauncy Street remaining in the same condition as existing conditions. The Project corridor would continue to experience an increase in traffic volume, and traffic operations are expected to degrade when compared to existing conditions.

This alternative would avoid impacts to the intermittent stream; however, no stormwater, traffic or

[4] Per Chapter 1, Volume 1 of the MA Stormwater Standards Handbook, redevelopment projects are defined to include "Maintenance and improvement of existing roadways, including widening less than a single lane, [and] correcting substandard intersections".

accessibility improvements would be made.

5.2 CORRIDOR ALTERNATIVES

5.2.1 ALTERATIVE 2.1

This alternative would provide a single lane in each direction, with the proposed roadway essentially occupying the same width as the existing roadway. The roadway in both directions would include sidewalks and bicycle lanes/shoulders, but no left-turn lane accommodations would be made. Maintaining the existing roadway width would not require the replacement or extension of the two 18" side by side culverts, thereby avoiding any Resource Area impacts. This alterative would only partially meet the goals of the project as bicycle accommodations would be provided but traffic operations along the corridor would not be sufficiently improved without left-turn lane accommodations.

5.2.2 ALTERATIVE 2.2

This alternative would provide a single lane in each direction with the addition of a two-way left turn lane and would include sidewalks and bicycle lanes/shoulders in both directions. The Town of Mansfield indicated a strong preference for this alternative to accommodate left turns into the closely spaced abutting businesses along Chauncy Street between Route 140 and Copeland Drive. To make room for these improvements within the project corridor, greater Resource Area impacts would be required at the proposed culvert extensions, as the work area would have extended farther north. Significant land takings of abutting properties and businesses would also be required to add two-way left turn lanes, widen the roadway shoulders to accommodate bicycles, and provide pedestrian accommodations. Although this alterative would meet the goals of the Project, extensive Resource Area impacts would be required and the acquisition of private property would be costly.

5.2.3 ALTERATIVE 2.3 – THE PREFERRED ALTERNATIVE

To avoid the private property takings and large resource area impacts described above, a modified version of Alternative 2.2 was evaluated. This alternative proposes a typical 5-foot sidewalk on the north side of Chauncy Street and an 8-foot bi-directional path (shared use path) on the south side to accommodate bicyclists and pedestrians. Installation of a shared use path on the south side of Chauncy Street also allows for the inclusion of a two-way left turn lane to improve traffic operations.

While extension of the culverts would still be required by this alternative; the length of extension and associated Resource Area impacts would be less than required under Alternative 2.2. The goals of the project to provide pedestrian accommodations on both sides of the road, bicycle accommodations, and a two-way left turn lane to improve traffic operations are also met by this alternative. Accordingly, this alternative was selected.

5.3 CULVERT TYPE ALTERNATIVES

In order to meet the purpose of the Project and accommodate Alternative 2.3 (described above), the two side by side culverts carrying the *B1/B2 Series* intermittent stream needs to be extended to the north, and ± 62lf of 18" side by side CMP culverts will be replaced from the existing headwall to a vault to restore streamflow. The feasibility of upgrading this culvert to meet the Massachusetts Stream Crossing Standards was reviewed as described below.

5.3.1 Alternative 3.1

This alternative proposes replacement and extension of the two culverts that meets the Massachusetts Stream Crossing Standards which would require a minimum 10.8-foot span culvert with a natural substrate and expanded openness ratio. However, improving only the two 18" side by side culverts up to the vault via culvert replacement (±62 lf) and culvert extension (10 lf) upstream of a 304 lf single 30" culvert would provide limited benefit to the ecology and hydraulics of the system.

To improve the ecological conditions within this stream segment, replacement of the entire culvert from the headwall to the discharge point (a total culvert length of 366 lf) to better meet the Stream Crossing Standards would be necessary. This would include replacement of the two 18" side by side culverts up to the vault and replacement of the single 30" culvert from the vault to the discharge point. Considering the 10 lf extension to the culvert required to accommodate roadway widening (a total culvert length of 376 lf), a culvert structure wider than 30 feet and taller than 10 ft would be necessary to meet the openness ratio requirements. This would be more costly, require extensive work on private property outside the scope of this Project, and likely require daylighting a portion of the stream which is within privately owned parking lots that serve adjacent businesses.

5.3.2 Alternative 3.2 – The Preferred Alternative

This alternative proposes the extension and replacement of the two 18" side by side culverts that is consistent with the existing culverts in this location, including a new headwall with two 18" diameter side by side pipes that do not meet the Stream Crossing Standards. This culvert will maintain the hydraulics of the existing system through the addition of 10 lf of pipe onto the upstream end of the existing 366-foot-long culvert. This alternative was selected due to its lower cost, and consistency with the existing hydraulics.

6.0 Regulatory Compliance

The Project will involve work within Bank, Land Under Water, and the 100-foot buffer zone and has been designed to support the interest of the Act. The Project is also being filed under the Limited Project provisions at 310 CMR 10.53(3)(f) and 10.53(8); however, it has been designed to meet all Performance Standards to the extent practicable and feasible.

6.1 Stream Crossing Standards Compliance

The Project requires the extension of one stream crossing to accommodate the proposed widening necessary to improve the Chauncy Street/Giles Street intersection. The table below describes whether the crossing meets the Massachusetts Stream Crossing Standards. The Stream Crossing Standards cannot be met, and replacement of the existing culverts to comply is not practicable or feasible (see Section 5.3). The length of the existing culverts extends beyond the Project limits as shown in the culvert as-built plans included in Appendix D.

Stream Information and Standards	Existing (B1/B2)	Proposed (B1/B2)
Location	Sta. 29 + 75	Sta. 29 + 75
Stream Type	Intermittent Stream	Intermittent Stream
New or Replacement Crossing	N/A	Extension and Partial Replacement

Standard 1 **Crossing Type**	**Two 18" corrugated metal pipes**	**Two 18" ductile iron pipes**
Standard 2 **Embedment > 2 feet**	Embedment of the existing culverts is unknown, and assumed to be less than 25%[5] - **Not Met**	Culverts to meet existing culverts, which is presumed not to be sufficiently embedded - **Not Met**
Standard 3 **Crossing Span >1.2*BFW**	BFW = 9' 1.2* 9' = 10.8' Span = 1.5' **Not Met**	BFW = 9' 1.2* 9' = 10.8' Span = 1.5' (matches existing) **Not Met**
Standard 4 **Openness Ratio >0.82 feet**	$= \frac{2 * (\frac{pi * 1.5'^2}{4})}{366'}$ = 0.0097 feet **Not Met**	$= \frac{2 * (\frac{pi * 1.5'^2}{4})}{376'}$ = 0.0094 feet **Not Met**
Standard 5 **Substrate Type**	Substrate will match the existing substrate upstream of the existing culvert.	
Standard 6 **Water Depth and Velocity**	The culverts will be installed so the finished grade within the culverts will be at the existing streambed elevation, resulting in no change to the water depth or velocity	

As documented in the table above, the proposed extension and replacement of the two side by side culverts will not substantially change any of the stream crossing characteristics from existing conditions.

6.2 MASSACHUSETTS WETLANDS PROTECTION ACT REGULATIONS-310 CMR 10.00

The Project has been designed to comply with General Performance Standards for Bank and LUW to the maximum extent practicable. The portions of the Project that qualify as a Limited Project under the provisions at 310 CMR 10.53(3)(f) and 10.53(8) include maintenance and improvement of existing public roadways, constructing or improving inadequate sidewalks to meet ADA standards, replacing/extending the culverts, improving substandard intersections, and improving drainage infrastructure.

6.2.1 INLAND BANK - PERFORMANCE STANDARDS - 310 CMR 10.54 (4)

Work impacting inland Bank will meet the performance standards at 310 CMR 10.54(4) to the maximum extent practicable, as work will not affect the stability of the bank, impair the water carrying capacity of the intermittent stream, impair ground or surface water quality, or impair the capacity of the bank to provide breeding habitat or important wildlife habitat functions. In accordance with 310 CMR 10.54(4)(a)6., impacts on Bank caused by the installation of a stream crossing are exempt from the requirement to perform a habitat evaluation in accordance with 310 CMR 10.60.

[5] *The Massachusetts Stream Crossing Standards: Second Edition* dated June 2012, Page 7, Standard 2 Embedment "All culverts should be embedded (sunk into stream) a minimum of 2 feet, and round pipe culverts at least 25%."

Although the extension of the two side by side 18" culverts does not meet the Massachusetts Stream Crossing Standards, the extension is required to accommodate the roadway widening necessary to improve the Chauncy Street and Giles Place intersection. There are no economically equivalent alternatives that would provide improved compliance with the standards.

6.2.2 Land Under Water - Performance Standards - 310 CMR 10.56 (4)

Work within LUW will meet the performance standards at 310 CMR 10.56(4)(a) as work will not impair the water carrying capacity within the unnamed intermittent stream, impair ground or surface water quality, or permanently exceed thresholds for wildlife habitat impairment. Dewatering within LUW may be required depending on site conditions due to the intermittent nature of the stream. This work will be completed in a manner to avoid direct impacts to water quality.

In accordance with 310 CMR 10.56(4)(a)5., impacts on LUW caused by the installation of a stream crossing are exempt from the requirement to perform a habitat evaluation in accordance with 310 CMR 10.60.

7.0 Summary

The proposed improvements to Chauncy Street will improve traffic and safety for all users along Chauncy Street within the Project limits, including the intersections at Giles Place, Copeland Drive and Route 140. The Project will result in improved traffic flow along Chauncy Street and provide bicycle and pedestrian amenities and infrastructure that meets current ADA Standards. The Project has been designed to meet applicable state Standards where feasible, has incorporated stormwater management improvements, and has minimized Wetland Resource Area impacts to the greatest extent practical and feasible, while still meeting the overall Project purpose.

The Massachusetts Department of Transportation respectfully requests that the Mansfield Conservation Commission finds these measures adequately protective of the interests of the Act in the Order of Conditions approving the work as described in the Notice of Intent and accompanying plans.

FIGURES

IMPROVING COMMUNITIES TOGETHER

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0 1,000 2,000 Feet

1 inch = 1,000 feet

Figure 1
Site Locus
Chauncy Street (Route 6)
Mansfield, MA

Data Source: MassGIS USGS Topographic Quadrangle Images (2001)

Proposal No. 613052-131228

Figure 2
Environmental Resources Figure
Chauncy Street (Route 106)
Improvements Phase 1
Mansfield, MA

Environmental Resources Legend

- MassDEP Hydrologic Feature
- Marsh/Bog
- Wooded marsh
- Open Water

Wildlife Habitat Legend

- NHESP Certified Vernal Pool
- NHESP Potential Vernal Pool
- NHESP Priority Habitat of Rare Species
- NHESP Estimated Habitats of Rare Wildlife
- Area of Critical Environmental Concern (ACEC)
- MA DFW Coldwater Fisheries Resources

Drinking Water Protection Areas

- Zone A
- Zone B
- ZONE C
- MassDEP IWPA
- MassDEP Zone I
- MassDEP Zone II
- Outstanding Resource Water

N
W E
S

0 150 300 Feet

1 inch = 150 feet

Data Source: MassGIS USGS Color Ortho Imagery (2014), MassDEP Wetlands (1:12000) (2009), NHESP Potential Vernal Pools (2000), NHESP Certified Vernal Pools, NHESP Priority Habitats of Rare Species (2008), NHESP Estimated Habitats of Rare Species (2008), Areas of Critical Environmental Concern (2009), FEMA National Flood Hazard Layer (2014),

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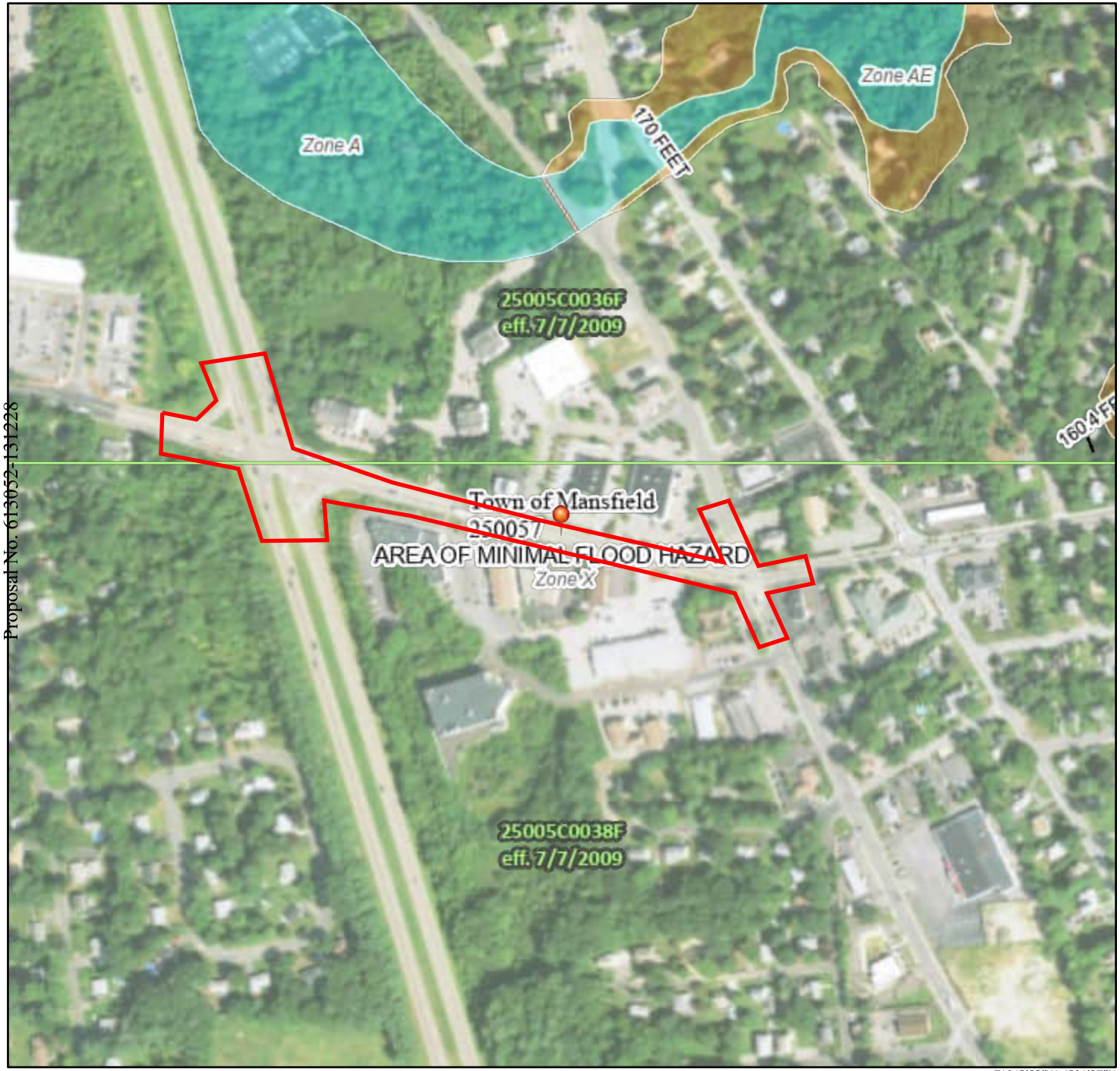
A00860 - 40

National Flood Hazard Layer FIRMette

FEMA

71°14'10"W 42°2'4"N



Proposal No. 613052-131228

71°13'33"W 42°1'37"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

A00860 - 41

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/21/2023 at 9:09 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX A –Wetland Delineation Report

Resource Area Boundary Delineation
Chauncy Street (Route 106)
From Route 140 to Copeland Drive
Mansfield, Massachusetts

January 16, 2024

BETA Group, Inc. (BETA) Wetland Scientists conducted Wetland Resource Area delineations along Chauncy Street (Route 106), the Chauncy Street and Commercial Street (Route 140) intersection, and the Chauncy Street and Copeland Drive intersection in Mansfield, Massachusetts (the Site) on July 25, 2023. This report describes Resource Areas Subject to Protection under the Massachusetts Wetlands Protection Act (M.G.L. Chapter 131 Section 40 – the Act), the Town of Mansfield Wetland Protection Bylaw (Chapter 15 – the "Bylaw"), the federal Clean Water Act (33 U.S.C. §1251 et seq (1972)), and the Massachusetts Clean Waters Act (MGL Chapter 21 Section 26-53) that exist on or within 100 feet of the Site as well as the methodologies used to delineate their boundaries.

Site Description

The Site consists of an approximately 1,800-foot section of Chauncy Street, an 800-foot section along Commercial Street, and a 400-foot section along Copeland Drive in Mansfield, Massachusetts (Figure 1 – Site Locus). Land use north, east, and south of the Site is primarily commercial, with small, forested areas located primarily around the Chauncy Street and Commercial Street intersection and interspersed wetlands and waterways (Figure 2 – Environmental Resources). Residential parcels and Stop and Shop are located west of the Site. Existing improvements include paved roadways, roadway shoulders, and an existing sidewalk along the north side of Chauncy Street.

According to the USDA Natural Resources Conservation Service – Soil Survey, mapped soils on and within proximity to the Site are generally classified as Scarboro mucky fine sandy loam, Swansea muck, Freetown muck, Hinckley loamy sand, and Udorthents, refuse substratum (dumps and landfills). Field observations generally confirmed the soil types at the Site. The *Soil Map of Bristol County, Massachusetts, Northern Part* is attached.

State jurisdictional Resource Areas identified within 100 feet of the Site include Bank (to an unnamed intermittent stream), Bordering Vegetated Wetlands (BVW), and Land Under Water (LUW). The MassGIS database was used as the initial step in identifying critical areas on or within proximity to the Site that would be examined more closely if construction activities are proposed. The table below describes selected environmentally critical categories as determined through MassGIS.

Table 1: Selected MassGIS Environmental Data Layers

Mapped Resource On or Within Proximity to Site	Yes	No
Area of Critical Environmental Concern		✓
NHESP Certified Vernal Pool		✓
NHESP Potential Vernal Pool		✓
NHESP Established Habitat of Rare Wildlife		✓
NHESP Priority Habitat of Rare Species		✓
Outstanding Resource Waters		✓
FEMA Flood Zones		✓
Surface Water Protection Area (Zones A and B)		✓
Interim Wellhead Protection Area		✓
Zone I Wellhead Protection Area		✓

BETA Group, Inc.
89 Shrewsbury Street, Suite 300 Worcester, MA 01604
P: 508.756.1600 | W: www.BETA-Inc.com

Mapped Resource On or Within Proximity to Site	Yes	No
Zone II Wellhead Protection Area		✓
Wild and Scenic River		✓
Coldwater Fisheries Resource		✓

Source: MassGIS

Jurisdictional Wetland Resource Areas – Massachusetts Wetlands Protection Act

A Site visit was conducted by BETA's Wetland Scientists on July 25, 2023, to identify and delineate the boundaries of Wetland Resource Areas at and in the immediate vicinity of the Site. Resource Area boundaries were identified and delineated in accordance with methods developed by the Massachusetts Department of Environmental Protection's *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act: Second Edition*, dated 2022, as well as definitions set forth in the Wetland Regulations, 310 CMR 10.00. Several areas subject to Protection under the Act exist along the Site and are described below.

Inland Bank (to intermittent stream) – 310 CMR 10.54

According to 310 CMR 10.54(2), the definition of a Bank is the portion of the land surface which normally abuts and confines a water body, occurring between a water body and a vegetated bordering wetland and adjacent floodplain, or, in the absence of these, it occurs between a water body and an upland. The upper boundary of a Bank is the first observable break in the slope or the mean annual flood level, whichever is lower.

BETA identified the resource Bank to one (1) unnamed intermittent stream within and near the Site. Banks were delineated in the field with blue flagging or otherwise identified as described in Table 2.

Table 2: Bank Boundary Description

Flag Series	Location	Description / Notes
B1 / B2 Series Flags B1-100 to 102; B2-200 to 203 *B3 Series Flags B3-300 to 301*	Unnamed intermittent stream, west of 273 Chauncy Street.	The eastern (*B1 Series)* and southern/western (*B2/B3 Series*) Banks of an unnamed intermittent stream were delineated in two segments along the first observable break in slope (consistent with the mean annual flood level), where flow is generally conveyed southerly toward Chauncy Street. This stream channel at this location was generally 2 to 4 feet wide with a mucky substrate, and the water depth observed during the Site visit was approximately 6 to 12 inches. This stream is not mapped on USGS topographic maps or the StreamStats program; therefore, it is presumed to be intermittent. Segment 1: Flags *B1-100 to B1-102* and *B2-200 to B2-203* delineate the Bank of this intermittent stream immediately north of Chauncy Street, west of 273 Chauncy Street. The stream is conveyed under Chauncy Street through 2 separate 18-inch pipes for approximately 370 feet, discharging south of 292 Chauncy Street. Banks consisted of well-defined fill slopes vegetated by silky dogwood (*Cornus amomum*), purple loosestrife (*Lythrum salicaria*), and Japanese knotweed (*Falloipia japonica*). Segment 2: Flags *B3-300 and B3-301* delineate the Bank east of the driveway to the Copland Crossing Condominiums, upstream of the *B1/B2 Series* flagging. The stream is conveyed under the driveway from the *WF2 Series* BVW through a three-sided box culvert of an undetermined size. The flow continues easterly within *WF1 Series* BVW until directed southerly to the *B1/B2 Series*. This Bank consists of a well-defined rock-armored fill

Flag Series	Location	Description / Notes
		slope sparsely vegetated by Japanese knotweed.
Not flagged	Unnamed intermittent stream, interior to the *WF5 Series*	An intermittent stream flowing easterly until its confluence with Robinson Brook was observed interior to the *WF5 Series* BVW. The stream is conveyed under the Commercial Street roadway through two large concrete culverts at the northern end of the BVW between flags *WF5-509* and *WF5-510.* Upon discharge from the culverts, the two stream channels merge into one 3- to 4-foot-wide channel with a mucky substrate, where the water depth was approximately 4 to 6 inches during the Site visit. This stream is not depicted on USGS topographic maps but is mapped on the USGS StreamStats program. The StreamStats report demonstrates that the associated drainage area does meet the definition of perennial under 310 CMR 10.58(2); therefore, the stream is intermittent. Bank of this intermittent stream was not flagged in the field, as it is interior to the WF5 Series BVW, and no work is occurring within the vicinity of the stream.

Bordering Vegetated Wetlands – 310 CMR 10.55

According to 310 CMR 10.55(2), the definition of BVW is freshwater wetlands which border on creeks, rivers, streams, ponds and lakes and are areas where the soils are saturated and/or inundated such that they support a predominance of wetland indicator plants. The boundary of BVW is the line within which 50% or more of the vegetation community consists of wetland indicator plants and saturated or inundated conditions exist.

BETA identified five (5) areas of BVW within or adjacent to the Site. US Army Corps of Engineers' *Vegetated Wetland Boundary Delineation Field Data Sheets* documenting BETA's observed evidence of hydrology, soils, and hydrophytic vegetation at specific data plots are attached. BVW was delineated in the field with pink flagging as described in Table 3.

Table 3: BVW Boundary Description

Flag Series	Location	Description / Notes
WF1 Series Flags WF1-100 to 107	North side of Chauncy Street, near 273 Chauncy Street	The *WF1 Series* BVW is a forested wetland bordering the *B1/B2/B3 Series* intermittent stream north of Chauncy Street. The attached U.S. Army Corps of Engineers Field Data Sheets describes observations of hydrophytic vegetation, hydric soils, and hydrology at a specific data plot.
WF2 Series Flags WF2-200 to 209	North side of Chauncy Street, near 287 Chauncy Street	The *WF2 Series* BVW is a forested wetland bordering an intermittent stream north of Chauncy Street. Dominant hydrophytic vegetation observed includes skunk cabbage (*Symplocarpus foetidus*), cinnamon fern (*Osmunda cinnamomea*), arrowwood viburnum (*Viburnum dentatum*), and red maple (*Acer rubrum*). Invasive species, including Japanese knotweed and oriental bittersweet (*Celastrus orbiculatus*), were also observed. Evidence of hydrology observed in the field includes saturation and drift deposits. A formal data plot was not conducted at this location.
WF3 Series Flags WF3-300 to 315	South of Chauncy Street, east of Commercial Street	The *WF3 Series* BVW is scrub shrub wetland east of Commercial Street that borders on the *B1/B2 Series* intermittent stream, where it outlets south of Chauncy Street and a commercial paved parking area. Two stormwater outlets with rip-rap aprons are located at the northern boundary of the *WF3 Series*. The attached U.S. Army Corps of Engineers Field Data Sheets describe observations of hydrophytic vegetation, hydric soils, and hydrology at a specific data plot.

Flag Series	Location	Description / Notes
WF4 Series Flags WF4-400 to 402	West of Giles Place	The *WF4 Series* BVW is the eastern extent of the *WF1* and *WF2 Series* BVW, and bordering on the same intermittent stream, situated at the toe of slope between Giles Place and the parking lot at 273 Chauncy Street. Dominant hydrophytic vegetation observed includes red maple, swamp loosestrife (*Decodon verticillatus),* broad-leaved cattail (*Typha latifloia*), silky dogwood, and sensitive fern (*Onoclea sensibilis*). Evidence of hydrology observed in the field includes geomorphic position and standing water to a depth of approximately 2 inches at the time of the Site visit. A formal data plot was not conducted at this location.
WF5 Series Flags WF5 -500 to 514	East side of Commercial Street	The *WF5 Series* BVW is a forested wetland situated along the east side of Commercial Street bordering on an unnamed interior intermittent stream that flows easterly until its confluence with Robinson Brook. A portion of this BVW is located beyond the existing fence line and was inaccessible; therefore, flags *WF5-500* to *WF5-502* were hung on the fence line. Dominant hydrophytic vegetation observed includes highbush blueberry (*Vaccinium corymbosum*), red maple, steeplebush *(Spiraea tomentosa*), and cattail. Evidence of hydrology observed in the field includes water-stained leaves, aquatic fauna, and surface water to a depth of 2 to 3 inches at the time of the site visit. A formal data plot was not conducted at this location.

Jurisdictional Wetland Resource Areas – Town of Mansfield

The Massachusetts Department of Transportation (MassDOT) is not subject to local bylaws and ordinances; however, the applicability of the following Bylaw (and associated Regulations) definitions that differ from those found in the Act is provided for completeness:

Bank (upper boundary)

The Bylaw and Regulations define Bank as "the first observable break in the slope or the mean annual flood level, *whichever is higher*" (italics added for emphasis). The B1, B2, and B3 Series Bank boundaries to the unnamed intermittent stream were delineated at the first observable break in slope, which was coincident with the mean annual flood level. Bank delineations comply with the Bylaw definition of Bank.

Buffer Zones

The Bylaw and Regulations protect a 25-foot undisturbed buffer zone (No Disturb Zone) around all Wetland Resource Areas protected under the Bylaw where no alteration is permitted. All Resource Areas identified in this report have a local associated 25-foot No Disturb Zone.

Isolated Areas

Under the Bylaw and Regulations, an isolated wetland area larger than 5,000 sf and/ or any area defined as Isolated Land Subject to Flooding (ILSF) under the WPA is protected. Areas that meet the definition of an isolated wetland or ISLF under the Act or the Bylaw were not observed within 100 feet of the Site.

Vernal Pools

The Bylaw and Regulations protect any vernal pools certified by the State and a 100-foot undisturbed Buffer Zone from the vernal pool boundary. No NHESP mapped certified or

potential vernal pools are mapped along the Site. Additionally, no areas were observed along the Site that would meet the criteria of a vernal pool as defined in the WPA.

Jurisdictional Wetland Resource Areas – Federal Clean Water Act (Section 404)

The wetlands and streams located along the Site are "Waters of the United States," and are therefore subject to the federal Clean Water Act, 33 U.S.C. §1251 et seq (1972). The boundary to "Waters of the United States" is the Vegetated Wetlands boundary, or, in the absence of Vegetated Wetlands, is the Ordinary High-Water Mark (OHWM) for non-tidal rivers and streams, as specified at 33 CFR §328.4.

According to 33 CFR §328.3(c)(4), Vegetated Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

The wetland boundaries previously described in this report (Table 3) were delineated in accordance with this definition. The US Army Corps of Engineers' *Vegetated Wetland Boundary Delineation Field Data Sheets* are attached documenting BETA's observed evidence of hydrology, soils, and hydrophytic vegetation at specific data plots.

Work conducted below the boundary of Vegetated Wetlands or the OHWM is Subject to Jurisdiction under Section 404 of the Clean Water Act. Where present, Vegetated Wetland boundaries (Table 3) are the extent of federal Jurisdiction. Where streams are present and upgradient Vegetated Wetlands are absent, the OHWM (coincident with the delineated Bank) is the extent of federal Jurisdiction.

Jurisdictional Wetland Resource Areas – Massachusetts Clean Waters Act (Section 401)

The limit of jurisdiction under Massachusetts Clean Waters Act (Section 401), as specified in 314 CMR 9.00, is the limit of Section 404 jurisdiction under the federal Clean Water Act. Exceedances of the jurisdictional threshold under 314 CMR 9.00 require filing for a Water Quality Certification under Section 401.

Findings and Recommendations

BETA has identified areas Subject to Protection and/or Jurisdiction under the Massachusetts Wetlands Protection Act, the Mansfield Wetland Protection Bylaw, the federal Clean Water Act, and the Massachusetts Clean Waters Act located on or within 100 feet of the Site and has delineated the boundaries of Bank and BVW that exist along the Site. In order to definitively determine the extent of Conservation Commission jurisdiction, Army Corps jurisdiction, and MassDEP jurisdiction, the boundary flags would need to be located and depicted on a to-scale plan of the Site.

Attachments: Figure 1 – Site Locus
Figure 2 – Environmental Resources
Figure 3 – FEMA FIRMette
Delineation Sketch
Photographic Documentation
US Army Corps of Engineers' *Vegetated Wetland Boundary Delineation Field Data Sheets*
Custom Soil Report for Bristol County, Massachusetts, Northern Part
StreamStats Report

Job No: 23.10326.21

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1 inch = 1,000 feet

Figure 1
Site Locus
Chauncy Street (Route 6)
Mansfield, MA

Data Source: MassGIS USGS Topographic Quadrangle Images (2001)

Proposal No. 613052-131228

Figure 2
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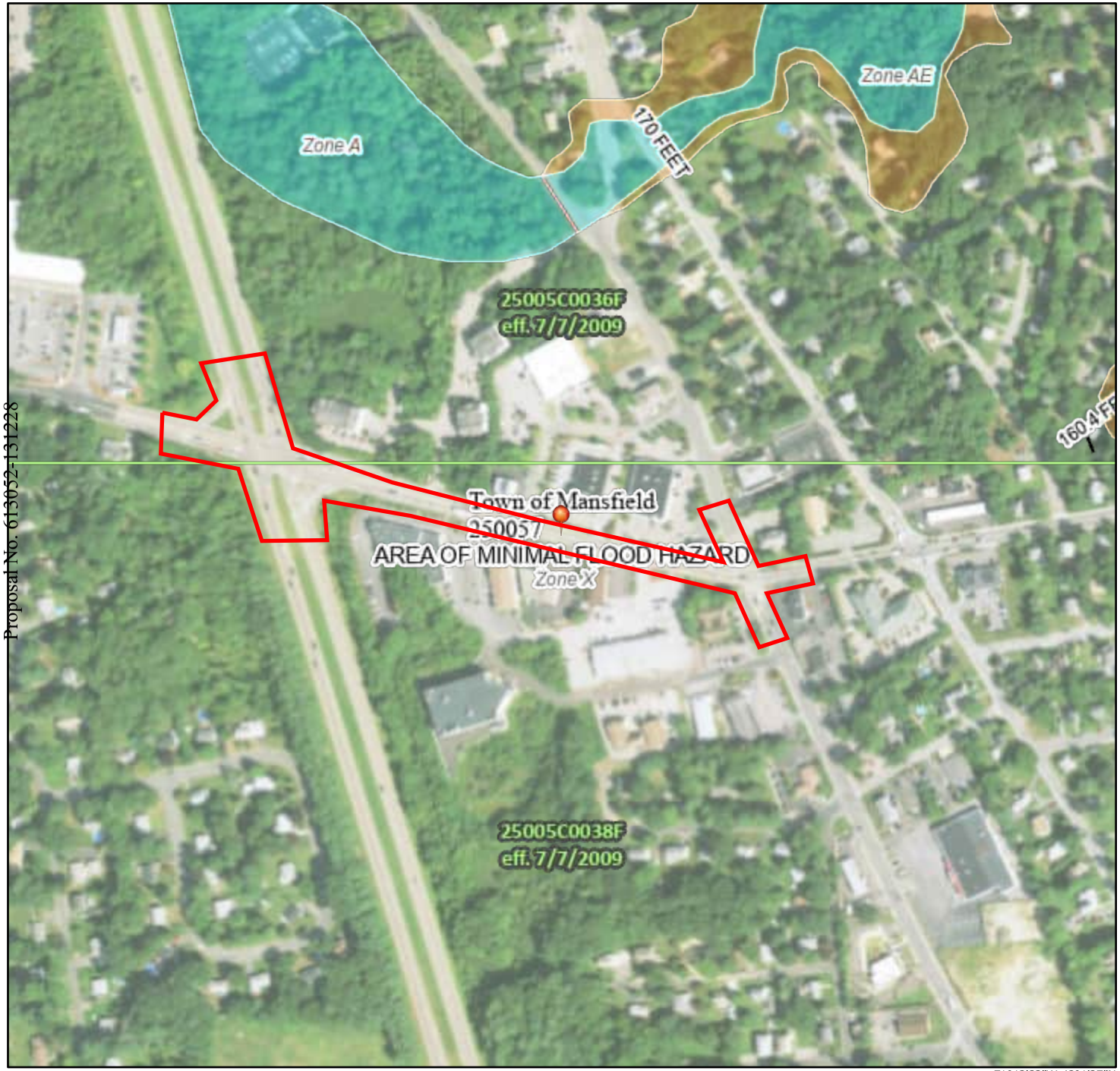
A00860 - 49

National Flood Hazard Layer FIRMette

FEMA

71°14'10"W 42°2'4"N



Proposal No. 613052-131228

71°13'33"W 42°1'37"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

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- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

A00860 - 50

MAP PANELS
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- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/21/2023 at 9:09 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Photo 1

View of the B1/B2 Series Banks to the unnamed intermittent stream at the headwall—facing northeast.

Photo 2

View of the B1/ B2 Series intermittent stream interior of the WF1 Series BVW—facing south.

PHOTOGRAPHIC DOCUMENTATION

Chauncy Street (Route 106)

Mansfield, Massachusetts

Photographs Documented July 25,2023

Photo 3

View of the WF 1 Series BVW—facing northeast.

Photo 4

View of the unnamed intermittent stream interior of the WF1 Series BVW where it is conveyed under the Copeland Crossing Condominium driveway—facing south.

PHOTOGRAPHIC DOCUMENTATION

Chauncy Street (Route 106)

Mansfield, Massachusetts

Photographs Documented July 25,2023

Photo 5

View of the WF2 Series BVW—facing south.

Photo 6

View of the WF3 Series BVW—facing south.

PHOTOGRAPHIC DOCUMENTATION

Chauncy Street (Route 106)

Mansfield, Massachusetts

Photographs Documented July 25,2023

Photo 7

View of the WF4 Series BVW—facing northwest.

Photo 8

View of the WF5 Series BVW—facing east

PHOTOGRAPHIC DOCUMENTATION

Chauncy Street (Route 106)

Mansfield, Massachusetts

Photographs Documented July 25,2023

Photo 9

View of the intermittent stream interior to the WF5 Series BVW—facing north.

PHOTOGRAPHIC DOCUMENTATION
Chauncy Street (Route 106)
Mansfield, Massachusetts
Photographs Documented July 25,2023

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Chauncy Street (Route 106) City/County: Mansfield Sampling Date: 7/25/2023

Applicant/Owner: MassDOT Highway Division State: MA Sampling Point: WF1-101-UP

Investigator(s): BETA Group Inc. Section, Township, Range: Bristol County

Landform (hillside, terrace, etc.): gradual slope Local relief (concave, convex, none): convex Slope (%): 0-5

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 42.03112 Long: -71.23184 Datum: WGS84

Soil Map Unit Name: Hinckley loamy sand, 3 to 8 percent slope NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: WF1-101-UP

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana*	60	Yes	FACW
2. *Quercus rubra*	20	Yes	FACU
3. *Acer rubrum*	20	Yes	FAC
4.			
5.			
6.			
7.			
	100	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Rhamnus cathartica*	40	Yes	FAC
2. *Elaeagnus umbellata*	40	Yes	UPL
3. *Acer rubrum*	20	Yes	FAC
4.			
5.			
6.			
7.			
	100	=Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Toxicodendron radicans*	60	Yes	FAC
2. *Lonicera japonica*	30	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90	=Total Cover	
Woody Vine Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 62.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	140	x 3 =	420
FACU species	50	x 4 =	200
UPL species	40	x 5 =	200
Column Totals:	290 (A)		940 (B)

Prevalence Index = B/A = 3.24

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WF1-101-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 4/3	100						Loamy Sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Soil structure would not hold in auger beyond 14" after multiple plots.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Chauncy Street (Route 106) City/County: Mansfield Sampling Date: 7/25/2023

Applicant/Owner: MassDOT Highway Division State: MA Sampling Point: WF1-101-WET

Investigator(s): BETA Group Inc. Section, Township, Range: Bristol County

Landform (hillside, terrace, etc.): Toe of slope Local relief (concave, convex, none): concave Slope (%): 5-10

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 42.03112 Long: -71.23184 Datum: WGS84

Soil Map Unit Name: Hinckley loamy sand, 3 to 8 percent slope NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**	
Hydric Soil Present?	Yes X	No ____	**within a Wetland?**	**Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID:	WF 1 Series

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches):	____
Water Table Present?	Yes X	No ____	Depth (inches):	4
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches):	____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: WF1-101-WET

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana*	20	Yes	FACW
2. *Acer rubrum*	80	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	100	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Cornus amomum*	10	Yes	FACW
2. *Rhamnus cathartica*	40	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	50	=Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Symplocarpus foetidus*	20	Yes	OBL
2. *Onoclea sensibilis*	20	Yes	FACW
3. *Impatiens capensis*	20	Yes	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60	=Total Cover	
Woody Vine Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	70	x 2 =	140
FAC species	120	x 3 =	360
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	210 (A)		520 (B)

Prevalence Index = B/A = 2.48

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WF1-101-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/1	100						loamy sand
10-22	10YR 3/1	80	2.5Y 5/3	20	D	M		loamy sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- X Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Chauncy Street (Route 106) City/County: Mansfield Sampling Date: 7/25/2023

Applicant/Owner: MassDOT Highway Division State: MA Sampling Point: WF3-300-UP

Investigator(s): BETA Group Inc. Section, Township, Range: Bristol County

Landform (hillside, terrace, etc.): Roadside slope Local relief (concave, convex, none): Convex Slope (%): 5-10

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 42.03076 Long: -71.23313 Datum: WGS84

Soil Map Unit Name: Hinckley loamy sand, 3 to 9 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: WF3-300-UP

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus strobus*	30	Yes	FACU
2. *Quercus rubra*	60	Yes	FACU
3. *Acer rubrum*	10	No	FAC
4.			
5.			
6.			
7.			
	100	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Rhamnus cathartica*	20	Yes	FAC
2. *Quercus rubra*	40	Yes	FACU
3. *Pinus strobus*	20	Yes	FACU
4.			
5.			
6.			
7.			
	80	=Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Toxicodendron radicans*	20	Yes	FAC
2. *Comptonia peregrina*	20	Yes	UPL
3. *Fragaria virginiana*	30	Yes	FACU
4. *Maianthemum canadense*	10	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80	=Total Cover	
Woody Vine Stratum (Plot size: 15' radius)			
1. *Smilax rotundifolia*	20	Yes	FAC
2.			
3.			
4.			
	20	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	70	x 3 =	210
FACU species	190	x 4 =	760
UPL species	20	x 5 =	100
Column Totals:	280 (A)		1070 (B)

Prevalence Index = B/A = 3.82

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WF3-300-UP

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/3	100						Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

Soil structure wouldnt hold in auger beyond 12" after multiple plots.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Chauncy Street (Route 106) City/County: Mansfield Sampling Date: 7/25/2023

Applicant/Owner: MassDOT Highway Division State: MA Sampling Point: WF3-300-WET

Investigator(s): BETA Group Inc. Section, Township, Range: Bristol County

Landform (hillside, terrace, etc.): toe of slope Local relief (concave, convex, none): concave Slope (%): 5-10

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 42.03076 Long: -71.23313 Datum: WGS84

Soil Map Unit Name: Hinckley loamy sand, 3 to 9 percent slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**	
Hydric Soil Present?	Yes X	No ____	**within a Wetland?**	**Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID:	WF 3 Series

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): Surface

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: WF3-300-WET

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus strobus*	20	Yes	FACU
2. *Acer rubrum*	80	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	100	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Rosa multiflora*	20	Yes	FACU
2. *Viburnum dentatum*	10	No	FAC
3. *Acer rubrum*	30	Yes	FAC
4. *Fraxinus americana*	10	No	FACU
5.			
6.			
7.			
	70	=Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Juncus effusus*	20	Yes	OBL
2. *Solidago rugosa*	10	No	FAC
3. *Toxicodendron radicans*	60	Yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90	=Total Cover	
Woody Vine Stratum (Plot size: 15' radius)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	0	x 2 =	0
FAC species	190	x 3 =	570
FACU species	50	x 4 =	200
UPL species	0	x 5 =	0
Column Totals:	260 (A)		790 (B)

Prevalence Index = B/A = 3.04

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WF3-300-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/1	100						Organic
1-12	10YR 3/2	65	2.5Y 4/2	20		M		Loamy Sand
			7.5YR 4/6	15	C	PL		
12-16	10YR 3/1	85	7.5YR 4/6	15	C	PL		Loamy Sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
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- ___ Stratified Layers (A5)
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- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
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- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: refusal

Depth (inches): 16

Hydric Soil Present? **Yes** X **No** ___

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to reflect the NRCS Field Indicators of Hydric Soils version 7.0 March 2013 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Bristol County, Massachusetts, Northern Part

January 8, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....8
Soil Map.....9
Legend.....10
Map Unit Legend.....11
Map Unit Descriptions.....11
Bristol County, Massachusetts, Northern Part.....13
43A—Scarboro mucky fine sandy loam, 0 to 3 percent slopes.....13
51A—Swansea muck, 0 to 1 percent slopes.....14
52A—Freetown muck, 0 to 1 percent slopes.....16
245B—Hinckley loamy sand, 3 to 8 percent slopes.....17
652—Udorthents, refuse substratum (Dumps/Landfill).....19
References.....20

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

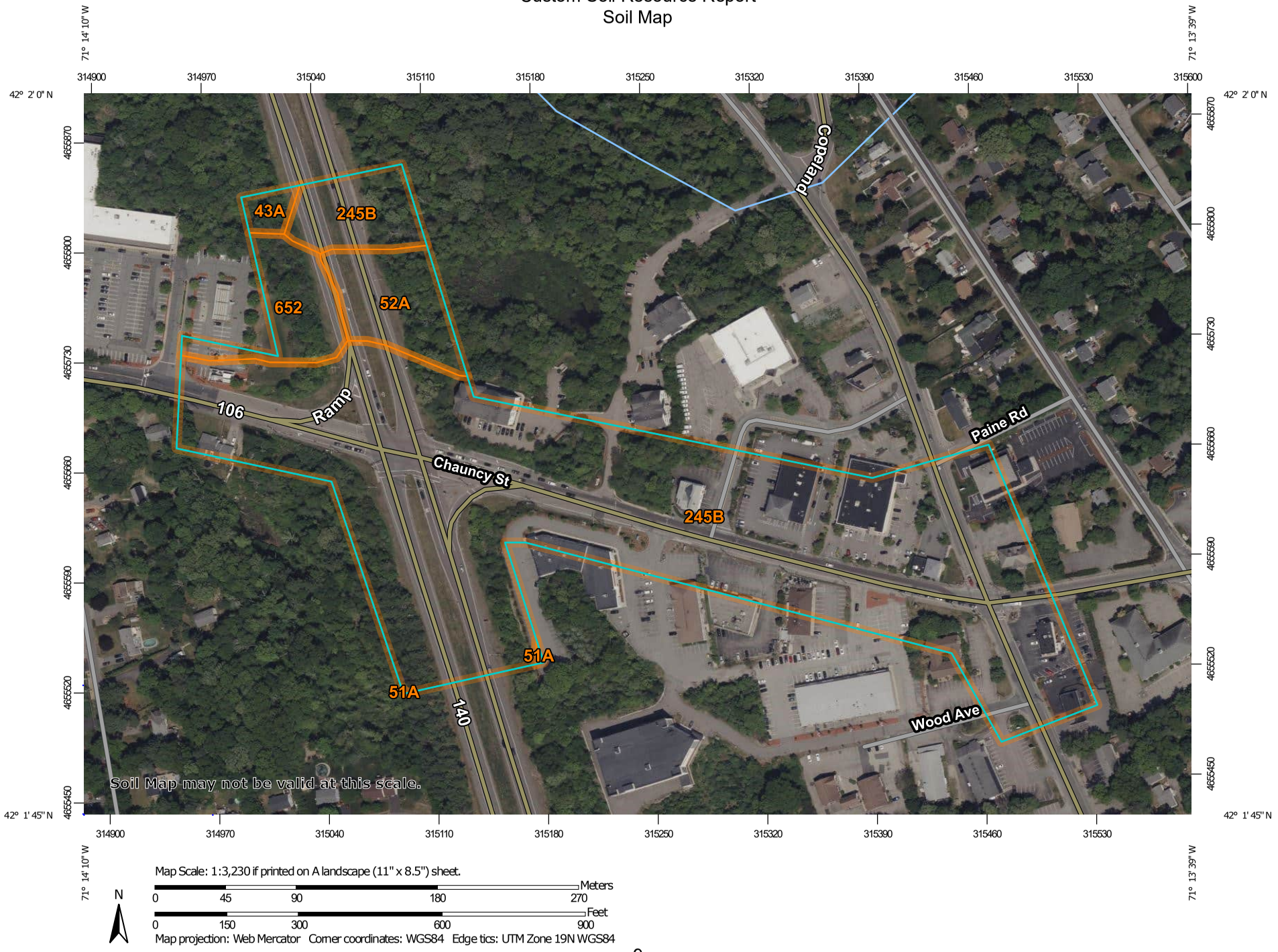
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:3,230 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bristol County, Massachusetts, Northern Part
Survey Area Data: Version 16, Sep 10, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Proposal No. 613052-131228

A00860 - 77

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
43A	Scarboro mucky fine sandy loam, 0 to 3 percent slopes	0.2	1.0%
51A	Swansea muck, 0 to 1 percent slopes	0.0	0.1%
52A	Freetown muck, 0 to 1 percent slopes	1.1	6.0%
245B	Hinckley loamy sand, 3 to 8 percent slopes	16.9	87.8%
652	Udorthents, refuse substratum (Dumps/Landfill)	1.0	5.2%
Totals for Area of Interest		**19.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Bristol County, Massachusetts, Northern Part

43A—Scarboro mucky fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svky
Elevation: 0 to 1,320 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

Scarboro and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scarboro

Setting

Landform: Drainageways, outwash deltas, outwash terraces, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy glaciofluvial deposits derived from schist and/or sandy glaciofluvial deposits derived from gneiss and/or sandy glaciofluvial deposits derived from granite

Typical profile

Oe - 0 to 3 inches: mucky peat
A - 3 to 11 inches: mucky fine sandy loam
Cg1 - 11 to 21 inches: sand
Cg2 - 21 to 65 inches: gravelly coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.42 to 14.17 in/hr)
Depth to water table: About 0 to 2 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Ecological site: F144AY031MA - Very Wet Outwash
Hydric soil rating: Yes

Minor Components

Swansea

Percent of map unit: 10 percent
Landform: Bogs, swamps
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Wareham

Percent of map unit: 5 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Walpole

Percent of map unit: 5 percent
Landform: Deltas, depressions, outwash terraces, depressions, outwash plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

51A—Swansea muck, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2trl2
Elevation: 0 to 1,140 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Swansea and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swansea

Setting

Landform: Bogs, swamps
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Highly decomposed organic material over loose sandy and gravelly glaciofluvial deposits

Typical profile

Oa1 - 0 to 24 inches: muck
Oa2 - 24 to 34 inches: muck
Cg - 34 to 79 inches: coarse sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Rare
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 16.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: B/D
Ecological site: F144AY043MA - Acidic Organic Wetlands
Hydric soil rating: Yes

Minor Components

Freetown

Percent of map unit: 10 percent
Landform: Bogs, swamps
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Whitman

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

52A—Freetown muck, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2t2q9
Elevation: 0 to 1,110 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Freetown and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freetown

Setting

Landform: Depressions, depressions, swamps, kettles, marshes, bogs
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Highly decomposed organic material

Typical profile

Oe - 0 to 2 inches: mucky peat
Oa - 2 to 79 inches: muck

Properties and qualities

Slope: 0 to 1 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Rare
Frequency of ponding: Frequent
Available water supply, 0 to 60 inches: Very high (about 19.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: F144AY043MA - Acidic Organic Wetlands
Hydric soil rating: Yes

Minor Components

Whitman

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Swansea

Percent of map unit: 5 percent
Landform: Bogs, swamps, marshes, depressions, depressions, kettles
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

245B—Hinckley loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2svm8
Elevation: 0 to 1,430 feet
Mean annual precipitation: 36 to 53 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hinckley and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Outwash deltas, outwash terraces, kames, kame terraces, moraines, eskers, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope, footslope

Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 8 percent
Landform: Outwash deltas, outwash terraces, moraines, eskers, kames, outwash plains, kame terraces
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Landform: Outwash deltas, outwash terraces, moraines, outwash plains, kame terraces
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Head slope, side slope, base slope, tread
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

Agawam

Percent of map unit: 2 percent
Landform: Outwash deltas, outwash terraces, moraines, eskers, kames, outwash plains, kame terraces
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

652—Udorthents, refuse substratum (Dumps/Landfill)

Map Unit Setting

National map unit symbol: 9983
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Dumps: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Hadley

Percent of map unit: 5 percent
Hydric soil rating: No

Udorthents

Percent of map unit: 5 percent
Hydric soil rating: Unranked

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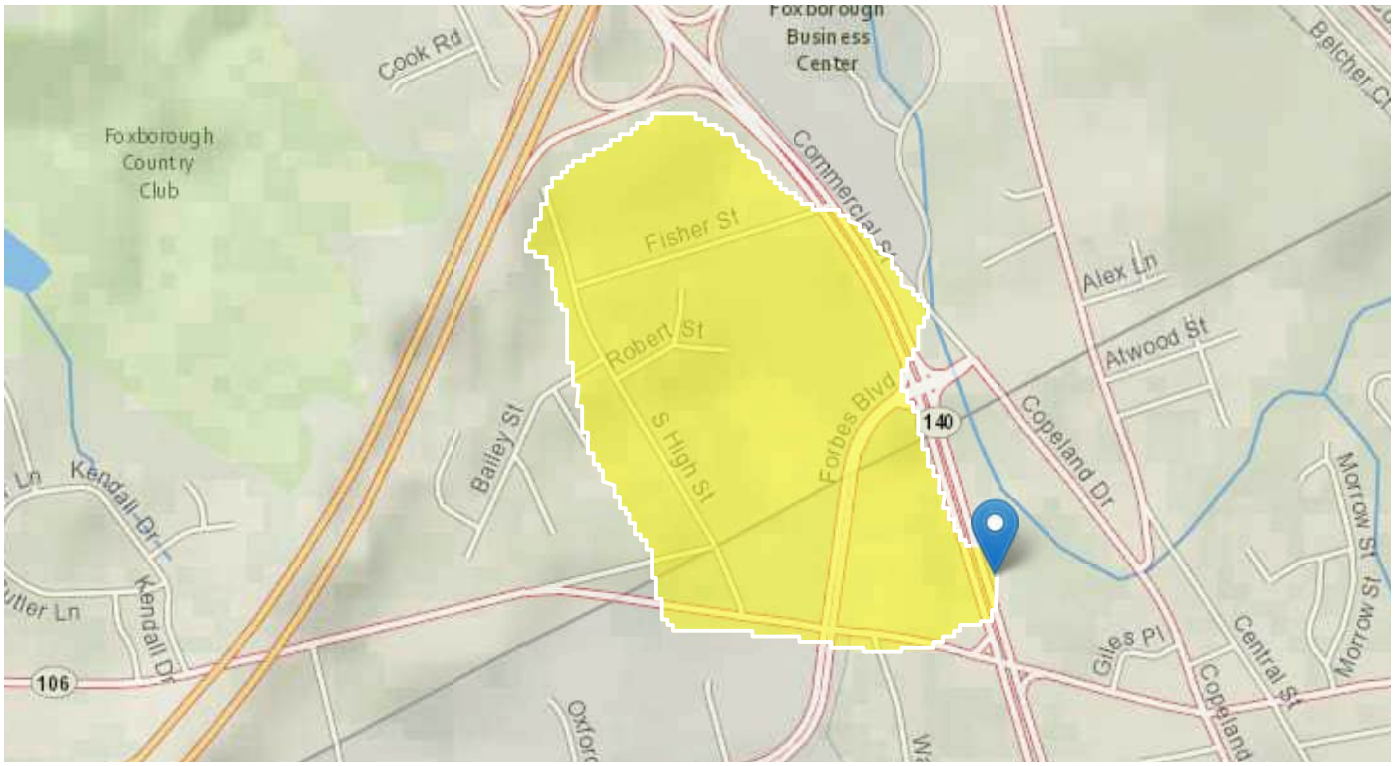
United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

StreamStats Report

Region ID: MA
Workspace ID: MA20240108220450832000
Clicked Point (Latitude, Longitude): 42.03278, -71.23396
Time: 2024-01-08 17:05:13 -0500



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLDEM10M	Mean basin slope computed from 10 m DEM	4.063	percent
BSLDEM250	Mean basin slope computed from 1:250K DEM	2.56	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	0.13	square mile per mile
DRNAREA	Area that drains to a point on a stream	0.22	square miles
ELEV	Mean Basin Elevation	210	feet
FOREST	Percentage of area covered by forest	47.12	percent
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	2.54	percent

Parameter Code	Parameter Description	Value	Unit
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	44.67	percent

Peak-Flow Statistics

Peak-Flow Statistics Parameters [Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	0.16	512
ELEV	Mean Basin Elevation	210	feet	80.6	1948
LC06STOR	Percent Storage from NLCD2006	2.54	percent	0	32.3

Peak-Flow Statistics Flow Report [Peak Statewide 2016 5156]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
50-percent AEP flood	13	ft^3/s	6.52	25.9	42.3
20-percent AEP flood	22.1	ft^3/s	10.9	44.8	43.4
10-percent AEP flood	29.5	ft^3/s	14.2	61.3	44.7
4-percent AEP flood	40.4	ft^3/s	18.7	87.1	47.1
2-percent AEP flood	49.5	ft^3/s	22.2	110	49.4
1-percent AEP flood	59.3	ft^3/s	25.7	137	51.8
0.5-percent AEP flood	70.1	ft^3/s	29.5	167	54.1
0.2-percent AEP flood	85.7	ft^3/s	34.3	214	57.6

Peak-Flow Statistics Citations

Zarriello, P.J.,2017, Magnitude of flood flows at selected annual exceedance probabilities for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2016–5156, 99 p. (https://dx.doi.org/10.3133/sir20165156)

Maximum Probable Flood Statistics

Maximum Probable Flood Statistics Parameters [Crippen Bue Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	0.1	3000

Maximum Probable Flood Statistics Flow Report [Crippen Bue Region 2]

Statistic	Value	Unit
Maximum Flood Crippen Bue Regional	1900	ft^3/s

Maximum Probable Flood Statistics Citations

Crippen, J.R. and Bue, Conrad D.1977, Maximum Floodflows in the Conterminous United States, Geological Survey Water-Supply Paper 1887, 52p. (https://pubs.usgs.gov/wsp/1887/report.pdf)

Probability Statistics

Probability Statistics Parameters [Perennial Flow Probability]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	0.01	1.99
PCTSNDGRV	Percent Underlain By Sand And Gravel	44.67	percent	0	100
FOREST	Percent Forest	47.12	percent	0	100
MAREGION	Massachusetts Region	0	dimensionless	0	1

Probability Statistics Flow Report [Perennial Flow Probability]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PC
Probability Stream Flowing Perennially	0.67	dim	71

Probability Statistics Citations

Bent, G.C., and Steeves, P.A.,2006, A revised logistic regression equation and an automated procedure for mapping the probability of a stream flowing perennially in Massachusetts: U.S.

Geological Survey Scientific Investigations Report 2006–5031, 107 p. (http://pubs.usgs.gov/sir/2006/5031/pdfs/SIR_2006-5031rev.pdf)

Bankfull Statistics

Bankfull Statistics Parameters [Bankfull Statewide SIR2013 5155]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	0.6	329
BSLDEM10M	Mean Basin Slope from 10m DEM	4.063	percent	2.2	23.9

Bankfull Statistics Parameters [Appalachian Highlands D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	0.07722	940.1535

Bankfull Statistics Parameters [New England P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	3.799224	138.999861

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	0.07722	59927.7393

Bankfull Statistics Disclaimers [Bankfull Statewide SIR2013 5155]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Bankfull Statistics Flow Report [Bankfull Statewide SIR2013 5155]

Statistic	Value	Unit
Bankfull Width	7.51	ft
Bankfull Depth	0.57	ft
Bankfull Area	4.21	ft^2
Bankfull Streamflow	7.7	ft^3/s

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	8.11	ft
Bieger_D_channel_depth	0.726	ft
Bieger_D_channel_cross_sectional_area	5.94	ft^2

Bankfull Statistics Disclaimers [New England P Bieger 2015]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Bankfull Statistics Flow Report [New England P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	16.5	ft
Bieger_P_channel_depth	0.986	ft
Bieger_P_channel_cross_sectional_area	16	ft^2

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	7.27	ft
Bieger_USA_channel_depth	0.873	ft
Bieger_USA_channel_cross_sectional_area	7.54	ft^2

Bankfull Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
Bankfull Width	7.51	ft
Bankfull Depth	0.57	ft
Bankfull Area	4.21	ft^2
Bankfull Streamflow	7.7	ft^3/s
Bieger_D_channel_width	8.11	ft
Bieger_D_channel_depth	0.726	ft
Bieger_D_channel_cross_sectional_area	5.94	ft^2
Bieger_P_channel_width	16.5	ft
Bieger_P_channel_depth	0.986	ft

Statistic	Value	Unit
Bieger_P_channel_cross_sectional_area	16	ft^2
Bieger_USA_channel_width	7.27	ft
Bieger_USA_channel_depth	0.873	ft
Bieger_USA_channel_cross_sectional_area	7.54	ft^2

Bankfull Statistics Citations

Bent, G.C., and Waite, A.M.,2013, Equations for estimating bankfull channel geometry and discharge for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2013–5155, 62 p., (http://pubs.usgs.gov/sir/2013/5155/)

Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_campa

August Flow-Duration Statistics

August Flow-Duration Statistics Parameters [Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	2.56	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.13	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

August Flow-Duration Statistics Disclaimers [Statewide Low Flow WRIR00 4135]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

August Flow-Duration Statistics Flow Report [Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit
August 50 Percent Duration	0.0321	ft^3/s

August Flow-Duration Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

Flow-Duration Statistics

Flow-Duration Statistics Parameters [Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	0.13	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1
BSLDEM250	Mean Basin Slope from 250K DEM	2.56	percent	0.32	24.6

Flow-Duration Statistics Disclaimers [Statewide Low Flow WRIR00 4135]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Flow-Duration Statistics Flow Report [Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit
50 Percent Duration	0.204	ft^3/s
60 Percent Duration	0.13	ft^3/s
70 Percent Duration	0.0711	ft^3/s
75 Percent Duration	0.0526	ft^3/s
80 Percent Duration	0.044	ft^3/s
85 Percent Duration	0.0302	ft^3/s
90 Percent Duration	0.0219	ft^3/s
95 Percent Duration	0.0111	ft^3/s
98 Percent Duration	0.00679	ft^3/s
99 Percent Duration	0.00452	ft^3/s

Flow-Duration Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p.

(http://pubs.usgs.gov/wri/wri004135/)

Low-Flow Statistics

Low-Flow Statistics Parameters [Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.22	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	2.56	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.13	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

Low-Flow Statistics Disclaimers [Statewide Low Flow WRIR00 4135]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0114	ft^3/s
7 Day 10 Year Low Flow	0.00389	ft^3/s

Low-Flow Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

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Application Version: 4.19.3
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

APPENDIX B – Photographic Documentation

Photo 1

View of the intersection of Chauncy Street (Route 106) and Copeland Drive—facing east.

Photo 2

Another view of the intersection of Chauncy Street (Route 106) and Copeland Drive—facing northwest.

PHOTOGRAPHIC DOCUMENTATION
Improvements to Chauncy Street (Route 106)
Mansfield, Massachusetts
Photographs Documented December 15, 2020

Photo 3

View of the intersection of Chauncy Street (Route 106) and Commercial Street (Route 140)—facing east.

Photo 4

Another view of the intersection of Chauncy Street (Route 106) and Commercial Street (Route 140)—facing west.

PHOTOGRAPHIC DOCUMENTATION

Improvements to Chauncy Street (Route 106)

Mansfield, Massachusetts

Photographs Documented December 27, 2023

Photo 5

View of the roadway conditions on Chauncy Street (Route 106)—facing east.

Photo 6

View of the intersection of Chauncy Street (Route 106) and Giles Place—facing west.

PHOTOGRAPHIC DOCUMENTATION

Improvements to Chauncy Street (Route 106)

Mansfield, Massachusetts

Photographs Documented December 15, 2020

Photo 7

View of the headwall and culvert carrying an intermittent stream under Chauncy Street—facing south.

Photo 8

View of the BVW and intermittent stream adjacent to Chauncy Street—facing south.

PHOTOGRAPHIC DOCUMENTATION

Improvements to Chauncy Street (Route 106)

Mansfield, Massachusetts

Photographs Documented December 15, 2020 and July 26, 2023

APPENDIX C – Stormwater Report and Checklist (Bound Separately)

Mansfield, Massachusetts

Improvements of Chauncy St (Route 106) Route 140 to Copeland Drive (Phase 1)

MassDOT Highway Division
Project File # 613052
February 2025

STORMWATER MANAGEMENT REPORT

PREPARED FOR

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Table of Contents

1 Introduction 1

2 Project Summary 2

3 Existing Conditions 4

4 Proposed Conditions 7

5 Impaired Waters and TMDLs 10

6 Stormwater Management Standards 12

List of Figures

Figure No.	Description	Page
Figure 1	Locus Figure	3
Figure 2	Existing Key Features and Wetland Resource Areas	6

List of Tables

Table No.	Description	Page
Table 1	Existing Drainage Areas	5
Table 2	Impervious Area	7
Table 3	Proposed Drainage Areas	8
Table 4	Proposed SCMs	9
Table 5	Impaired Waters and TMDL Information	10
Table 6	Nutrient Removal for Project	11
Table 7	Rainfall Depths (in)	13
Table 8	Peak Discharge Rates (cfs)	13
Table 9	Required Recharge Volume for Project	14
Table 10	Provided Recharge Volumes at Each Design Point	14
Table 11	WQV at Each Design Point	16
Table 12	WQV Provided by the SCMs at Each Design Point	16

Attachments

Appendix A:	MassDEP Checklist for Stormwater Report
Appendix B:	Soils and FEMA Information
Appendix C:	Supporting Calculations
Appendix D:	Hydrologic Data
Appendix E:	O&M Plan and LTPPP
Appendix F:	Watershed Plans

1

Introduction

This Stormwater Management Report has been prepared to demonstrate compliance with the Massachusetts Stormwater Management Standards (the Standards) in accordance with the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00) and Water Quality Certification Regulations (314 CMR 9.00). Appendix A includes a completed Massachusetts Department of Environmental Protection (MassDEP) Checklist for Stormwater Report, stamped by a Massachusetts registered professional engineer.

The Project follows the guidance presented in the MassDOT Stormwater Design Guide (SDG), and stormwater management systems are designed in accordance with the Standards.

2

Project Summary

The Applicant, MassDOT, is proposing Project #613052 to complete highway widening, resurfacing, and streetscape improvements along Chauncy St (Route 106), Commercial St (Route 140) and Copeland Drive (the "Project") located in Mansfield, MA.

As proposed, the Project consists of roadway widening, drainage improvements, a shared use path along the southern side of Chauncy Street (Route 106) with ADA compliant ramps, a brick buffer between the roadway and the shared use path, reconstruction of sidewalks along the northern side of Chauncy Street (Route 106) with ADA compliant ramps, new signs, and pavement markings, as well as geometric modifications to include turn lanes and an upgraded traffic signal system at the intersection of Chauncy St (Route 106) and Commercial St (Route 140) and the intersection of Chauncy Street (Route 106) and Copeland Drive.

The purpose of this project is to improve traffic and safety for all users along Chauncy Street (Route 106) and at the aforementioned intersections.

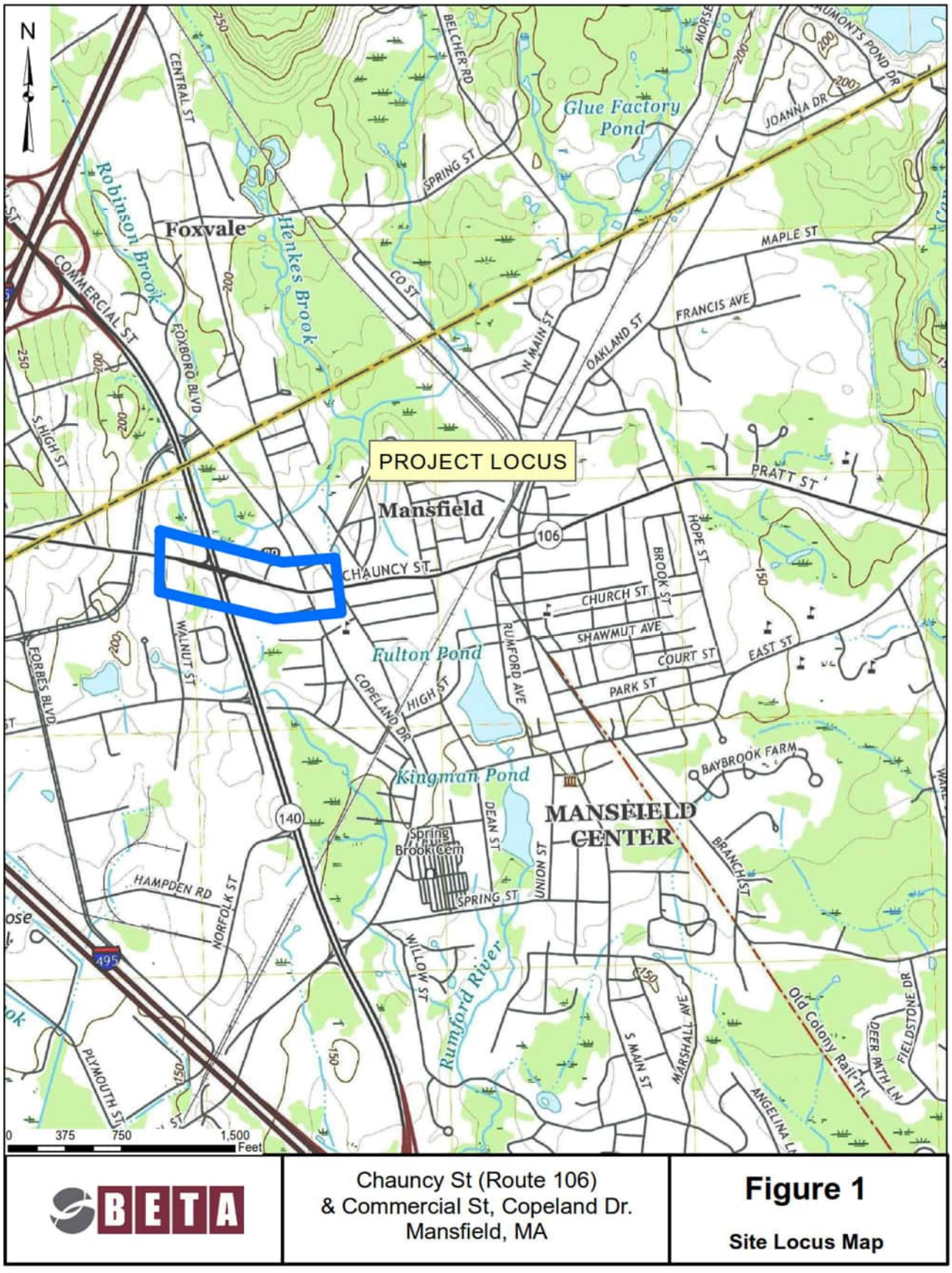
The project is located along a section of Chauncy Street (Route 106) which begins approximately 200 feet west of its intersection with Commercial St (Route 140) and ends east of Copeland Drive, including the Chauncy Street (Route 106) and Commercial St (Route 140) intersection and the Chauncy Street (Route 106) and Copeland Drive intersection. Chauncy St (Route 106) follows an east-west alignment through Mansfield, connecting to Foxborough to the north and west, and to Mansfield to the east. In this area, Chauncy Street (Route 106) is approximately 35' – 50' wide with one travel lane in each direction. Existing sidewalks are present on both sides of Chauncy Street (Route 106) for the majority of the project limits. Commercial Street (Route 140) is a divided highway with a total width of approximately 115' and two travel lanes in each direction. Copeland Drive is approximately 40' wide with one travel lane in each direction.

The total project length is approximately 1,800 feet along Chauncy Street (Route 106), 800 feet along Commercial St (Route 140), and 450 ft along Copeland Drive. The total area of disturbance is approximately 3.65 acres, excluding proposed mill and overlay areas.

Wetland resource areas are located in proximity to the project area. Refer to Notice of Intent narrative for a summary of project compliance. The project is not considered a Land Use with Higher Potential Pollutant Loads (LUHPPL) and the project is not located within or near to a Zone II or Interim Wellhead Protection Area, any other critical areas, or a NHESP-mapped habitat.

See Figure 1 for the Project Locus Map.

Figure 1 Locus Figure



3

Existing Conditions

The project is primarily a section of Chauncy Street (Route 106) between 360 Chauncy Street (located 200± feet west of the intersection of Commercial Street (Route 140) and 205 Chauncy Street (located 200± to the east of the Intersection of Copeland Drive). The project also includes an 800 foot section of Commercial Street (Route 140), a 450 foot section of Copeland Drive between 93 Copeland Drive and 131 Copeland Drive, and a 60 foot section of Giles Place.

Existing impervious areas include the respective roadways as well as sidewalks and driveways along Chauncy Street (Route 106), Commercial Street (Route 140), Copeland Drive, and Giles Place. Grassed areas are present along each roadway as well as within the Route 140 median. Topography at the Site varies between being sloped towards or away from the roadways and existing drainage patterns are described below.

The project is located in the IWP Priority: Taunton watershed. Existing drainage patterns consist of curb and gutter conveyance which directs stormwater runoff to closed drainage systems consisting of catch basins, manholes, and culverts. These systems discharge stormwater runoff to several points of analysis. The southwestern system at the intersection of Route 140 and Route 106 discharges to a series of outfalls near to the #3-series wetlands (DP 1). The northwestern and central systems carry flows from the remaining portions of Route 140, Giles Place, and Route 106 from the westerly project limits to a high point approximately 200 feet west of the intersection of Copeland Road. These systems discharge directly or indirectly to a culvert near 273 Chauncy Street (DP 2 and 3). The northeastern system carries flows from Chauncy Street (Route 106) from the roadway high point to the easterly project limits and the majority of Copeland Road to the east beyond the project limits (DP 4). The southeastern system carries the remaining flows from Copeland Drive to the south beyond the project limits (DP 5). No existing stormwater control measures (SCMs) are present within the limits of the Site.

Table 1 presents the existing drainage areas and their characteristics. See Appendix F for existing drainage areas.

Table 1 Existing Drainage Areas

Drainage Area	Design Point	Area (acres)	Curve Number
Ex-1E	DP-1	0.66	87
Ex-2E	DP-2	4.06	73
EX-3E	DP-3	0.83	83
EX-4E	DP-4	1.13	85
EX-5E	DP-5	0.24	85

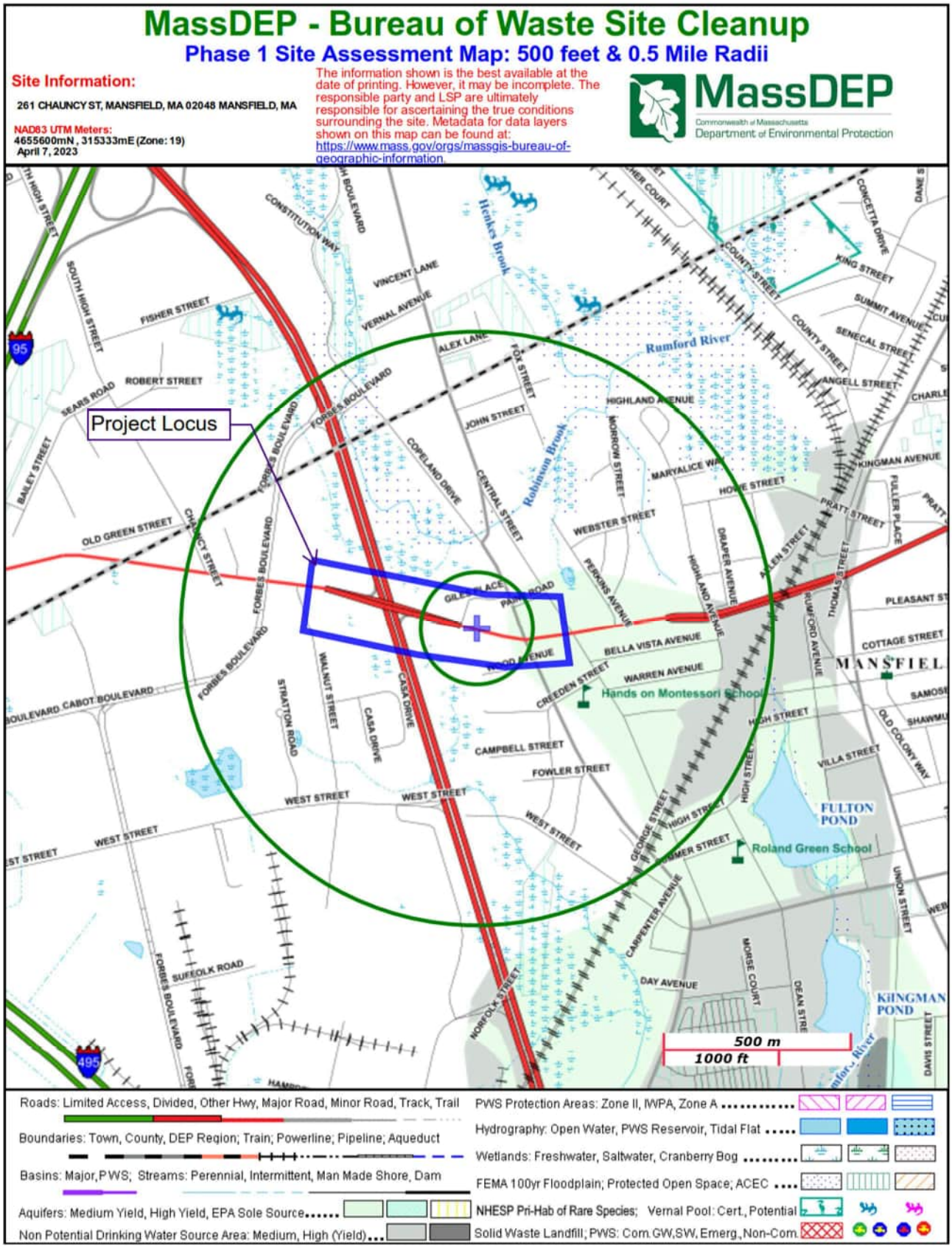
Key features in and around the project area include wetland resource areas located near the intersection of Chauncy St (Route 106) and Commercial St (Route 140), and in proximity to the intersection of Chauncy Street (Route 106) and Giles Place. Buffer zones associated with these resource areas extend into the project limits, as shown on Figure 2 and the plans in Appendix F.

The Project is not located within the 100-year floodplain as shown on the National Flood Hazard Layer FIRMette, Panel 25005C0036F eff. 7/7/2009, included in Appendix B.

Review of the NRCS Soil Survey maps of the project area identified Hinckley loamy sand with hydrologic soil group (HSG) A (high infiltration rate), Sudbury fine sandy loam with HSG B (moderate infiltration rate), and Freetown muck with HSG B/D (moderate infiltration rate when drained and very low infiltration rate when undrained). NRCS soils information is shown on the plans in Appendix F and included in Appendix B.

Two test pits have been conducted at the Site in areas potentially suited for infiltration. TP-1 was completed at the northwest corner of Copeland Drive and Wood Avenue. TP-2 was completed at the southeast corner of Route 106 and Route 140. Both test pits identified subsurface conditions as loamy sand or medium or medium to coarse sand. Groundwater was identified at a depth of 52” below grade in TP-2 and was not encountered in TP-1. Test pit locations are shown on the plans in Appendix F and logs are included in Appendix B.

Figure 2 Existing Key Features and Wetland Resource Areas



4

Proposed Conditions

The Project consists of modifying the roadway width and intersection geometry as well as constructing a shared use path along the southern side of Chauncy Street (Route 106). The existing sidewalk along the northern side of Chauncy Street (Route 106) will be reconstructed. The western limit of the northern sidewalk will be extended to Commercial Street (Route 140) and the western limit of the southern shared use path will extend to #360 Chauncy Street, including new pedestrian crossings across Commercial Street (Route 140). The project will also include new ADA compliant ramps, new signs, pavement markings, and upgraded traffic signal systems.

The project will modify the existing closed drainage system, generally retaining or upgrading existing trunklines and proposing new deep sump catch basins to meet modified curb lines. The existing culvert near #273 Chauncy St will be replaced and extended, and a new headwall constructed to meet with the proposed roadway layout. Proposed structural stormwater control measures (SCMs) include three leaching basins located near #100 Copeland Drive. Additionally, the existing grassed swale located in the Route 140 median north of the intersection will be upgraded to a water quality swale. The proposed SCMs will provide stormwater treatment that does not exist today and will improve the existing conditions. Proposed topography and high/low points will generally remain similar between pre- and post-development conditions.

The project will include in an increase in impervious area of approximately 16,965 sq. ft.

Refer to Appendix F for detailed delineation of post-development flow patterns and watershed boundaries and Appendix D for hydrologic calculations. Supplemental calculations used for the design are provided as Appendix C.

Table 2 provides a breakdown of the impervious area for the Project.

Table 2 Impervious Area

Condition	Impervious Area (sq. ft)
Existing	194,420
Proposed	211,385
Net	+16,965

The project will retain existing drainage grading patterns to the maximum extent practicable. Proposed grading does not include significant alterations to the roadway profile, cross section,

or high points. Proposed sidewalks will require only a minor degree of daylighting to meet existing grades. The proposed closed drainage system has been designed to utilize existing outfall locations and only minimal changes in subwatershed boundaries are proposed.

The project has significant right-of-way constraints, which severely restrict the opportunity to install substantial Structural Control Measures (SCMs) and Low Impact Development (LID) techniques. Opportunities for non-structural SCMs are restricted by the limited right-of-way and proximity to wetland resource areas. A second potential area for leaching basins was considered at the southeast corner of the Route 140/106 intersection; this area was deemed infeasible due to the presence of shallow groundwater and conflicts with existing gas and communications utilities which restrict the installation of drainage pipes for stormwater conveyance to the basins.

No significant impacts are proposed to natural resource areas and only minimal tree clearing or trimming is required. Impacts are proposed for modifications to the existing culvert including temporary and permanent impacts to streambank and land under water. No other impacts to wetland resource areas or any other key features are anticipated.

LID measures incorporated at the project include the enhancement and preservation of existing vegetation, maintaining pre-development drainage patterns, and construction of a water quality swale. The reduction of impervious cover was considered; however, the introduction of new impervious area is required to install the shared use path and extend sidewalks to areas where none currently exist.

Despite constraints, the proposed stormwater management systems will provide an improvement to the existing conditions by installing deep sump catch basins and SCMs. Refer to Summary of Compliance with the Ten Stormwater Management Standards.

Table 3 presents the proposed drainage areas and their characteristics under proposed conditions. Appendix F shows proposed drainage patterns and drainage area delineations by design point.

Table 3 Proposed Drainage Areas

Drainage Area	Design Point	Area (acres)	Curve Numbers
Pr-1P	DP-1	0.71	85
Pr-2P & 2Pb	DP-2	4.01	76
PR-3P	DP-3	0.83	88
PR-4P	DP-4	1.04	92
PR-5P & 5Pa	DP-5	0.33	76

See Appendix F for proposed drainage areas and proposed SCMs by design point.

Table 4 lists the proposed SCMs and provides a description of each.

Table 4 Proposed SCMs

SCM	Description
Deep-Sump Catch Basin	Construction of 27 new deep-sump catch basins throughout the project limits.
Leaching Basins	Construction of 3 new leaching basins within the projects limits.
Water Quality Swale	Upgrade of the existing grassed swale along Route 140 to a Water Quality Swale with vegetated check dams.

5

Impaired Waters and TMDLs

As described under the Existing Conditions section, the Project is located in the IWP Priority: Taunton Watershed. The project is also located upgradient of the Rumford River and Mount Hope Bay, though no direct discharges to these waterbodies are proposed. Rumford River, Taunton River, and Mount Hope Bay are listed as impaired based on the MassDEP Year 2020 Integrated List of Waters, also known as the 303(d) list.

Table 5 lists the receiving water bodies that are impaired and if the water body has a TMDL.

Table 5 Impaired Waters and TMDL Information

Water Body	303(d) Category	303(d) Impairments	TMDL	TMDL Pollutant	TMDL Report Name
Rumford River	5	Curley Leaf Pondweed, Benthic macroinvertebrates, Dioxin, Pentachlorophenol	No	N/A	N/A
Taunton River	5	Dissolved Oxygen E. Coli	Yes	Bacteria/Pathogens	Final Pathogen TMDL for the Taunton River Watershed June 2011
Mt Hope Bay	5	Chlorophyll-a, Dissolved Oxygen, Enterococcus, Fecal Coliform, Fish Bioassessments, Nitrogen, Total	Yes	Pathogen	Final Pathogen TMDL for the Narragansett/Mt. Hope Bay Watershed July 2010

As stated in the Final Pathogen TMDLs for the Taunton River Watershed and Narragansett/Mt. Hope Bay Watershed, leading sources of bacterial surface water pollution include leaking sewer pipes, illicit connections of sanitary sewers to storm drains, failing septic systems, combined sewer overflows (CSOs), sanitary sewer overflows (SSOs), agricultural areas, and stormwater runoff. As part of the proposed drainage system modification, any illicit connections from the sanitary sewer system will be eliminated. As a transportation facility, pathogen loads from the roadway surfaces are anticipated to be minimal.

See Standard 4 in Section 6 below for more water quality calculations and discussion.

SCMs were selected and designed to specifically treat for Nitrogen due to the listed impairment for the Mt. Hope Bay watershed. Selected SCMs to treat this impairment include leaching basins and a water quality swale.

Table 6 lists each water body, the proposed SCMs that drain to it, and each SCM's estimated Total Nitrogen removal per year.

Table 6 Nutrient Removal for Project

Water Body	SCM	Total Nitrogen Removal (lbs/yr)
Mt. Hope Bay		
	Water Quality Swale	2.3
	Leaching Basins	1.1
	Total Provided by SCMs	3.4

6

Stormwater Management Standards

As demonstrated below, the proposed Project complies with the MassDEP Stormwater Management Standards (the Standards) to the maximum extent practicable. The Project is classified as a redevelopment under the first definition “Maintenance and improvement of existing roadways, including widening less than a single lane, adding shoulders, correcting substandard intersections, improving existing drainage systems and repaving.” Certain standards need be met only to the maximum extent practicable.

Standard 1: No New Untreated Discharges

No new stormwater conveyances may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.

The Project has been designed to comply with Standard 1.

No new stormwater outfalls are proposed for the Project and all stormwater runoff captured by the proposed drainage system will be discharged to existing closed drainage systems. The existing outfall located offsite to the south will be retained. The existing outfall to the unnamed stream west of Giles Place will be slightly relocated to connect directly to the reconstructed culvert via a new drainage manhole. Existing outfalls at the southeast corner of the Route 106/140 intersection include riprap aprons for scour protection.

Stormwater runoff will be pretreated by deep-sump catch basins, and portions of the project will be treated by leaching basins or a water quality swale, prior to discharge. See Standard 4 for the water quality treatment provided by the Project.

Standard 2: Peak Rate Attenuation

Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04.

The Project has been designed to comply with Standard 2 only to the maximum extent practicable as the project is a limited, redevelopment project. A net increase in peak discharge rate and runoff volume is anticipated for most points of analysis during the 2-year, 10-year, and 100-year 24-hour design storm events based on Northeast Regional Climate Center precipitation data. Refer to Tables 7 and 8.

Table 7 Rainfall Depths (in)

Design Storm Event	Rainfall Depth (in)
2-year	3.27
10-year	4.95
100-year	9.04

Table 8 provides a summary of peak rates for each design point under existing and proposed conditions. Appendix D provides computations and supporting information regarding the hydrologic modeling.

Table 8 Peak Discharge Rates (cfs)

Design Point	Existing			Proposed		
	2-year	10-year	100-year	2-year	10-year	100-year
DP-1	1.51	2.64	5.39	1.48	2.67	5.61
DP-2	4.54	10.40	26.64	5.49	11.63	28.01
DP-3	1.58	2.96	6.39	1.95	3.36	6.77
DP-4	2.36	4.26	8.94	2.81	4.57	8.78
DP-5	0.50	0.90	1.89	0.30	0.69	2.17
Project Total	10.49	21.16	49.25	12.03	22.92	51.34

The project is unable to fully meet this standard due to constraints at the project site as described below. This project includes a net increase of 16,965± sq. ft. of impervious surface, which will result in minor increases to the volume and rate of stormwater runoff from the project area. This accounts for an approximate 5.63% increase in impervious area throughout the entire study area of approximately 6.92 acres. The project has significant right-of-way constraints, private commercial features, and wetland resource areas located in proximity to the roadway corridor. Despite project constraints and an increase in peak flow rates, the proposed deep-sump catch basins, leaching basins, and water quality swale will improve existing conditions throughout the project corridor. Refer to HydroCAD calculations provided in Appendix D for additional information.

Standard 3: Recharge

Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures, including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

The project has been designed to meet this standard only to the maximum extent practicable for the total impervious area as a redevelopment; however, the project will meet this standard fully for the new impervious area. The project has significant right-of-way constraints, private commercial features, and wetland resource areas located in proximity to the roadway which restrict opportunities for recharge. A portion of the required recharge volume will be provided in the proposed leaching basins and the water quality swale. The leaching basins have been designed to infiltrate the required recharge volume for their respective catchment areas.

Leaching Basins were designed using an underlying soil type of loamy sand and a Rawl's Rate of 2.41 in/hr has been utilized in the drawdown calculations. This soil type is supported by the NRCS HSGR of A and the soil conditions identified in TP-1 and TP-2.

Grassed areas adjacent to the roadways and within the project's right-of-way were evaluated for potential locations of SCMs. However, the areas at the intersection of Route 140 and Route 106 are generally upgradient of the proposed roadway modifications and thus limited opportunities for recharge area available. The southeastern corner of this intersection was considered for SCM opportunities but has been deemed infeasible due to shallow groundwater and the presence of existing gas and communication utilities which restrict methods of conveying stormwater runoff to an SCM. The portions of the Site east of this intersection have limited right-of-way and thus opportunities for SCMs are limited. Despite this, the grassed area at the intersection of Wood Avenue and Copeland Drive was selected as a suitable location for Leaching Basins.

Despite project constraints, the proposed deep sump catch basins, leaching basins, and water quality swale will improve existing conditions throughout the project corridor.

Table 9 provides the required recharge volume for the Project, and Table 10 provides the recharge volumes proposed for each design point.

Table 9 Required Recharge Volume for Project

	HSG A	HSG B	HSG C	HSG D	Total
Existing Impervious (sq. ft.)	182985	11435	0	0	194420
Proposed Impervious (sq. ft.)	199730	11655	0	0	211385
Net Impervious Area (sq. ft.)	16745	220	0	0	16965
Target depth, F (in)	0.6	0.35	0.25	0.1	-
Required Recharge Volume, ReV (cf)	837	6	0	0	844

Table 10 Provided Recharge Volumes at Each Design Point

	HSG A	HSG B	HSG C	HSG D	Total
DP-1					
Net Impervious Area (sf)	475	0	0	0	475
Required Recharge Volume, ReV (cf)	23.75	#	0	0	23.75
Provided Recharge Volume (cf)					0
DP-2					

	HSG A	HSG B	HSG C	HSG D	Total
DP-2					
Net Impervious Area (sf)	8680	220	0	0	8900
Required Recharge Volume, ReV (cf)	434.00	6.42	0	0	440.42
Provided Recharge Volume (cf)					223.2
DP-3					
Net Impervious Area (sf)	2760	0	0	0	2760
Required Recharge Volume, ReV (cf)	138.0	0	0	0	138.0
Provided Recharge Volume (cf)					0
DP-4					
Net Impervious Area (sf)	2340	0	0	0	2340
Required Recharge Volume, ReV (cf)	117.0	0	0	0	117.0
Provided Recharge Volume (cf)					0
DP-5					
Net Impervious Area (sf)	2490	0	0	0	2490
Required Recharge Volume, ReV (cf)	124.50	0	0	0	124.50
Provided Recharge Volume (cf)					1012.6

Note: DP-6 is a combination of DP-2 and DP-3 and therefore has been excluded from the above table due to redundancy.

As depicted in the tables above, the project-wide required recharge volume is 844 cu. ft. and the provided SCMs will provide a recharge volume of 1,236 cu. ft.

The infiltration SCMs are designed to drain completely within 72 hours.

Appendix B provides soil evaluation information and Appendix C provides computations, drawdown calculations, and supporting information regarding recharge.

Standard 4: Water Quality Treatment

Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when:

- Suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained.
- Structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook.
- Pretreatment is provided in accordance with the Massachusetts Stormwater Handbook.

The Project has been designed to comply with Standard 4 only to the maximum extent practicable as the project is a limited, redevelopment project. Proposed drainage system improvements, including the installation of deep sump catch basins, installation of leaching basins, and installation of the water quality swale will provide treatment of stormwater runoff that does not currently exist and will improve existing conditions. The project will provide treatment of existing and new impervious areas to the maximum extent practicable. The

proposed leaching basins will provide 80% TSS removal for a treatment area of 4,500± Sq. Ft and the proposed water quality swale will provide 70% TSS removal for a treatment area of 10,900± Sq. Ft. Additionally, the proposed deep-sump catch basins will provide 25% TSS removal for 162,930± Sq. Ft. of impervious area and the project will provide an equivalent area for 80% TSS removal of 64,949 Sq. Ft.

The project is predominantly located in an area of soils with rapid infiltration rate (>2.4 in/hr) and is required to treat the 1-inch water quality volume and provide at least 44% TSS removal as pretreatment for infiltration SCMs. The project will only meet these requirements to the maximum extent practicable due to previously mentioned project constraints.

Table 11 shows the required WQV to be treated for both new and existing impervious area within each drainage area, organized by design point.

Table 11 WQV at Each Design Point

Design Point	WQV for New IA (cf)	WQV for Existing IA (cf)	Total WQV (cf)
DP-1	39.6	1955.0	1994.6
DP-2	741.7	8130.4	8872.1
DP-3	230.0	2260.0	2490.0
DP-4	195.0	3175.8	3370.8
DP-5	207.5	680.4	887.9
Project Total	1413.8	16201.7	17615.4

Table 13 shows the WQV provided by the SCMs at each design point.

Table 12 WQV Provided by the SCMs at Each Design Point

Design Point	Pretreatment (y/n)	WQV Provided (cf)	Meets Total WQV	Meets Required WQV for New IA
DP-2				
Water Quality Swale	N	223.2	No	No
Total		223.3		
DP-5				
Eastern Leaching Basins	Y	1012.6	Yes	Yes
Total		1012.6		
Project Total		1,235.8	No	No

In DP-1, the project does not propose any water quality volume. Deep-sump catch basins are proposed to provide some TSS removal and will improve the existing conditions. This watershed is constrained by the presence of wetland resource areas.

In DP-2, a water quality swale is proposed to treat a portion of Route 140 and will provide a water quality volume of 223 cu. ft. Deep-sump catch basins are also proposed to provide additional TSS removal.

In DP-3 and DP-4, the project does not propose any water quality volume. Deep-sump catch basins are proposed to provide some TSS removal and will improve the existing conditions. These watersheds are constrained by limited right-of-way, the presence of private commercial properties the presence of wetland resource areas.

In DP-5, the project provides 1013 cu. ft. of water quality volume via the installation of three leaching basins constructed in series.

For the proposed leaching basins, pretreatment is provided via deep-sump catch basins. For the water quality swale, pretreatment is provided via vegetated check dams which will function as sediment forebays.

As previously noted, the project is a limited, redevelopment project with limited right-of-way, proximity to wetland resource areas, and private commercial features located in proximity to the roadway; therefore, the project is required to meet this standard only to the maximum extent practicable. Additional SCMs were evaluated at several locations, as described under Standard 3, but were not considered to be practicable. Despite project constraints, the proposed deep sump catch basins, leaching basins, and water quality swales will improve existing conditions throughout the project corridor. Refer to Appendix C for calculations relating to TSS Removal. Refer to Illicit Discharge Compliance Statement under Standard 10.

For MassDOT facilities, Long-Term Pollution Prevention Plans (LTPPPs) are implemented at a programmatic level through MassDOT's highway operation and maintenance program by district. Appendix E includes the LTPPP for this project.

Standard 5: Land Uses with Higher Potential Pollutant Loads

For Land Uses with Higher Potential Pollutant Loads (LUHPPLs), source control and pollution prevention shall be implemented in accordance with the Massachusetts Stormwater Handbook to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable. If through source control and/or pollution prevention all LHPPLs cannot be completely protected from exposure to rain, snow, snow melt, and stormwater runoff, the proponent shall use the specific structural stormwater BMPs determined by the Department to be suitable for such uses as provided in the Massachusetts Stormwater Handbook. Stormwater discharges from LUHPPLs shall also comply with the requirements of the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53 and the regulations promulgated thereunder at 314 CMR 3.00, 314 CMR 4.00 and 314 CMR 5.00.

Standard 5 does not apply to the Project. There are no Land Uses with Higher Potential Pollutant Loads within the project area.

Standard 6: Critical Areas

Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply and stormwater discharges near or to any other critical area require the use of the specific source control and pollution prevention measures and the specific structural stormwater best management practices determined by the Department to be suitable for managing discharges to such areas as provided in the Massachusetts Stormwater Handbook. A discharge is near a critical area if there is a strong likelihood of a significant impact occurring to said area, taking into account site-specific factors. Stormwater discharges to Outstanding Resource Waters and Special Resource Waters shall be removed and set back from the receiving water or wetland and receive the highest and best practical method of treatment. A "stormwater discharge" as defined in 314 CMR 3.04(2)(a)1 or (b), to an Outstanding Resource Water or Special Resource Water shall comply with 314 CMR 3.00 and 314 CMR 4.00.

Standard 6 does not apply to the Project. There are no Critical Areas near the project area.

Standard 7: Redevelopment

A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

The Project is a Limited Redevelopment project under the first definition: "Maintenance and improvement of existing roadways, including widening less than a single lane, adding shoulders, correcting substandard intersections, improving existing drainage systems and repaving." Proposed deep sump catch basins, leaching basins, and water quality swales will provide treatment to the maximum extent practicable and represent an improvement to the existing conditions. Standards 1, 8, 9, and 10 are fully met and Standards 2, and 4 are met to the maximum extent practicable. Standard 3 is met for new impervious area. Standards 5 and 6 are not applicable to this project.

Standard 8: Erosion and Sediment Control

A plan to control construction related impacts, including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.

The implementation of erosion and sediment (E&S) controls during construction is considered a standard practice for all MassDOT projects. E&S controls will be installed before any land disturbance begins for the Project and will remain in place for the duration of the Project. The E&S controls for the Project are shown on the project plans and include erosion control barrier, coir logs, catch basin inlet protection, tree protection, and control of water.

The Project disturbs one or more acres of land; therefore, the project contractor will request coverage under the NPDES Construction General Permit (CGP) and develop a Stormwater

Pollution Prevention Plan (SWPPP). The SWPPP follows the requirements of this standard and complies with the NPDES CGP.

The SWPPP will be provided as part of the construction documents; however, a Construction Period Pollution Prevention and Erosion and Sediment Control Plan is included in Appendix E.

Standard 9: Operation and Maintenance Plan

A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed.

A Long-Term Operation and Maintenance Plan has been included. Operations and maintenance of stormwater management systems will be the responsibility of MassDOT and the Town of Mansfield DPW. The majority of the project is within MassDOT's jurisdiction and generally includes Commercial Street (Route 140), Copeland Drive, and Chauncy Street (Route 106). The portion of the project along Giles Place is within the Town's jurisdiction.

Street sweeping and inspection and maintenance of SCMs will be in accordance with MassDOT and Town-wide Operations and Maintenance schedules.

MassDOT O&M plans are implemented on a programmatic level by each MassDOT district. Each MassDOT district office is responsible for providing operation and maintenance for the MassDOT stormwater management systems within their respective jurisdictions.

Appendix E includes the O&M Plan for this project.

Standard 10: Prohibition of Illicit Discharges

All illicit discharges to the stormwater management system are prohibited.

Illicit Discharge Statement

The project's stormwater management systems, as shown on the plans submitted with this report, have been designed in full compliance with Standard 10. The project area does not have any known illicit connections. Any illicit connections to the stormwater management system found in the project limit of work during construction will be removed and/or resolved through MassDOT's or the Town of Mansfield's Illicit Discharge Detention and Elimination (IDDE) Programs. The Long-Term Pollution Prevention Plan, provided in Appendix E, includes measures to prevent illicit discharges.

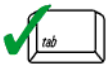
Appendix A: MassDEP Checklist for Stormwater Report

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

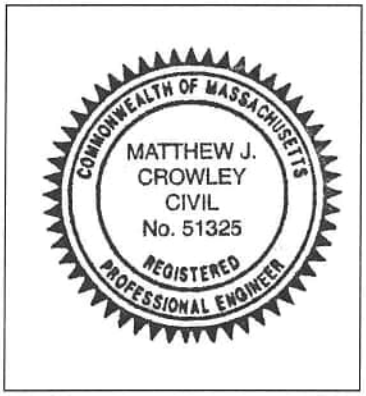
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



02/10/25

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

- ☐ New development
- ☒ Redevelopment
- ☐ Mix of New Development and Redevelopment

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

☐ No disturbance to any Wetland Resource Areas

☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)

☐ Reduced Impervious Area (Redevelopment Only)

☒ Minimizing disturbance to existing trees and shrubs

☐ LID Site Design Credit Requested:

- ☐ Credit 1
- ☐ Credit 2
- ☐ Credit 3

☒ Use of "country drainage" versus curb and gutter conveyance and pipe

☐ Bioretention Cells (includes Rain Gardens)

☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)

☐ Treebox Filter

☒ Water Quality Swale

☐ Grass Channel

☐ Green Roof

☐ Other (describe): _____

Standard 1: No New Untreated Discharges

☒ No new untreated discharges

☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth

☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☐ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☒ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☒ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☒ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☒ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☐ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☒ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☒ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☒ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☒ Bike Path and/or Foot Path
- ☒ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☒ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☒ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☒ Description and delineation of public safety features;
- ☒ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☒ An Illicit Discharge Compliance Statement is attached;

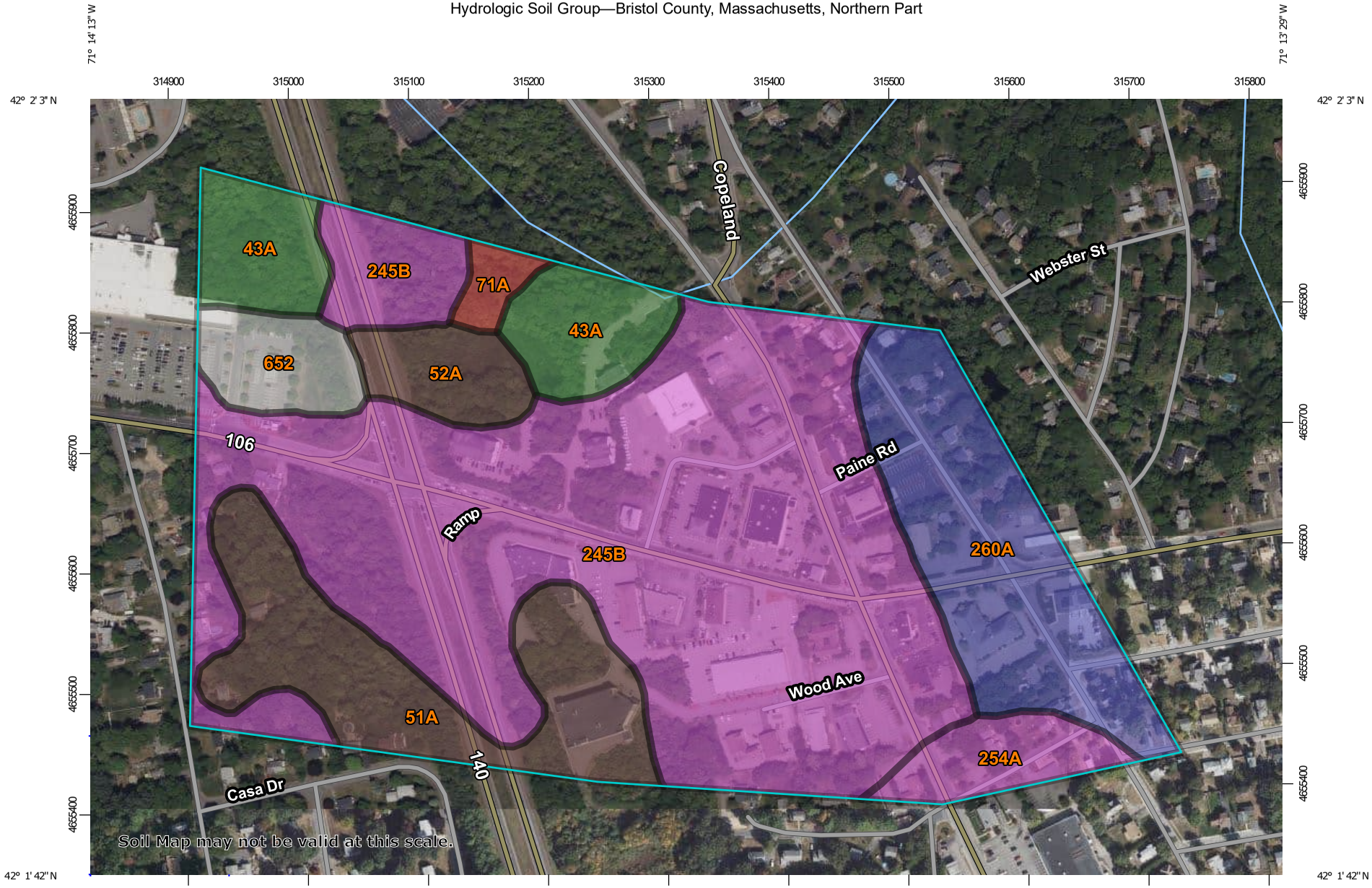
☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

Appendix B: Soils and FEMA Information

Proposal No. 613052-131228

A00860 - 136

Hydrologic Soil Group—Bristol County, Massachusetts, Northern Part



Map Scale: 1:4,540 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

Proposal No. 613052-131228

A00860 - 137

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bristol County, Massachusetts, Northern Part
Survey Area Data: Version 16, Sep 10, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 25, 2020—Jun 5, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
43A	Scarboro mucky fine sandy loam, 0 to 3 percent slopes	A/D	5.7	7.6%
51A	Swansea muck, 0 to 1 percent slopes	B/D	9.3	12.3%
52A	Freetown muck, 0 to 1 percent slopes	B/D	2.5	3.3%
71A	Ridgebury fine sandy loam, 0 to 3 percent slopes, extremely stony	D	0.8	1.1%
245B	Hinckley loamy sand, 3 to 8 percent slopes	A	41.8	55.5%
254A	Merrimac fine sandy loam, 0 to 3 percent slopes	A	2.5	3.4%
260A	Sudbury fine sandy loam, 0 to 3 percent slopes	B	10.1	13.4%
652	Udorthents, refuse substratum (Dumps/ Landfill)		2.6	3.4%
Totals for Area of Interest			**75.3**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Commonwealth of Massachusetts
City/Town of Mansfield

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

A. Facility Information

MASS DPW
Owner Name

Rte 140 & 106
Street Address

Map/Lot #

Mansfield
City

MA
State

Zip Code

B. Site Information

1. (Check one) ☐ New Construction ☐ Upgrade ☐ Repair Stormwater

2. Soil Survey Available? ☒ Yes ☐ No If yes: NRCS-WSS (Source) 245B (Soil Map Unit)

   Hinckley Loamy Sand (Soil Name) excessively drained (Soil Limitations)

   sand (Geologic/Parent Material) (Landform)

3. Surficial Geological Report Available? ☐ Yes ☒ No If yes: (Year Published/Source) (Publication Scale) (Map Unit)

4. Flood Rate Insurance Map

   Above the 500-year flood boundary? ☒ Yes ☐ No Within the 100-year flood boundary? ☐ Yes ☒ No
   If Yes, continue to #5.

5. Within a velocity zone? ☐ Yes ☒ No

6. Within a Mapped Wetland Area? ☐ Yes ☒ No MassGIS Wetland Data Layer: (Wetland Type)

7. Current Water Resource Conditions (USGS): 12-24 (Month/Year) Range: ☐ Above Normal ☒ Normal ☐ Below Normal

8. Other references reviewed: 3.9 inches of rainfall on previous day

Proposal No. 613052-131228

A00860 - 140

Commonwealth of Massachusetts
City/Town of Mansfield

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (*minimum of two holes required at every proposed primary and reserve disposal area)*

Deep Observation Hole Number: 1 | 12-13-2024 (Date) | 8:15 (Time) | clear cold (Weather)

1. Location

Ground Elevation at Surface of Hole: _____ feet Latitude/Longitude: /

Description of Location: corner of Wood Street & Copeland and intersection 140 & 106

2. Land Use: commercial (e.g., woodland, agricultural field, vacant lot, etc.) | n (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3 (Slope (%))

grass (Vegetation) | _____ (Landform) | _____ (Position on Landscape (SU, SH, BS, FS, TS))

3. Distances from:

Open Water Body	_____ feet	Drainage Way	_____ feet	Wetlands	_____ feet
Property Line	12 feet	Drinking Water Well	_____ feet	Other	_____ feet

4. Parent Material: _____ Unsuitable Materials Present: ☐ Yes ☐ No

If Yes: ☐ Disturbed Soil ☒ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☐ Yes ☒ No If yes: _____ Depth Weeping from Pit _____ Depth Standing Water in Hole

Estimated Depth to High Groundwater: >120 inches _____ elevation

Proposal No. 613052-131228

A00860 - 141

Commonwealth of Massachusetts
City/Town of Mansfield

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 1

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-18	A & fill	10 YR 3/2				Loam					
18-31	Bw	10 YR 5/6				sandy loam	5-10	5-10	crumb	dry	friable
31-120	C1	5 Y 5/4				M-C Sand	35-40	15-20	grain	loose	

Additional Notes:

C1 layer less stones with depth. Hole caving at bottom

Proposal No. 613052-131228

A00860 - 142

Commonwealth of Massachusetts
City/Town of Mansfield

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 2 | 12-13-2024 (Date) | 8:50 (Time) | clear - cold (Weather)

1. Location

   Ground Elevation at Surface of Hole: _____ feet Latitude/Longitude: /

2. Land Use: roadway shoulder (e.g., woodland, agricultural field, vacant lot, etc.) | none (Surface Stones (e.g., cobbles, stones, boulders, etc.)) | 0-3 (Slope (%))

   Vegetation: grass | Landform: _____ | Position on Landscape (SU, SH, BS, FS, _____

3. Distances from:

Open Water Body	_____ feet	Drainage Way	_____ feet	Wetlands	_____ feet
Property Line	_____ feet	Drinking Water Well	_____ feet	Other	_____ feet

4. Parent Material: sand Unsuitable Materials Present: ☒ Yes ☐ No

   If Yes: ☐ Disturbed Soil ☒ Fill Material ☐ Impervious Layer(s) ☐ Weathered/Fractured Rock ☐ Bedrock

5. Groundwater Observed: ☒ Yes ☐ No If yes: 57 (Depth Weeping from Pit) | 57 (Depth Standing Water in Hole)

   Estimated Depth to High Groundwater: 52 inches _____ elevation

Proposal No. 613052-131228

A00860 - 143

Commonwealth of Massachusetts
City/Town of Mansfield

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-Site Review (continued)

Deep Observation Hole Number: 2

Depth (in.)	Soil Horizon/ Layer	Soil Matrix: Color-Moist (Munsell)	Redoximorphic Features			Soil Texture (USDA)	Coarse Fragments % by Volume		Soil Structure	Soil Consistence (Moist)	Other
			Depth	Color	Percent		Gravel	Cobbles & Stones			
0-18	A & fill	10 YR 3/2									
18-40	Bw	10 YR 5/6				loamy sand	10-15	10-15	grain	wet	loose
40-68	C1	10 YR 5/3	52	7.5 YR 5/8 10YR3/1	8-10	Med Sand	15-20	5-10	grain	wet	loose

Additional Notes:

Proposal No. 613052-131228

A00860 - 144

Commonwealth of Massachusetts
City/Town of Mansfield

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

D. Determination of High Groundwater Elevation

1. Method Used:

	Obs. Hole #1	Obs. Hole #2
☐ Depth observed standing water in observation hole	_____ inches	_____ inches
☐ Depth weeping from side of observation hole	_____ inches	_____ inches
☒ Depth to soil redoximorphic features (mottles)	>120 inches	52 inches
☐ Depth to adjusted seasonal high groundwater (S_h) (USGS methodology)	_____ inches	_____ inches

_____ Index Well Number _____ Reading Date

$S_h = S_c – [S_r \times (OW_c – OW_{max})/OW_r]$

Obs. Hole # _____ S_c _____ S_r _____ OW_c _____ OW_{max} _____ OW_r _____ S_h _____

Obs. Hole # _____ S_c _____ S_r _____ OW_c _____ OW_{max} _____ OW_r _____ S_h _____

E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

   a. Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system?

      ☐ Yes ☐ No

   b. If yes, at what depth was it observed? Upper boundary: _____ inches Lower boundary: _____ inches

   c. If no, at what depth was impervious material observed? Upper boundary: _____ inches Lower boundary: _____ inches

Proposal No. 613052-131228

A00860 - 145

Commonwealth of Massachusetts
City/Town of Mansfield

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

F. Board of Health Witness

Name of Board of Health Witness	Board of Health

G. Soil Evaluator Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through 15.107.

Signature of Soil Evaluator	Date
	12-13-2024
Typed or Printed Name of Soil Evaluator / License #	Expiration Date of License
Gary D. James, P.E. 13765	06/26

Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

Proposal No. 613052-131228

A00860 - 146

Commonwealth of Massachusetts
City/Town of Mansfield

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Field Diagrams

Use this sheet for field diagrams:

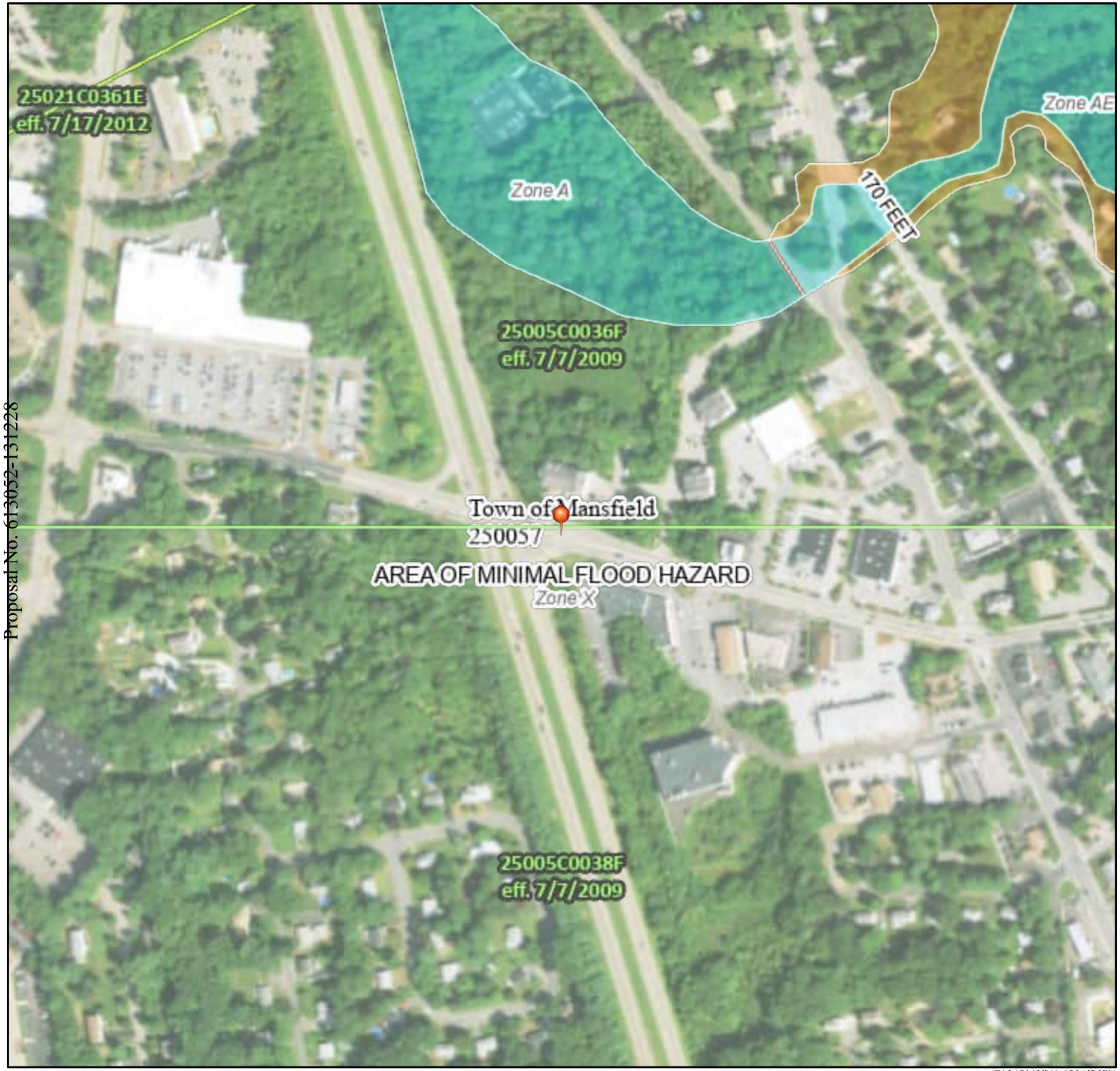
Proposal No. 613052-131228

A00860 - 147

National Flood Hazard Layer FIRMette

FEMA

71°14'18"W 42°2'6"N



Proposal No. 613052-131228

71°13'40"W 42°1'39"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 — Cross Sections with 1% Annual Chance
- 17.5 — Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

A00860 - 148

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/7/2023 at 9:55 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Appendix C: Supporting Calculations

Proposal No. 613052-131228

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point

Smoothing	Yes
State	
Location	
Latitude	42.030 degrees North
Longitude	71.232 degrees West
Elevation	50 feet
Date/Time	Wed Mar 29 2023 09:17:53 GMT-0400 (Eastern Daylight Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr
1yr	0.29	0.45	0.56	0.73	0.91	1.15	**1yr**	0.79	1.09	1.33	1.68	2.14	2.73	3.03
2yr	0.36	0.55	0.69	0.91	1.14	1.44	**2yr**	0.98	1.33	1.66	2.08	2.61	3.27	3.64
5yr	0.43	0.67	0.84	1.13	1.44	1.83	**5yr**	1.24	1.66	2.12	2.66	3.32	4.14	4.65
10yr	0.49	0.77	0.97	1.32	1.72	2.20	**10yr**	1.48	1.97	2.56	3.21	4.00	4.95	5.60
25yr	0.58	0.92	1.18	1.63	2.17	2.81	**25yr**	1.87	2.46	3.28	4.11	5.11	6.28	7.15
50yr	0.67	1.07	1.38	1.93	2.59	3.38	**50yr**	2.24	2.92	3.95	4.96	6.14	7.53	8.62
100yr	0.77	1.24	1.60	2.27	3.10	4.06	**100yr**	2.68	3.46	4.76	5.98	7.39	9.04	10.39
200yr	0.89	1.45	1.87	2.69	3.71	4.90	**200yr**	3.21	4.10	5.75	7.22	8.91	10.86	12.54
500yr	1.08	1.78	2.32	3.37	4.72	6.26	**500yr**	4.07	5.14	7.37	9.26	11.42	13.88	16.08

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr
1yr	0.25	0.38	0.47	0.63	0.78	0.87	**1yr**	0.67	0.86	1.06	1.39	1.84	2.54	2.51
2yr	0.34	0.53	0.66	0.89	1.09	1.31	**2yr**	0.94	1.28	1.50	1.98	2.53	3.24	3.59
5yr	0.39	0.60	0.75	1.03	1.31	1.56	**5yr**	1.13	1.53	1.78	2.33	2.94	3.94	4.38
10yr	0.43	0.67	0.83	1.16	1.49	1.78	**10yr**	1.29	1.74	2.01	2.63	3.29	4.55	5.08
25yr	0.50	0.76	0.94	1.35	1.77	2.10	**25yr**	1.53	2.05	2.38	3.10	3.82	5.54	6.18
50yr	0.55	0.83	1.04	1.49	2.01	2.38	**50yr**	1.73	2.32	2.70	3.50	4.28	6.45	7.15
100yr	0.61	0.92	1.15	1.66	2.28	2.70	**100yr**	1.96	2.64	3.06	3.96	4.80	7.53	8.30
200yr	0.67	1.01	1.27	1.85	2.57	3.08	**200yr**	2.22	3.01	3.48	4.49	5.38	8.83	9.64
500yr	0.76	1.13	1.46	2.12	3.01	3.63	**500yr**	2.60	3.55	4.10	5.30	6.26	10.93	11.71

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr
1yr	0.32	0.50	0.61	0.82	1.01	1.22	**1yr**	0.87	1.19	1.38	1.83	2.36	2.92	3.27
2yr	0.38	0.58	0.71	0.97	1.19	1.41	**2yr**	1.03	1.38	1.62	2.12	2.72	3.35	3.75
5yr	0.48	0.74	0.91	1.26	1.60	1.84	**5yr**	1.38	1.80	2.10	2.74	3.46	4.36	4.93
10yr	0.58	0.90	1.11	1.55	2.00	2.28	**10yr**	1.73	2.23	2.58	3.33	4.16	5.30	6.11
25yr	0.76	1.16	1.44	2.05	2.70	3.01	**25yr**	2.33	2.94	3.38	4.30	5.32	6.90	8.13
50yr	0.92	1.41	1.75	2.52	3.39	3.72	**50yr**	2.93	3.63	4.15	5.21	6.40	8.44	10.09
100yr	1.14	1.72	2.16	3.12	4.27	4.60	**100yr**	3.69	4.49	5.09	6.32	7.71	10.32	12.55
200yr	1.40	2.10	2.67	3.86	5.38	5.68	**200yr**	4.64	5.56	6.26	7.68	9.27	12.65	15.63
500yr	1.86	2.76	3.56	5.17	7.35	7.51	**500yr**	6.34	7.34	8.22	9.92	11.86	16.54	20.90

Powered by ACIS Northeast Regional Climate Center

PROJECT NAME:	**Chauncy Street (Route 106)**	PROJ NO.	**6076**
DESCRIPTION:	**Standards 3 & 4 Worksheet**	DATE	**01/29/25**
CALCULATED BY:	**SLB**	SHEET	**1**

Recharge Volume (Rv) and Water Quality Volume (WQv)
Provided Volumes Worksheet

Calculation of Required Recharge Volume

	Soil Group	Impervious Area (Sq. Ft.)	Runoff Depth (In.)	Recharge Volume (Cu. Ft.)
Pre-Development	Total	**194420**		
	HSG A	182985		
	HSG B	11435		
Post-Development	Total	**211385**		**10326.44**
	HSG A	199730	0.60	9986.50
	HSG B	11655	0.35	339.94
Net Change	Total	**16965**		**843.67**
	HSG A	16745	0.60	837.25
	HSG B	220	0.35	6.42

Recharge Volume (R_V) Required = Impervious Area x Runoff Depth (from HSG)

*For sites comprised of primarily HSG C and D soils, proponents are reqired to infiltrate to the maximum extent practicable. All portions of the project located within jurisdictional areas are also located in areas of HSG C and D mapped soils.

Total Recharge Volume Required: **844 CF**

Total Recharge Volume Provided: **1,236 CF**

Calculation of Required Water Quality Volume

	Impervious Area (Sq. Ft.)	Runoff Depth (In.)	Water Quality Volume (Cu. Ft.)
Total Impervious Area	211385	1.0	17615
Net New Impervious Area Only	16965	1.0	**1414**
Treatment Area Only (2Pb, 5Pa)	15400	1.0	**1283**

Water Quality Volume (WQ_V) Required = Impervious Area x Runoff Depth (0.5" or 1.0" Depth)

Total Water Quality Volume Provided: **1,236 CF**

PROJECT NAME:	**Chauncy Street (Route 106)**	PROJ NO.	**6076**
DESCRIPTION:	**Standards 3 & 4 Worksheet**	DATE	**01/29/25**
CALCULATED BY:	**SLB**	SHEET	**2**

Recharge Volume (Rv) and Water Quality Volume (WQv)
Provided Volumes Worksheet

Calculation of Required Recharge Volume by Design Point

	Soil Group	Runoff Depth (In.)	Net Impervious Area (Sq. Ft.)	Recharge Volume Required (Cu. Ft.)	Recharge Volume Provided (Cu. Ft.)
DP 1L	Total			**23.75**	0.0
	A	0.6	475	23.75	
DP 2L	Total			**440.42**	**223.2**
	A	0.6	**8680**	434.00	
	B	0.35	**220**	6.42	
DP 3L	Total			**138.00**	0.0
	A	0.6	**2760**	138.00	
DP 4L	Total			**117.00**	0.0
	A	0.6	**2340**	117.00	
DP 5L	Total			**124.50**	**1012.6**
	A	0.6	**2490**	124.50	

Recharge Volume (R_V) Required = Impervious Area x Runoff Depth (from HSG)

Calculation of Required Water Quality Volume

	New Impervious Area (Sq. Ft.)	Water Quality Volume - New (Cu. Ft.)	Total Impervious Area (Sq. Ft.)	Water Quality Volume - Total (Cu. Ft.)	Water Quality Volume - Provided (Cu. Ft.)
DP-1L	475	**39.58**	23935	**1994.58**	0.0
DP 2L	8900	**741.67**	106465	**8872.08**	**223.2**
DP-3L	2760	**230.00**	29880	**2490.00**	0.0
DP-4L	2340	**195.00**	40450	**3370.83**	0.0
DP-5L	2490	**207.50**	10655	**887.92**	**1012.6**

Water Quality Volume (WQ_V) Required = Impervious Area x Runoff Depth (0.5" or 1.0" Depth)

Calculation of Provided Treatment Volumes

SCM Name	Design Point	Impervious Treatment Area (Sq. Ft.)		Water Quality Volume - Provided (Cu. Ft.)
East Leaching Basin (5LB)	5L	4500		**1013**
Water Quality Swale	2L	10900		**223**
Projectwide Total:		**15400**		**1236**

PROJECT NAME:	**Chauncy Street (Route 106)**	PROJ NO.	**6076**
DESCRIPTION:	**Standards 3 & 4 Worksheet**	DATE	**01/29/25**
CALCULATED BY:	**SLB**	SHEET	**3**

Leaching Basins
Provided Volumes & TSS Worksheet

Total Storage

Storage Within Basins	Diameter (Ft.)	Height of Stone Section (Ft.)	Volume - Structure (Cu. Ft.)	Volume - Stone (Cu. Ft.)	# Of Structures in System	Total Volume Provided (Cu. Ft.)
5LB	6	4.0	339.3	673.3	3.00	1013

Total Storage Volume Provided: **1,013 CF**

Required Water Quality Volume

	Impervious Area Within Catchment (Sq. Ft.)	Runoff Depth (in.)	Required Volume (Cu. Ft.)	Provided Volume (Cu. Ft.)	Provided > Required?	
5LB	4500	1	**375**	**1,013**	**Okay**	
Total:	**4,500**		**375**	**1,013**		

TSS Removal

Best Management Practice (BMP)	SCM Removal Rate (%)	Remaining TSS (%)	Cumulative Removal Rate (%)
Deep-Sump Catch Basin (Pretreatment)	0%	100%	0%
Leaching Catch Basin	80%	20%	80%

Drawdown Calculations

BMP: **Leaching Basin**

Rv (cu. ft.) =	1,013	Drawdown (hrs) =	**11.8**
K (in/hr) =	2.41		
Bottom Area (sq. ft.) =	429	Less than 72 hrs?	**PASS**

**The hydraulic conductivity rate is based on Rawls Rate for Loamy Sand
*Bottom Area is based on total leaching area across all systems

PROJECT NAME:	**Chauncy Street (Route 106)**	PROJ NO.	**6076**
DESCRIPTION:	**Standards 3 & 4 Worksheet**	DATE	**01/29/25**
CALCULATED BY:	**SLB**	SHEET	**4**

Water Quality Swale
Provided Volumes & TSS Worksheet

Total Storage

Storage Within Basins	Check Dam Elevation (ft)	Volume Below Dam (Ft.)
Behind 1st Check Dam	177.50	108.0
Behind 2nd Check Dam	178.20	115.2

Total Storage Volume Provided: **223 CF**

Required Recharge & Water Quality Volume

	Impervious Area Within Catchment (Sq. Ft.)	Runoff Depth (in.)	Required Volume (Cu. Ft.)
Required Recharge Volume (HSG A)	10900	0.6	**545**
Required Water Quality Volume	10900	1	**908**

TSS Removal

Best Management Practice (BMP)	SCM Removal Rate (%)	Remaining TSS (%)	Cumulative Removal Rate (%)
Water Quality Swale	0% 70%	100% 30%	0% 70%

Drawdown Calculations

BMP: **Water Quality Swale**

Rv (cu. ft.) =	223	Drawdown (hrs) =	**11.1**
K (in/hr) =	2.41		
Bottom Area (sq. ft.)	100	Less than 72 hrs?	**PASS**

Soil Type:245B - Hinckley Loamy Sand - HSG A

PROJECT NAME:	**Chauncy Street (Route 106)**	PROJ NO.	**6076**
DESCRIPTION:	**Standards 3 & 4 Worksheet**	DATE	**01/29/25**
CALCULATED BY:	**SLB**	SHEET	**5**

Total Suspended Solids (TSS)
Provided Treatment Worksheet

Treatment Train	A: Total Removal Rate (%)	B: Total Treatment Area (Sq. Ft.)	C: A x B (Cu. Ft.)
No Treatment (Existing Cbs)	0%	33067	0
Treatment Train 1 - Deep Sump Catch Basins	25%	162918	40729
Treatment Train 2 - Leaching Basins	80%	4500	3600
Treatment Train 3 - Water Quality Swale	70%	10900	7630
Totals:		211,385 SF	51,959 CF

Total Sitewide TSS Removal (C / B) 25%
Total of Column C divided by Total of Column B

Equivalent Area for 80% TSS Removal **64,949 CF**
Total of Column B x total TSS Rate divided by 80%

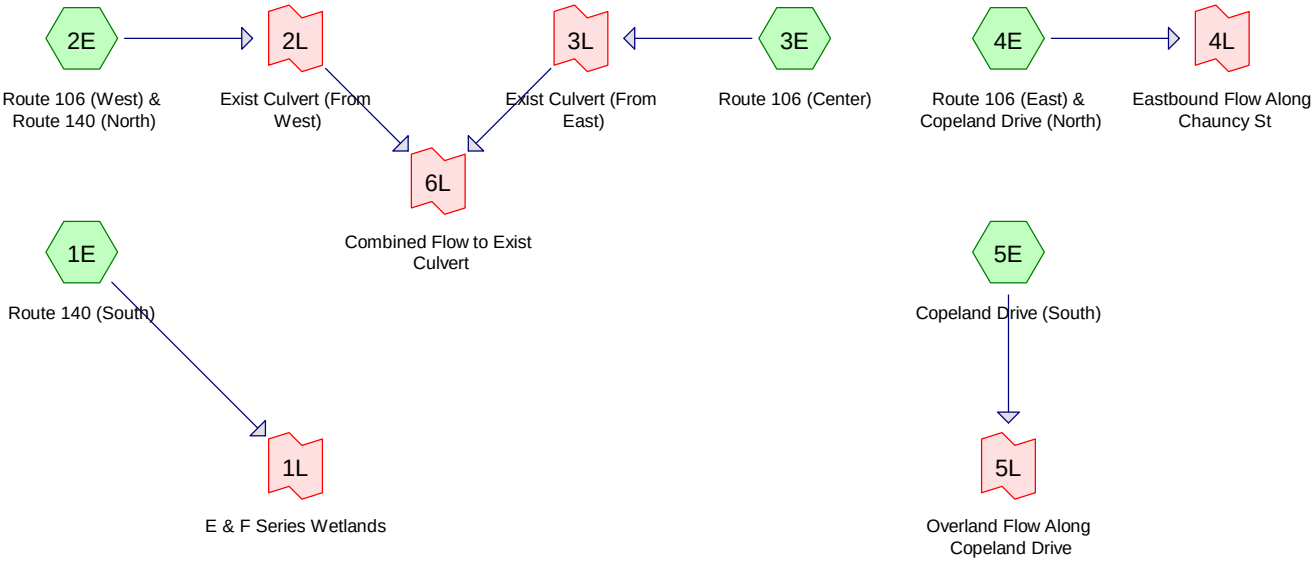
Proposed New Impervious Area: 16,965 SF

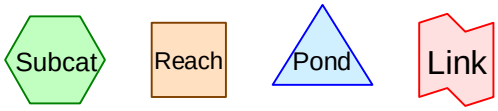
Appendix D: Hydrologic Data

Summary of Modelling Results

Peak Rate of Runoff		Flow (cubic feet per second)							
		1-Year Storm		2 Year Storm		10 Year Storm		100 Year Storm	
Outlet To:		Exist	Prop	Exist	Prop	Exist	Prop	Exist	Prop
1L	E & F Series Wetlands	1.15	1.11	1.51	1.48	2.64	2.67	5.39	5.61
2L	Exist Culvert (From West)	2.91	3.76	4.54	5.49	10.40	11.63	26.64	28.01
3L	Exist Culvert (From East)	1.16	1.50	1.58	1.95	2.96	3.36	6.39	6.77
4L	Chancy St.	1.77	2.24	2.36	2.81	4.26	4.57	8.94	8.78
5L	Copeland Dr.	0.37	0.20	0.50	0.30	0.90	0.69	1.89	2.17
Project Total:		7.36	8.81	10.49	12.03	21.16	22.92	49.25	51.34
6L	Exist Culvert (Combined)	4.07	5.22	6.12	7.43	13.35	14.99	33.03	34.78

Runoff Volume		Volume (acre-feet)							
		1-Year Storm		2 Year Storm		10 Year Storm		100 Year Storm	
Outlet To:		Exist	Prop	Exist	Prop	Exist	Prop	Exist	Prop
1L	E & F Series Wetlands	0.078	0.075	0.103	0.100	0.184	0.184	0.391	0.403
2L	Exist Culvert (From West)	0.213	0.260	0.317	0.375	0.702	0.784	1.822	1.936
3L	Exist Culvert (From East)	0.079	0.102	0.107	0.133	0.202	0.236	0.454	0.495
4L	Chancy St.	0.119	0.156	0.160	0.198	0.294	0.331	0.642	0.658
5L	Copeland Dr.	0.025	0.014	0.034	0.021	0.062	0.072	0.136	0.118
Project Total:		0.514	0.607	0.721	0.827	1.444	1.607	3.445	3.610
6L	Exist Culvert (Combined)	0.291	0.362	0.424	0.508	0.904	1.020	2.276	2.431





Routing Diagram for 6076_ExistingConditions
Prepared by BETA Group Inc, Printed 1/28/2025
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Summary for Subcatchment 1E: Route 140 (South)

Runoff = 1.15 cfs @ 12.09 hrs, Volume= 0.078 af, Depth> 1.40"
Routed to Link 1L : E & F Series Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
5,539	39	>75% Grass cover, Good, HSG A
23,462	98	Paved roads w/curbs & sewers, HSG A
29,000	87	Weighted Average
5,539		19.10% Pervious Area
23,462		80.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	50	0.0070	0.78		**Sheet Flow, Sheet** Smooth surfaces n= 0.011 P2= 3.12"
0.9	125	0.0120	2.22		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
4.0					**Direct Entry, Min TC**
6.0	175	Total			

Summary for Subcatchment 2E: Route 106 (West) & Route 140 (North)

Runoff = 2.91 cfs @ 12.10 hrs, Volume= 0.213 af, Depth> 0.63"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
40,077	39	>75% Grass cover, Good, HSG A
11,224	61	>75% Grass cover, Good, HSG B
86,127	98	Paved roads w/curbs & sewers, HSG A
11,436	98	Paved roads w/curbs & sewers, HSG B
19,504	30	Woods, Good, HSG A
8,550	55	Woods, Good, HSG B
176,918	73	Weighted Average
79,355		44.85% Pervious Area
97,563		55.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.12"
2.8	290	0.0070	1.70		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
2.5					**Direct Entry, Use Min TC**
6.0	340	Total			

Summary for Subcatchment 3E: Route 106 (Center)

Runoff = 1.16 cfs @ 12.10 hrs, Volume= 0.079 af, Depth> 1.14"
Routed to Link 3L : Exist Culvert (From East)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
8,904	39	>75% Grass cover, Good, HSG A
27,121	98	Paved roads w/curbs & sewers, HSG A
36,025	83	Weighted Average
8,904		24.72% Pervious Area
27,121		75.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0130	1.00		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.8	265	0.0140	2.40		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
3.4					**Direct Entry, Use Min TC**
6.0	315	Total			

Summary for Subcatchment 4E: Route 106 (East) & Copeland Drive (North)

Runoff = 1.77 cfs @ 12.09 hrs, Volume= 0.119 af, Depth> 1.27"
Routed to Link 4L : Eastbound Flow Along Chauncy St

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
11,087	39	>75% Grass cover, Good, HSG A
38,109	98	Paved roads w/curbs & sewers, HSG A
49,197	85	Weighted Average
11,087		22.54% Pervious Area
38,109		77.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	140	0.0110	2.13		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.2					**Direct Entry, Use Min TC**
6.0	190	Total			

Summary for Subcatchment 5E: Copeland Drive (South)

Runoff = 0.37 cfs @ 12.09 hrs, Volume= 0.025 af, Depth> 1.27"
Routed to Link 5L : Overland Flow Along Copeland Drive

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
2,261	39	>75% Grass cover, Good, HSG A
8,163	98	Paved roads w/curbs & sewers, HSG A
10,424	85	Weighted Average
2,261		21.69% Pervious Area
8,163		78.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	102	0.0060	1.57		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.0					**Direct Entry, Use Minimum TC**
6.0	152	Total			

Summary for Link 1L: E & F Series Wetlands

Inflow Area = 0.666 ac, 80.90% Impervious, Inflow Depth > 1.40" for 1-year event
Inflow = 1.15 cfs @ 12.09 hrs, Volume= 0.078 af
Primary = 1.15 cfs @ 12.09 hrs, Volume= 0.078 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Exist Culvert (From West)

Inflow Area = 4.061 ac, 55.15% Impervious, Inflow Depth > 0.63" for 1-year event
Inflow = 2.91 cfs @ 12.10 hrs, Volume= 0.213 af
Primary = 2.91 cfs @ 12.10 hrs, Volume= 0.213 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 3L: Exist Culvert (From East)

Inflow Area = 0.827 ac, 75.28% Impervious, Inflow Depth > 1.14" for 1-year event
Inflow = 1.16 cfs @ 12.10 hrs, Volume= 0.079 af
Primary = 1.16 cfs @ 12.10 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 4L: Eastbound Flow Along Chauncy St

Inflow Area = 1.129 ac, 77.46% Impervious, Inflow Depth > 1.27" for 1-year event
Inflow = 1.77 cfs @ 12.09 hrs, Volume= 0.119 af
Primary = 1.77 cfs @ 12.09 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 5L: Overland Flow Along Copeland Drive

Inflow Area = 0.239 ac, 78.31% Impervious, Inflow Depth > 1.27" for 1-year event
Inflow = 0.37 cfs @ 12.09 hrs, Volume= 0.025 af
Primary = 0.37 cfs @ 12.09 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 6L: Combined Flow to Exist Culvert

Inflow Area = 4.888 ac, 58.55% Impervious, Inflow Depth > 0.71" for 1-year event
Inflow = 4.07 cfs @ 12.10 hrs, Volume= 0.291 af
Primary = 4.07 cfs @ 12.10 hrs, Volume= 0.291 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1E: Route 140 (South)

Runoff = 1.51 cfs @ 12.09 hrs, Volume= 0.103 af, Depth> 1.85"
Routed to Link 1L : E & F Series Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
5,539	39	>75% Grass cover, Good, HSG A
23,462	98	Paved roads w/curbs & sewers, HSG A
29,000	87	Weighted Average
5,539		19.10% Pervious Area
23,462		80.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	50	0.0070	0.78		**Sheet Flow, Sheet** Smooth surfaces n= 0.011 P2= 3.12"
0.9	125	0.0120	2.22		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
4.0					**Direct Entry, Min TC**
6.0	175	Total			

Summary for Subcatchment 2E: Route 106 (West) & Route 140 (North)

Runoff = 4.54 cfs @ 12.10 hrs, Volume= 0.317 af, Depth> 0.94"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
40,077	39	>75% Grass cover, Good, HSG A
11,224	61	>75% Grass cover, Good, HSG B
86,127	98	Paved roads w/curbs & sewers, HSG A
11,436	98	Paved roads w/curbs & sewers, HSG B
19,504	30	Woods, Good, HSG A
8,550	55	Woods, Good, HSG B
176,918	73	Weighted Average
79,355		44.85% Pervious Area
97,563		55.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.12"
2.8	290	0.0070	1.70		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
2.5					**Direct Entry, Use Min TC**
6.0	340	Total			

Summary for Subcatchment 3E: Route 106 (Center)

Runoff = 1.58 cfs @ 12.09 hrs, Volume= 0.107 af, Depth> 1.55"
Routed to Link 3L : Exist Culvert (From East)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
8,904	39	>75% Grass cover, Good, HSG A
27,121	98	Paved roads w/curbs & sewers, HSG A
36,025	83	Weighted Average
8,904		24.72% Pervious Area
27,121		75.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0130	1.00		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.8	265	0.0140	2.40		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
3.4					**Direct Entry, Use Min TC**
6.0	315	Total			

Summary for Subcatchment 4E: Route 106 (East) & Copeland Drive (North)

Runoff = 2.36 cfs @ 12.09 hrs, Volume= 0.160 af, Depth> 1.70"
Routed to Link 4L : Eastbound Flow Along Chauncy St

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
11,087	39	>75% Grass cover, Good, HSG A
38,109	98	Paved roads w/curbs & sewers, HSG A
49,197	85	Weighted Average
11,087		22.54% Pervious Area
38,109		77.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	140	0.0110	2.13		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.2					**Direct Entry, Use Min TC**
6.0	190	Total			

Summary for Subcatchment 5E: Copeland Drive (South)

Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.034 af, Depth> 1.70"
Routed to Link 5L : Overland Flow Along Copeland Drive

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
2,261	39	>75% Grass cover, Good, HSG A
8,163	98	Paved roads w/curbs & sewers, HSG A
10,424	85	Weighted Average
2,261		21.69% Pervious Area
8,163		78.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	102	0.0060	1.57		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.0					**Direct Entry, Use Minimum TC**
6.0	152	Total			

Summary for Link 1L: E & F Series Wetlands

Inflow Area = 0.666 ac, 80.90% Impervious, Inflow Depth > 1.85" for 2-year event
Inflow = 1.51 cfs @ 12.09 hrs, Volume= 0.103 af
Primary = 1.51 cfs @ 12.09 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Exist Culvert (From West)

Inflow Area = 4.061 ac, 55.15% Impervious, Inflow Depth > 0.94" for 2-year event
Inflow = 4.54 cfs @ 12.10 hrs, Volume= 0.317 af
Primary = 4.54 cfs @ 12.10 hrs, Volume= 0.317 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 3L: Exist Culvert (From East)

Inflow Area = 0.827 ac, 75.28% Impervious, Inflow Depth > 1.55" for 2-year event
Inflow = 1.58 cfs @ 12.09 hrs, Volume= 0.107 af
Primary = 1.58 cfs @ 12.09 hrs, Volume= 0.107 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 4L: Eastbound Flow Along Chauncy St

Inflow Area = 1.129 ac, 77.46% Impervious, Inflow Depth > 1.70" for 2-year event
Inflow = 2.36 cfs @ 12.09 hrs, Volume= 0.160 af
Primary = 2.36 cfs @ 12.09 hrs, Volume= 0.160 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 5L: Overland Flow Along Copeland Drive

Inflow Area = 0.239 ac, 78.31% Impervious, Inflow Depth > 1.70" for 2-year event
Inflow = 0.50 cfs @ 12.09 hrs, Volume= 0.034 af
Primary = 0.50 cfs @ 12.09 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 6L: Combined Flow to Exist Culvert

Inflow Area = 4.888 ac, 58.55% Impervious, Inflow Depth > 1.04" for 2-year event
Inflow = 6.12 cfs @ 12.10 hrs, Volume= 0.424 af
Primary = 6.12 cfs @ 12.10 hrs, Volume= 0.424 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1E: Route 140 (South)

Runoff = 2.64 cfs @ 12.09 hrs, Volume= 0.184 af, Depth> 3.32"
Routed to Link 1L : E & F Series Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
5,539	39	>75% Grass cover, Good, HSG A
23,462	98	Paved roads w/curbs & sewers, HSG A
29,000	87	Weighted Average
5,539		19.10% Pervious Area
23,462		80.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	50	0.0070	0.78		**Sheet Flow, Sheet** Smooth surfaces n= 0.011 P2= 3.12"
0.9	125	0.0120	2.22		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
4.0					**Direct Entry, Min TC**
6.0	175	Total			

Summary for Subcatchment 2E: Route 106 (West) & Route 140 (North)

Runoff = 10.40 cfs @ 12.10 hrs, Volume= 0.702 af, Depth> 2.07"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
40,077	39	>75% Grass cover, Good, HSG A
11,224	61	>75% Grass cover, Good, HSG B
86,127	98	Paved roads w/curbs & sewers, HSG A
11,436	98	Paved roads w/curbs & sewers, HSG B
19,504	30	Woods, Good, HSG A
8,550	55	Woods, Good, HSG B
176,918	73	Weighted Average
79,355		44.85% Pervious Area
97,563		55.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.12"
2.8	290	0.0070	1.70		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
2.5					**Direct Entry, Use Min TC**
6.0	340	Total			

Summary for Subcatchment 3E: Route 106 (Center)

Runoff = 2.96 cfs @ 12.09 hrs, Volume= 0.202 af, Depth> 2.93"
Routed to Link 3L : Exist Culvert (From East)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
8,904	39	>75% Grass cover, Good, HSG A
27,121	98	Paved roads w/curbs & sewers, HSG A
36,025	83	Weighted Average
8,904		24.72% Pervious Area
27,121		75.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0130	1.00		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.8	265	0.0140	2.40		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
3.4					**Direct Entry, Use Min TC**
6.0	315	Total			

Summary for Subcatchment 4E: Route 106 (East) & Copeland Drive (North)

Runoff = 4.26 cfs @ 12.09 hrs, Volume= 0.294 af, Depth> 3.12"
Routed to Link 4L : Eastbound Flow Along Chauncy St

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
11,087	39	>75% Grass cover, Good, HSG A
38,109	98	Paved roads w/curbs & sewers, HSG A
49,197	85	Weighted Average
11,087		22.54% Pervious Area
38,109		77.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	140	0.0110	2.13		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.2					**Direct Entry, Use Min TC**
6.0	190	Total			

Summary for Subcatchment 5E: Copeland Drive (South)

Runoff = 0.90 cfs @ 12.09 hrs, Volume= 0.062 af, Depth> 3.12"
Routed to Link 5L : Overland Flow Along Copeland Drive

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
2,261	39	>75% Grass cover, Good, HSG A
8,163	98	Paved roads w/curbs & sewers, HSG A
10,424	85	Weighted Average
2,261		21.69% Pervious Area
8,163		78.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	102	0.0060	1.57		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.0					**Direct Entry, Use Minimum TC**
6.0	152	Total			

Summary for Link 1L: E & F Series Wetlands

Inflow Area = 0.666 ac, 80.90% Impervious, Inflow Depth > 3.32" for 10-year event
Inflow = 2.64 cfs @ 12.09 hrs, Volume= 0.184 af
Primary = 2.64 cfs @ 12.09 hrs, Volume= 0.184 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Exist Culvert (From West)

Inflow Area = 4.061 ac, 55.15% Impervious, Inflow Depth > 2.07" for 10-year event
Inflow = 10.40 cfs @ 12.10 hrs, Volume= 0.702 af
Primary = 10.40 cfs @ 12.10 hrs, Volume= 0.702 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 3L: Exist Culvert (From East)

Inflow Area = 0.827 ac, 75.28% Impervious, Inflow Depth > 2.93" for 10-year event
Inflow = 2.96 cfs @ 12.09 hrs, Volume= 0.202 af
Primary = 2.96 cfs @ 12.09 hrs, Volume= 0.202 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 4L: Eastbound Flow Along Chauncy St

Inflow Area = 1.129 ac, 77.46% Impervious, Inflow Depth > 3.12" for 10-year event
Inflow = 4.26 cfs @ 12.09 hrs, Volume= 0.294 af
Primary = 4.26 cfs @ 12.09 hrs, Volume= 0.294 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 5L: Overland Flow Along Copeland Drive

Inflow Area = 0.239 ac, 78.31% Impervious, Inflow Depth > 3.12" for 10-year event
Inflow = 0.90 cfs @ 12.09 hrs, Volume= 0.062 af
Primary = 0.90 cfs @ 12.09 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 6L: Combined Flow to Exist Culvert

Inflow Area = 4.888 ac, 58.55% Impervious, Inflow Depth > 2.22" for 10-year event
Inflow = 13.35 cfs @ 12.09 hrs, Volume= 0.904 af
Primary = 13.35 cfs @ 12.09 hrs, Volume= 0.904 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1E: Route 140 (South)

Runoff = 5.39 cfs @ 12.09 hrs, Volume= 0.391 af, Depth> 7.05"
Routed to Link 1L : E & F Series Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
5,539	39	>75% Grass cover, Good, HSG A
23,462	98	Paved roads w/curbs & sewers, HSG A
29,000	87	Weighted Average
5,539		19.10% Pervious Area
23,462		80.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	50	0.0070	0.78		**Sheet Flow, Sheet** Smooth surfaces n= 0.011 P2= 3.12"
0.9	125	0.0120	2.22		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
4.0					**Direct Entry, Min TC**
6.0	175	Total			

Summary for Subcatchment 2E: Route 106 (West) & Route 140 (North)

Runoff = 26.64 cfs @ 12.09 hrs, Volume= 1.822 af, Depth> 5.38"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
40,077	39	>75% Grass cover, Good, HSG A
11,224	61	>75% Grass cover, Good, HSG B
86,127	98	Paved roads w/curbs & sewers, HSG A
11,436	98	Paved roads w/curbs & sewers, HSG B
19,504	30	Woods, Good, HSG A
8,550	55	Woods, Good, HSG B
176,918	73	Weighted Average
79,355		44.85% Pervious Area
97,563		55.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.12"
2.8	290	0.0070	1.70		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
2.5					**Direct Entry, Use Min TC**
6.0	340	Total			

Summary for Subcatchment 3E: Route 106 (Center)

Runoff = 6.39 cfs @ 12.09 hrs, Volume= 0.454 af, Depth> 6.59"
Routed to Link 3L : Exist Culvert (From East)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
8,904	39	>75% Grass cover, Good, HSG A
27,121	98	Paved roads w/curbs & sewers, HSG A
36,025	83	Weighted Average
8,904		24.72% Pervious Area
27,121		75.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0130	1.00		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.8	265	0.0140	2.40		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
3.4					**Direct Entry, Use Min TC**
6.0	315	Total			

Summary for Subcatchment 4E: Route 106 (East) & Copeland Drive (North)

Runoff = 8.94 cfs @ 12.09 hrs, Volume= 0.642 af, Depth> 6.82"
Routed to Link 4L : Eastbound Flow Along Chauncy St

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
11,087	39	>75% Grass cover, Good, HSG A
38,109	98	Paved roads w/curbs & sewers, HSG A
49,197	85	Weighted Average
11,087		22.54% Pervious Area
38,109		77.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	140	0.0110	2.13		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.2					**Direct Entry, Use Min TC**
6.0	190	Total			

Summary for Subcatchment 5E: Copeland Drive (South)

Runoff = 1.89 cfs @ 12.09 hrs, Volume= 0.136 af, Depth> 6.82"
Routed to Link 5L : Overland Flow Along Copeland Drive

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
2,261	39	>75% Grass cover, Good, HSG A
8,163	98	Paved roads w/curbs & sewers, HSG A
10,424	85	Weighted Average
2,261		21.69% Pervious Area
8,163		78.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	102	0.0060	1.57		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.0					**Direct Entry, Use Minimum TC**
6.0	152	Total			

Summary for Link 1L: E & F Series Wetlands

Inflow Area = 0.666 ac, 80.90% Impervious, Inflow Depth > 7.05" for 100-year event
Inflow = 5.39 cfs @ 12.09 hrs, Volume= 0.391 af
Primary = 5.39 cfs @ 12.09 hrs, Volume= 0.391 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Exist Culvert (From West)

Inflow Area = 4.061 ac, 55.15% Impervious, Inflow Depth > 5.38" for 100-year event
Inflow = 26.64 cfs @ 12.09 hrs, Volume= 1.822 af
Primary = 26.64 cfs @ 12.09 hrs, Volume= 1.822 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 3L: Exist Culvert (From East)

Inflow Area = 0.827 ac, 75.28% Impervious, Inflow Depth > 6.59" for 100-year event
Inflow = 6.39 cfs @ 12.09 hrs, Volume= 0.454 af
Primary = 6.39 cfs @ 12.09 hrs, Volume= 0.454 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 4L: Eastbound Flow Along Chauncy St

Inflow Area = 1.129 ac, 77.46% Impervious, Inflow Depth > 6.82" for 100-year event
Inflow = 8.94 cfs @ 12.09 hrs, Volume= 0.642 af
Primary = 8.94 cfs @ 12.09 hrs, Volume= 0.642 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 5L: Overland Flow Along Copeland Drive

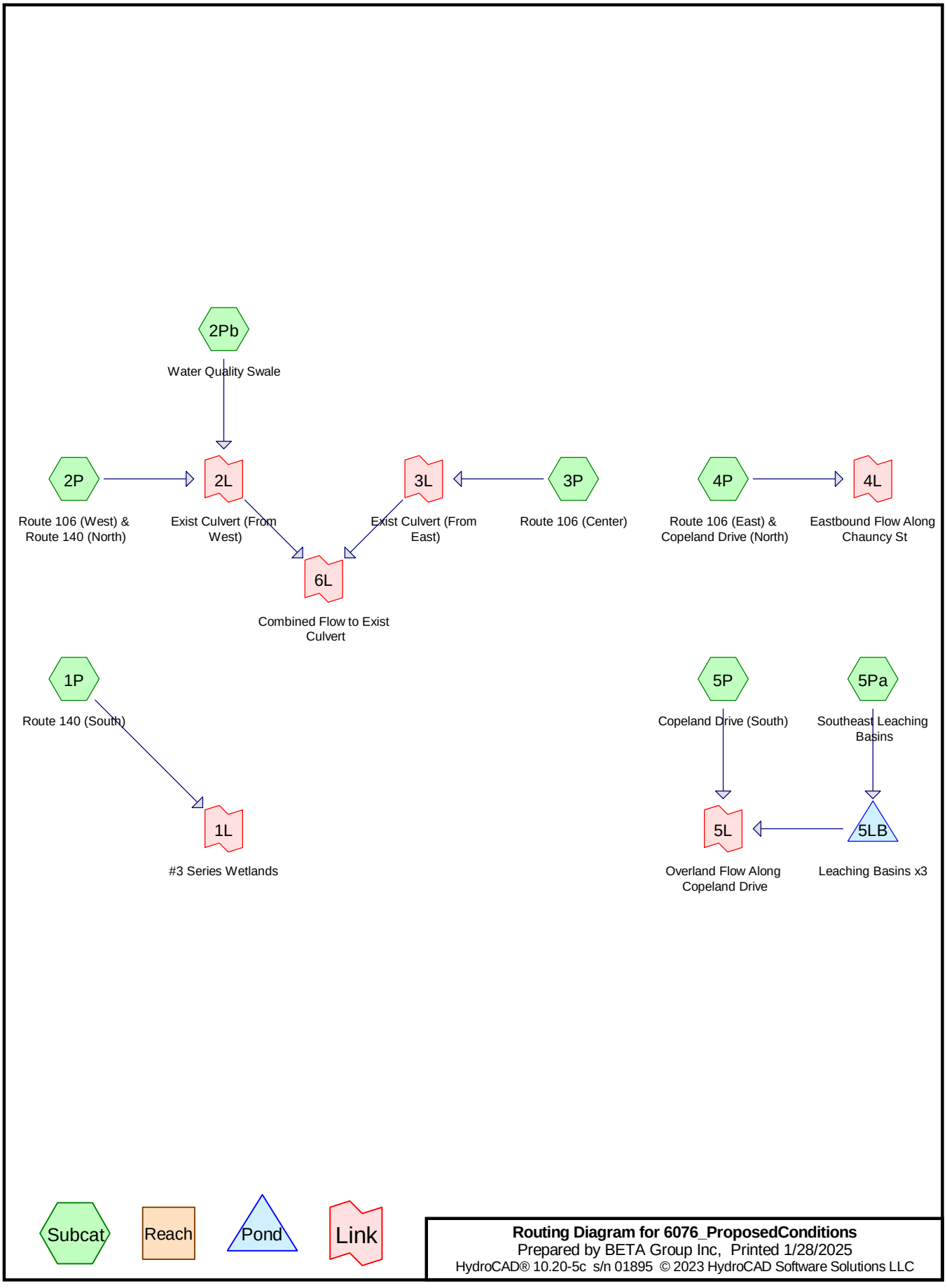
Inflow Area = 0.239 ac, 78.31% Impervious, Inflow Depth > 6.82" for 100-year event
Inflow = 1.89 cfs @ 12.09 hrs, Volume= 0.136 af
Primary = 1.89 cfs @ 12.09 hrs, Volume= 0.136 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 6L: Combined Flow to Exist Culvert

Inflow Area = 4.888 ac, 58.55% Impervious, Inflow Depth > 5.59" for 100-year event
Inflow = 33.03 cfs @ 12.09 hrs, Volume= 2.276 af
Primary = 33.03 cfs @ 12.09 hrs, Volume= 2.276 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs


2Pb
Water Quality Swale
2P
Route 106 (West) & Route 140 (North)
2L
Exist Culvert (From West)
3L
Exist Culvert (From East)
3P
Route 106 (Center)
4P
Route 106 (East) & Copeland Drive (North)
4L
Eastbound Flow Along Chauncy St
6L
Combined Flow to Exist Culvert
1P
Route 140 (South)
1L
#3 Series Wetlands
5P
Copeland Drive (South)
5Pa
Southeast Leaching Basins
5L
Overland Flow Along Copeland Drive
5LB
Leaching Basins x3
Subcat
Reach
Pond
Link
Routing Diagram for 6076_ProposedConditions
Prepared by BETA Group Inc, Printed 1/28/2025
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Summary for Subcatchment 1P: Route 140 (South)

Runoff = 1.11 cfs @ 12.09 hrs, Volume= 0.075 af, Depth> 1.27"
Routed to Link 1L : #3 Series Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
6,926	39	>75% Grass cover, Good, HSG A
23,933	98	Paved roads w/curbs & sewers, HSG A
30,859	85	Weighted Average
6,926		22.44% Pervious Area
23,933		77.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	50	0.0070	0.78		**Sheet Flow, Sheet** Smooth surfaces n= 0.011 P2= 3.12"
0.9	125	0.0120	2.22		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
4.0					**Direct Entry, Min TC**
6.0	175	Total			

Summary for Subcatchment 2P: Route 106 (West) & Route 140 (North)

Runoff = 3.25 cfs @ 12.10 hrs, Volume= 0.228 af, Depth> 0.76"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
29,052	39	>75% Grass cover, Good, HSG A
6,376	61	>75% Grass cover, Good, HSG B
90,221	98	Paved roads w/curbs & sewers, HSG A
5,345	98	Paved roads w/curbs & sewers, HSG B
16,825	30	Woods, Good, HSG A
8,550	55	Woods, Good, HSG B
156,370	76	Weighted Average
60,803		38.88% Pervious Area
95,567		61.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.12"
2.8	290	0.0070	1.70		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
2.5					**Direct Entry, Use Min TC**
6.0	340	Total			

Summary for Subcatchment 2Pb: Water Quality Swale

Runoff = 0.47 cfs @ 12.10 hrs, Volume= 0.032 af, Depth> 0.91"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
3,009	39	>75% Grass cover, Good, HSG A
4,626	61	>75% Grass cover, Good, HSG B
4,587	98	Paved roads w/curbs & sewers, HSG A
6,311	98	Paved roads w/curbs & sewers, HSG B
18,533	79	Weighted Average
7,635		41.20% Pervious Area
10,897		58.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6**

Summary for Subcatchment 3P: Route 106 (Center)

Runoff = 1.50 cfs @ 12.09 hrs, Volume= 0.102 af, Depth> 1.48"
Routed to Link 3L : Exist Culvert (From East)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
6,218	39	>75% Grass cover, Good, HSG A
29,881	98	Paved roads w/curbs & sewers, HSG A
36,099	88	Weighted Average
6,218		17.22% Pervious Area
29,881		82.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0130	1.00		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.8	265	0.0140	2.40		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
3.4					**Direct Entry, Use Min TC**
6.0	315	Total			

Summary for Subcatchment 4P: Route 106 (East) & Copeland Drive (North)

Runoff = 2.24 cfs @ 12.09 hrs, Volume= 0.156 af, Depth> 1.80"
Routed to Link 4L : Eastbound Flow Along Chauncy St

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
4,868	39	>75% Grass cover, Good, HSG A
40,452	98	Paved roads w/curbs & sewers, HSG A
45,320	92	Weighted Average
4,868		10.74% Pervious Area
40,452		89.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	140	0.0110	2.13		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.2					**Direct Entry, Use Min TC**
6.0	190	Total			

Summary for Subcatchment 5P: Copeland Drive (South)

Runoff = 0.20 cfs @ 12.10 hrs, Volume= 0.014 af, Depth> 0.76"
Routed to Link 5L : Overland Flow Along Copeland Drive

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
3,612	39	>75% Grass cover, Good, HSG A
6,155	98	Paved roads w/curbs & sewers, HSG A
9,768	76	Weighted Average
3,612		36.98% Pervious Area
6,155		63.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	102	0.0060	1.57		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.0					**Direct Entry, Use Min TC**
6.0	152	Total			

Summary for Subcatchment 5Pa: Southeast Leaching Basins

Runoff = 0.27 cfs @ 12.09 hrs, Volume= 0.020 af, Depth> 2.34"
Routed to Pond 5LB : Leaching Basins x3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-year Rainfall=2.73"

Area (sf)	CN	Description
1	39	>75% Grass cover, Good, HSG A
4,502	98	Paved roads w/curbs & sewers, HSG A
4,502	98	Weighted Average
1		0.01% Pervious Area
4,502		99.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6**

Summary for Pond 5LB: Leaching Basins x3

Inflow Area = 0.103 ac, 99.99% Impervious, Inflow Depth > 2.34" for 1-year event
Inflow = 0.27 cfs @ 12.09 hrs, Volume= 0.020 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link 5L : Overland Flow Along Copeland Drive

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 168.66' @ 20.00 hrs Surf.Area= 514 sf Storage= 878 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	165.30'	339 cf	**6.00'D x 4.00'H Basin Structure** x 3
#2	164.30'	673 cf	**13.00'W x 33.00'L x 5.00'H Crushed Stone Field** 2,145 cf Overall - 462 cf Embedded = 1,683 cf x 40.0% Voids
#3	165.30'	0 cf	**7.00'D x 4.00'H Exclude Structure from Field** x 3 Inside #2 462 cf Overall x 0.0% Voids
		1,013 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	170.10'	**24.0" x 24.0" Horiz. Orifice/Grate** X 3 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=164.30' (Free Discharge)
↑**1=Orifice/Grate** (Controls 0.00 cfs)

Summary for Link 1L: #3 Series Wetlands

Inflow Area = 0.708 ac, 77.56% Impervious, Inflow Depth > 1.27" for 1-year event
Inflow = 1.11 cfs @ 12.09 hrs, Volume= 0.075 af
Primary = 1.11 cfs @ 12.09 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Exist Culvert (From West)

Inflow Area = 4.015 ac, 60.87% Impervious, Inflow Depth > 0.78" for 1-year event
Inflow = 3.72 cfs @ 12.10 hrs, Volume= 0.260 af
Primary = 3.72 cfs @ 12.10 hrs, Volume= 0.260 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 3L: Exist Culvert (From East)

Inflow Area = 0.829 ac, 82.78% Impervious, Inflow Depth > 1.48" for 1-year event
Inflow = 1.50 cfs @ 12.09 hrs, Volume= 0.102 af
Primary = 1.50 cfs @ 12.09 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 4L: Eastbound Flow Along Chauncy St

Inflow Area = 1.040 ac, 89.26% Impervious, Inflow Depth > 1.80" for 1-year event
Inflow = 2.24 cfs @ 12.09 hrs, Volume= 0.156 af
Primary = 2.24 cfs @ 12.09 hrs, Volume= 0.156 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 5L: Overland Flow Along Copeland Drive

Inflow Area = 0.328 ac, 74.68% Impervious, Inflow Depth > 0.52" for 1-year event
Inflow = 0.20 cfs @ 12.10 hrs, Volume= 0.014 af
Primary = 0.20 cfs @ 12.10 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 6L: Combined Flow to Exist Culvert

Inflow Area = 4.844 ac, 64.62% Impervious, Inflow Depth > 0.90" for 1-year event
Inflow = 5.22 cfs @ 12.10 hrs, Volume= 0.362 af
Primary = 5.22 cfs @ 12.10 hrs, Volume= 0.362 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1P: Route 140 (South)

Runoff = 1.48 cfs @ 12.09 hrs, Volume= 0.100 af, Depth> 1.70"
Routed to Link 1L : #3 Series Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
6,926	39	>75% Grass cover, Good, HSG A
23,933	98	Paved roads w/curbs & sewers, HSG A
30,859	85	Weighted Average
6,926		22.44% Pervious Area
23,933		77.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	50	0.0070	0.78		**Sheet Flow, Sheet** Smooth surfaces n= 0.011 P2= 3.12"
0.9	125	0.0120	2.22		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
4.0					**Direct Entry, Min TC**
6.0	175	Total			

Summary for Subcatchment 2P: Route 106 (West) & Route 140 (North)

Runoff = 4.81 cfs @ 12.10 hrs, Volume= 0.329 af, Depth> 1.10"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
29,052	39	>75% Grass cover, Good, HSG A
6,376	61	>75% Grass cover, Good, HSG B
90,221	98	Paved roads w/curbs & sewers, HSG A
5,345	98	Paved roads w/curbs & sewers, HSG B
16,825	30	Woods, Good, HSG A
8,550	55	Woods, Good, HSG B
156,370	76	Weighted Average
60,803		38.88% Pervious Area
95,567		61.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.12"
2.8	290	0.0070	1.70		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
2.5					**Direct Entry, Use Min TC**
6.0	340	Total			

Summary for Subcatchment 2Pb: Water Quality Swale

Runoff = 0.67 cfs @ 12.10 hrs, Volume= 0.045 af, Depth> 1.28"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
3,009	39	>75% Grass cover, Good, HSG A
4,626	61	>75% Grass cover, Good, HSG B
4,587	98	Paved roads w/curbs & sewers, HSG A
6,311	98	Paved roads w/curbs & sewers, HSG B
18,533	79	Weighted Average
7,635		41.20% Pervious Area
10,897		58.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6**

Summary for Subcatchment 3P: Route 106 (Center)

Runoff = 1.95 cfs @ 12.09 hrs, Volume= 0.133 af, Depth> 1.93"
Routed to Link 3L : Exist Culvert (From East)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
6,218	39	>75% Grass cover, Good, HSG A
29,881	98	Paved roads w/curbs & sewers, HSG A
36,099	88	Weighted Average
6,218		17.22% Pervious Area
29,881		82.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0130	1.00		**Sheet Flow, SF**
					Smooth surfaces n= 0.011 P2= 3.12"
1.8	265	0.0140	2.40		**Shallow Concentrated Flow, SCF**
					Paved Kv= 20.3 fps
3.4					**Direct Entry, Use Min TC**
6.0	315	Total			

Summary for Subcatchment 4P: Route 106 (East) & Copeland Drive (North)

Runoff = 2.81 cfs @ 12.09 hrs, Volume= 0.198 af, Depth> 2.28"
Routed to Link 4L : Eastbound Flow Along Chauncy St

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
4,868	39	>75% Grass cover, Good, HSG A
40,452	98	Paved roads w/curbs & sewers, HSG A
45,320	92	Weighted Average
4,868		10.74% Pervious Area
40,452		89.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, SF**
					Smooth surfaces n= 0.011 P2= 3.12"
1.1	140	0.0110	2.13		**Shallow Concentrated Flow, SCF**
					Paved Kv= 20.3 fps
4.2					**Direct Entry, Use Min TC**
6.0	190	Total			

Summary for Subcatchment 5P: Copeland Drive (South)

Runoff = 0.30 cfs @ 12.10 hrs, Volume= 0.021 af, Depth> 1.10"
Routed to Link 5L : Overland Flow Along Copeland Drive

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
3,612	39	>75% Grass cover, Good, HSG A
6,155	98	Paved roads w/curbs & sewers, HSG A
9,768	76	Weighted Average
3,612		36.98% Pervious Area
6,155		63.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		**Sheet Flow, SF**
					Smooth surfaces n= 0.011 P2= 3.12"
1.1	102	0.0060	1.57		**Shallow Concentrated Flow, SCF**
					Paved Kv= 20.3 fps
4.0					**Direct Entry, Use Min TC**
6.0	152	Total			

Summary for Subcatchment 5Pa: Southeast Leaching Basins

Runoff = 0.32 cfs @ 12.09 hrs, Volume= 0.024 af, Depth> 2.84"
Routed to Pond 5LB : Leaching Basins x3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.27"

Area (sf)	CN	Description
1	39	>75% Grass cover, Good, HSG A
4,502	98	Paved roads w/curbs & sewers, HSG A
4,502	98	Weighted Average
1		0.01% Pervious Area
4,502		99.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6**

Summary for Pond 5LB: Leaching Basins x3

Inflow Area = 0.103 ac, 99.99% Impervious, Inflow Depth > 2.84" for 2-year event
Inflow = 0.32 cfs @ 12.09 hrs, Volume= 0.024 af
Outflow = 0.00 cfs @ 17.30 hrs, Volume= 0.001 af, Atten= 99%, Lag= 312.8 min
Primary = 0.00 cfs @ 17.30 hrs, Volume= 0.001 af
Routed to Link 5L : Overland Flow Along Copeland Drive

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 170.10' @ 17.30 hrs Surf.Area= 514 sf Storage= 1,013 cf

Plug-Flow detention time= 754.6 min calculated for 0.001 af (2% of inflow)
Center-of-Mass det. time= 368.7 min (1,107.1 - 738.4)

Volume	Invert	Avail.Storage	Storage Description
#1	165.30'	339 cf	**6.00'D x 4.00'H Basin Structure** x 3
#2	164.30'	673 cf	**13.00'W x 33.00'L x 5.00'H Crushed Stone Field**
			2,145 cf Overall - 462 cf Embedded = 1,683 cf x 40.0% Voids
#3	165.30'	0 cf	**7.00'D x 4.00'H Exclude Structure from Field** x 3 Inside #2
			462 cf Overall x 0.0% Voids
		1,013 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	170.10'	**24.0" x 24.0" Horiz. Orifice/Grate** X 3 rows C= 0.600
			Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 17.30 hrs HW=170.10' (Free Discharge)
1=Orifice/Grate (Weir Controls 0.00 cfs @ 0.05 fps)

Summary for Link 1L: #3 Series Wetlands

Inflow Area = 0.708 ac, 77.56% Impervious, Inflow Depth > 1.70" for 2-year event
Inflow = 1.48 cfs @ 12.09 hrs, Volume= 0.100 af
Primary = 1.48 cfs @ 12.09 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Exist Culvert (From West)

Inflow Area = 4.015 ac, 60.87% Impervious, Inflow Depth > 1.12" for 2-year event
Inflow = 5.49 cfs @ 12.10 hrs, Volume= 0.375 af
Primary = 5.49 cfs @ 12.10 hrs, Volume= 0.375 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 3L: Exist Culvert (From East)

Inflow Area = 0.829 ac, 82.78% Impervious, Inflow Depth > 1.93" for 2-year event
Inflow = 1.95 cfs @ 12.09 hrs, Volume= 0.133 af
Primary = 1.95 cfs @ 12.09 hrs, Volume= 0.133 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 4L: Eastbound Flow Along Chauncy St

Inflow Area = 1.040 ac, 89.26% Impervious, Inflow Depth > 2.28" for 2-year event
Inflow = 2.81 cfs @ 12.09 hrs, Volume= 0.198 af
Primary = 2.81 cfs @ 12.09 hrs, Volume= 0.198 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 5L: Overland Flow Along Copeland Drive

Inflow Area = 0.328 ac, 74.68% Impervious, Inflow Depth > 0.77" for 2-year event
Inflow = 0.30 cfs @ 12.10 hrs, Volume= 0.021 af
Primary = 0.30 cfs @ 12.10 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 6L: Combined Flow to Exist Culvert

Inflow Area = 4.844 ac, 64.62% Impervious, Inflow Depth > 1.26" for 2-year event
Inflow = 7.43 cfs @ 12.10 hrs, Volume= 0.508 af
Primary = 7.43 cfs @ 12.10 hrs, Volume= 0.508 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1P: Route 140 (South)

Runoff = 2.67 cfs @ 12.09 hrs, Volume= 0.184 af, Depth> 3.12"
Routed to Link 1L : #3 Series Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
6,926	39	>75% Grass cover, Good, HSG A
23,933	98	Paved roads w/curbs & sewers, HSG A
30,859	85	Weighted Average
6,926		22.44% Pervious Area
23,933		77.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	50	0.0070	0.78		**Sheet Flow, Sheet** Smooth surfaces n= 0.011 P2= 3.12"
0.9	125	0.0120	2.22		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
4.0					**Direct Entry, Min TC**
6.0	175	Total			

Summary for Subcatchment 2P: Route 106 (West) & Route 140 (North)

Runoff = 10.28 cfs @ 12.09 hrs, Volume= 0.693 af, Depth> 2.32"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
29,052	39	>75% Grass cover, Good, HSG A
6,376	61	>75% Grass cover, Good, HSG B
90,221	98	Paved roads w/curbs & sewers, HSG A
5,345	98	Paved roads w/curbs & sewers, HSG B
16,825	30	Woods, Good, HSG A
8,550	55	Woods, Good, HSG B
156,370	76	Weighted Average
60,803		38.88% Pervious Area
95,567		61.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.12"
2.8	290	0.0070	1.70		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
2.5					**Direct Entry, Use Min TC**
6.0	340	Total			

Summary for Subcatchment 2Pb: Water Quality Swale

Runoff = 1.35 cfs @ 12.09 hrs, Volume= 0.091 af, Depth> 2.57"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
3,009	39	>75% Grass cover, Good, HSG A
4,626	61	>75% Grass cover, Good, HSG B
4,587	98	Paved roads w/curbs & sewers, HSG A
6,311	98	Paved roads w/curbs & sewers, HSG B
18,533	79	Weighted Average
7,635		41.20% Pervious Area
10,897		58.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6**

Summary for Subcatchment 3P: Route 106 (Center)

Runoff = 3.36 cfs @ 12.09 hrs, Volume= 0.236 af, Depth> 3.42"
Routed to Link 3L : Exist Culvert (From East)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
6,218	39	>75% Grass cover, Good, HSG A
29,881	98	Paved roads w/curbs & sewers, HSG A
36,099	88	Weighted Average
6,218		17.22% Pervious Area
29,881		82.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0130	1.00		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.8	265	0.0140	2.40		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
3.4					**Direct Entry, Use Min TC**
6.0	315	Total			

Summary for Subcatchment 4P: Route 106 (East) & Copeland Drive (North)

Runoff = 4.57 cfs @ 12.09 hrs, Volume= 0.331 af, Depth> 3.82"
Routed to Link 4L : Eastbound Flow Along Chauncy St

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
4,868	39	>75% Grass cover, Good, HSG A
40,452	98	Paved roads w/curbs & sewers, HSG A
45,320	92	Weighted Average
4,868		10.74% Pervious Area
40,452		89.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	140	0.0110	2.13		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.2					**Direct Entry, Use Min TC**
6.0	190	Total			

Summary for Subcatchment 5P: Copeland Drive (South)

Runoff = 0.64 cfs @ 12.09 hrs, Volume= 0.043 af, Depth> 2.32"
Routed to Link 5L : Overland Flow Along Copeland Drive

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
3,612	39	>75% Grass cover, Good, HSG A
6,155	98	Paved roads w/curbs & sewers, HSG A
9,768	76	Weighted Average
3,612		36.98% Pervious Area
6,155		63.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		**Sheet Flow, SF** Smooth surfaces n= 0.011 P2= 3.12"
1.1	102	0.0060	1.57		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
4.0					**Direct Entry, Use Min TC**
6.0	152	Total			

Summary for Subcatchment 5Pa: Southeast Leaching Basins

Runoff = 0.49 cfs @ 12.09 hrs, Volume= 0.038 af, Depth> 4.37"
Routed to Pond 5LB : Leaching Basins x3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=4.95"

Area (sf)	CN	Description
1	39	>75% Grass cover, Good, HSG A
4,502	98	Paved roads w/curbs & sewers, HSG A
4,502	98	Weighted Average
1		0.01% Pervious Area
4,502		99.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6**

Summary for Pond 5LB: Leaching Basins x3

Inflow Area = 0.103 ac, 99.99% Impervious, Inflow Depth > 4.37" for 10-year event
Inflow = 0.49 cfs @ 12.09 hrs, Volume= 0.038 af
Outflow = 0.41 cfs @ 12.32 hrs, Volume= 0.029 af, Atten= 17%, Lag= 14.1 min
Primary = 0.41 cfs @ 12.32 hrs, Volume= 0.029 af
Routed to Link 5L : Overland Flow Along Copeland Drive

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 170.12' @ 12.30 hrs Surf.Area= 514 sf Storage= 1,013 cf

Plug-Flow detention time= 185.5 min calculated for 0.029 af (77% of inflow)
Center-of-Mass det. time= 126.7 min (861.9 - 735.2)

Volume	Invert	Avail.Storage	Storage Description
#1	165.30'	339 cf	**6.00'D x 4.00'H Basin Structure** x 3
#2	164.30'	673 cf	**13.00'W x 33.00'L x 5.00'H Crushed Stone Field** 2,145 cf Overall - 462 cf Embedded = 1,683 cf x 40.0% Voids
#3	165.30'	0 cf	**7.00'D x 4.00'H Exclude Structure from Field** x 3 Inside #2 462 cf Overall x 0.0% Voids
		1,013 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	170.10'	**24.0" x 24.0" Horiz. Orifice/Grate** X 3 rows C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 12.32 hrs HW=170.12' (Free Discharge)
↑**1=Orifice/Grate** (Weir Controls 0.21 cfs @ 0.45 fps)

Summary for Link 1L: #3 Series Wetlands

Inflow Area = 0.708 ac, 77.56% Impervious, Inflow Depth > 3.12" for 10-year event
Inflow = 2.67 cfs @ 12.09 hrs, Volume= 0.184 af
Primary = 2.67 cfs @ 12.09 hrs, Volume= 0.184 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Exist Culvert (From West)

Inflow Area = 4.015 ac, 60.87% Impervious, Inflow Depth > 2.34" for 10-year event
Inflow = 11.63 cfs @ 12.09 hrs, Volume= 0.784 af
Primary = 11.63 cfs @ 12.09 hrs, Volume= 0.784 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 3L: Exist Culvert (From East)

Inflow Area = 0.829 ac, 82.78% Impervious, Inflow Depth > 3.42" for 10-year event
Inflow = 3.36 cfs @ 12.09 hrs, Volume= 0.236 af
Primary = 3.36 cfs @ 12.09 hrs, Volume= 0.236 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 4L: Eastbound Flow Along Chauncy St

Inflow Area = 1.040 ac, 89.26% Impervious, Inflow Depth > 3.82" for 10-year event
Inflow = 4.57 cfs @ 12.09 hrs, Volume= 0.331 af
Primary = 4.57 cfs @ 12.09 hrs, Volume= 0.331 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 5L: Overland Flow Along Copeland Drive

Inflow Area = 0.328 ac, 74.68% Impervious, Inflow Depth > 2.65" for 10-year event
Inflow = 0.69 cfs @ 12.32 hrs, Volume= 0.072 af
Primary = 0.69 cfs @ 12.32 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 6L: Combined Flow to Exist Culvert

Inflow Area = 4.844 ac, 64.62% Impervious, Inflow Depth > 2.53" for 10-year event
Inflow = 14.99 cfs @ 12.09 hrs, Volume= 1.020 af
Primary = 14.99 cfs @ 12.09 hrs, Volume= 1.020 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1P: Route 140 (South)

Runoff = 5.61 cfs @ 12.09 hrs, Volume= 0.403 af, Depth> 6.82"
Routed to Link 1L : #3 Series Wetlands

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
6,926	39	>75% Grass cover, Good, HSG A
23,933	98	Paved roads w/curbs & sewers, HSG A
30,859	85	Weighted Average
6,926		22.44% Pervious Area
23,933		77.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	50	0.0070	0.78		**Sheet Flow, Sheet** Smooth surfaces n= 0.011 P2= 3.12"
0.9	125	0.0120	2.22		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
4.0					**Direct Entry, Min TC**
6.0	175	Total			

Summary for Subcatchment 2P: Route 106 (West) & Route 140 (North)

Runoff = 24.91 cfs @ 12.09 hrs, Volume= 1.719 af, Depth> 5.75"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
29,052	39	>75% Grass cover, Good, HSG A
6,376	61	>75% Grass cover, Good, HSG B
90,221	98	Paved roads w/curbs & sewers, HSG A
5,345	98	Paved roads w/curbs & sewers, HSG B
16,825	30	Woods, Good, HSG A
8,550	55	Woods, Good, HSG B
156,370	76	Weighted Average
60,803		38.88% Pervious Area
95,567		61.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, Sheet Flow** Smooth surfaces n= 0.011 P2= 3.12"
2.8	290	0.0070	1.70		**Shallow Concentrated Flow, Shallow** Paved Kv= 20.3 fps
2.5					**Direct Entry, Use Min TC**
6.0	340	Total			

Summary for Subcatchment 2Pb: Water Quality Swale

Runoff = 3.10 cfs @ 12.09 hrs, Volume= 0.217 af, Depth> 6.11"
Routed to Link 2L : Exist Culvert (From West)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
3,009	39	>75% Grass cover, Good, HSG A
4,626	61	>75% Grass cover, Good, HSG B
4,587	98	Paved roads w/curbs & sewers, HSG A
6,311	98	Paved roads w/curbs & sewers, HSG B
18,533	79	Weighted Average
7,635		41.20% Pervious Area
10,897		58.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6**

Summary for Subcatchment 3P: Route 106 (Center)

Runoff = 6.77 cfs @ 12.09 hrs, Volume= 0.495 af, Depth> 7.17"
Routed to Link 3L : Exist Culvert (From East)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
6,218	39	>75% Grass cover, Good, HSG A
29,881	98	Paved roads w/curbs & sewers, HSG A
36,099	88	Weighted Average
6,218		17.22% Pervious Area
29,881		82.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	50	0.0130	1.00		**Sheet Flow, SF**
					Smooth surfaces n= 0.011 P2= 3.12"
1.8	265	0.0140	2.40		**Shallow Concentrated Flow, SCF**
					Paved Kv= 20.3 fps
3.4					**Direct Entry, Use Min TC**
6.0	315	Total			

Summary for Subcatchment 4P: Route 106 (East) & Copeland Drive (North)

Runoff = 8.78 cfs @ 12.09 hrs, Volume= 0.658 af, Depth> 7.59"
Routed to Link 4L : Eastbound Flow Along Chauncy St

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
4,868	39	>75% Grass cover, Good, HSG A
40,452	98	Paved roads w/curbs & sewers, HSG A
45,320	92	Weighted Average
4,868		10.74% Pervious Area
40,452		89.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0180	1.13		**Sheet Flow, SF**
					Smooth surfaces n= 0.011 P2= 3.12"
1.1	140	0.0110	2.13		**Shallow Concentrated Flow, SCF**
					Paved Kv= 20.3 fps
4.2					**Direct Entry, Use Min TC**
6.0	190	Total			

Summary for Subcatchment 5P: Copeland Drive (South)

Runoff = 1.56 cfs @ 12.09 hrs, Volume= 0.107 af, Depth> 5.75"
Routed to Link 5L : Overland Flow Along Copeland Drive

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
3,612	39	>75% Grass cover, Good, HSG A
6,155	98	Paved roads w/curbs & sewers, HSG A
9,768	76	Weighted Average
3,612		36.98% Pervious Area
6,155		63.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.90		**Sheet Flow, SF**
					Smooth surfaces n= 0.011 P2= 3.12"
1.1	102	0.0060	1.57		**Shallow Concentrated Flow, SCF**
					Paved Kv= 20.3 fps
4.0					**Direct Entry, Use Min TC**
6.0	152	Total			

Summary for Subcatchment 5Pa: Southeast Leaching Basins

Runoff = 0.90 cfs @ 12.09 hrs, Volume= 0.070 af, Depth> 8.09"
Routed to Pond 5LB : Leaching Basins x3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=9.04"

Area (sf)	CN	Description
1	39	>75% Grass cover, Good, HSG A
4,502	98	Paved roads w/curbs & sewers, HSG A
4,502	98	Weighted Average
1		0.01% Pervious Area
4,502		99.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, 6**

Summary for Pond 5LB: Leaching Basins x3

Inflow Area = 0.103 ac, 99.99% Impervious, Inflow Depth > 8.09" for 100-year event
Inflow = 0.90 cfs @ 12.09 hrs, Volume= 0.070 af
Outflow = 0.61 cfs @ 12.09 hrs, Volume= 0.010 af, Atten= 32%, Lag= 0.0 min
Primary = 0.61 cfs @ 12.09 hrs, Volume= 0.010 af
Routed to Link 5L : Overland Flow Along Copeland Drive

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 170.13' @ 12.09 hrs Surf.Area= 514 sf Storage= 1,013 cf

Plug-Flow detention time= 233.7 min calculated for 0.010 af (15% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	165.30'	339 cf	**6.00'D x 4.00'H Basin Structure** x 3
#2	164.30'	673 cf	**13.00'W x 33.00'L x 5.00'H Crushed Stone Field**
			2,145 cf Overall - 462 cf Embedded = 1,683 cf x 40.0% Voids
#3	165.30'	0 cf	**7.00'D x 4.00'H Exclude Structure from Field** x 3 Inside #2
			462 cf Overall x 0.0% Voids
		1,013 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	170.10'	**24.0" x 24.0" Horiz. Orifice/Grate** X 3 rows C= 0.600
			Limited to weir flow at low heads

Primary OutFlow Max=0.43 cfs @ 12.09 hrs HW=170.13' (Free Discharge)
1=Orifice/Grate (Weir Controls 0.43 cfs @ 0.58 fps)

Summary for Link 1L: #3 Series Wetlands

Inflow Area = 0.708 ac, 77.56% Impervious, Inflow Depth > 6.82" for 100-year event
Inflow = 5.61 cfs @ 12.09 hrs, Volume= 0.403 af
Primary = 5.61 cfs @ 12.09 hrs, Volume= 0.403 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 2L: Exist Culvert (From West)

Inflow Area = 4.015 ac, 60.87% Impervious, Inflow Depth > 5.79" for 100-year event
Inflow = 28.01 cfs @ 12.09 hrs, Volume= 1.936 af
Primary = 28.01 cfs @ 12.09 hrs, Volume= 1.936 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 3L: Exist Culvert (From East)

Inflow Area = 0.829 ac, 82.78% Impervious, Inflow Depth > 7.17" for 100-year event
Inflow = 6.77 cfs @ 12.09 hrs, Volume= 0.495 af
Primary = 6.77 cfs @ 12.09 hrs, Volume= 0.495 af, Atten= 0%, Lag= 0.0 min
Routed to Link 6L : Combined Flow to Exist Culvert

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 4L: Eastbound Flow Along Chauncy St

Inflow Area = 1.040 ac, 89.26% Impervious, Inflow Depth > 7.59" for 100-year event
Inflow = 8.78 cfs @ 12.09 hrs, Volume= 0.658 af
Primary = 8.78 cfs @ 12.09 hrs, Volume= 0.658 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 5L: Overland Flow Along Copeland Drive

Inflow Area = 0.328 ac, 74.68% Impervious, Inflow Depth > 4.32" for 100-year event
Inflow = 2.17 cfs @ 12.09 hrs, Volume= 0.118 af
Primary = 2.17 cfs @ 12.09 hrs, Volume= 0.118 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link 6L: Combined Flow to Exist Culvert

Inflow Area = 4.844 ac, 64.62% Impervious, Inflow Depth > 6.02" for 100-year event
Inflow = 34.78 cfs @ 12.09 hrs, Volume= 2.431 af
Primary = 34.78 cfs @ 12.09 hrs, Volume= 2.431 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Appendix E: O&M Plan and LTPPP

Improvements of Chauncy St (Route 106) Route 140 to Copeland Drive (Phase 1)

Stormwater Management System Operation and Maintenance Plan and Long-Term Pollution Prevention Plan Mansfield, Massachusetts

PREPARED FOR

massDOT

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Boston, MA 02116

PREPARED BY

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Norwood, Massachusetts 02062
January 29, 2025

Table of Contents

1 Stormwater Management System Operation and Maintenance (O&M) Plan.....1

1.1 Responsible Party.....1
1.2 Inspection and Maintenance Measures and Record-Keeping.....2
1.3 Erosion and Sediment Control Measures during Maintenance Activities.....5
1.4 O&M Budget.....5

2 Long-Term Pollution Prevention Plan.....6

2.1 Practices for Long-Term Pollution Prevention.....6
2.1.1 Litter Pick-up.....6
2.1.2 Material Storage and Handling.....6
2.1.3 Inspection and Maintenance of Stormwater Assets.....7
2.1.4 Maintenance of Landscaped Areas.....7
2.1.5 Snow and Ice Management.....7
2.1.6 Street Sweeping.....7
2.1.7 Prohibition of Illicit Discharges.....8
2.1.8 Spill Prevention and Response.....8

3 Construction Period Pollution Prevention and Erosion and Sediment Control Plan.....10

1

Stormwater Management System Operation and Maintenance (O&M) Plan

This Stormwater Management System Operation and Maintenance (O&M) Plan describes the approach for inspection and maintenance of drainage infrastructure and structural stormwater control measures (SCMs) to minimize contaminant loading for the proposed closed drainage system located along portions of Chauncy Street (Route 106), Commercial Street (Route 140), Copeland Drive, and Giles Place (the "Project") located in Mansfield, MA. In general, inspection and maintenance activities will be conducted consistent with the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer System (MS4) and MassDOT's anticipated NPDES Transportation Separate Storm Sewer System (TS4) Permit.

This document has been prepared per the requirements of Massachusetts Department of Environmental Protection (MassDEP) Regulations 310 CMR 10.05 (6)(k)(9) and satisfies the requirements of Massachusetts Stormwater Standard 9.

1.1 Responsible Party

In accordance with MassDOT procedures, the MassDOT District 5 office located in Taunton, MA, is responsible for the maintenance of all stormwater management systems on MassDOT roads within the project area, including Commercial Street (Route 140), Copeland Drive, and Chauncy Street (Route 106). Note that MassDOT will be responsible for the Town-owned portion of Chauncy Street located between Station 33+50 and 35+75.

Questions or concerns regarding activities associated with this O&M Plan should be addressed to MassDOT's District 5 office located at 1000 County Street, Taunton, MA 02780, phone (857) 368-5000, during regular weekday hours, or to MassDOT's Highway Operations Center located in South Boston, MA at (800) 227-0608 during all other times and days, including weekends and holidays.

The Town of Mansfield will be responsible for the operation and maintenance of all stormwater management systems within Town-owned portions of the project, including Giles Place. Questions or concerns regarding activities associated with this O&M Plan should be addressed to the Mansfield Department of Public Works located at 130 Center Street, North Mansfield, MA 02356, phone (508) 230-0800.

It shall be the responsibility of the Owner to provide a revised plan to the Conservation Commission indicating any change of ownership or responsible party. The responsible party shall also be responsible for financing maintenance and emergency repairs at the Site.

Project information is summarized in the table below:

Project Name:	Improvement of Chauncy St (Route 106) Route 140 to Copeland Drive (Phase 1)
Project Type:	Transportation
Address:	Chauncy Street (Route 106) from #360 Chouncy St to #200 Chauncy Street approx. 0.33 mi. Commercial Street (Route 140), approximately 500 ft south and 400 feet north of intersection with Chauncy Street, approx. 0.15 mi. Copeland Drive, from 93 Copeland Drive to 131 Copeland Drive, approx. 0.09 mi. Giles Place, from intersection with Route 106 to a distance of apoprixmately 60' north of the intersection.
SWMS Owner (MassDOT):	MassDOT Highway Division District 5 1000 County Street, Taunton, MA
SWMS Owner (Town):	Town of Mansfield 6 Park Row, Mansfield, MA
Responsible Party (MassDOT):	MassDOT Highway Division District 5 1000 County Street, Taunton, MA
Responsible Party (Town):	Town of Mansfield 6 Park Row , Mansfield, MA
Contact (MassDOT):	MassDOT District 5 (857) 368-5000
Contact (Town):	Joshua Reinke, Director of Public Works (508) 261-7335

1.2 Inspection and Maintenance Measures and Record-Keeping

See Appendix F of the Stormwater Management Report for the proposed stormwater system within the project limits. The stormwater management system covered by this O&M Plan consists of the following measures:

- Deep Sump Catch Basins
- Retained Catch Basins
- Outfalls
- Leaching Basins
- Water Quality Swales

MassDOT uses a performance-based inspection and maintenance program for SCMs and catch basins. For SCMs, MassDOT's overall approach is to inspect SCMs, and based on the results of the inspections, perform maintenance to preserve functionality. For catch basins, MassDOT's overall approach is to perform maintenance at an interval that maintains the functionality of the catch basin (e.g., sump is less than 50% full of sediment). Catch basin

inspections, including documentation of sediment accumulation, and maintenance will generally occur simultaneously.

MassDOT's O&M program is data driven. Inspections and maintenance are recorded by personnel using hand-held tablets in the field to document sediment accumulation, maintenance action performed, and follow-up actions needed. Data are recorded in MassDOT's asset management system which is accessible in the field (mobile) or the office (desktop).

The table below summarizes data that is generally collected for each asset type. For all assets, the inspector and inspection date are recorded. Photo documentation of structure condition is taken and attached to the inspection record.

Inspection Form	Applicable Stormwater Assets	Information Collected
Inlets	› Catch basins › Outlet control structures	› Sediment accumulation › Trash/Debris accumulation › Signs of contamination › Frame and grate condition › Overall structure condition
SCMs	Consistent with the MassDOT Stormwater Design Guide (SDG), SCM categories include: › Infiltration SCMs › Stormwater wetland SCMs › Bioretention SCMs › Other SCMs	› SCM accessibility › Presence of standing water › Level of erosion › Sediment accumulation › Trash/Debris accumulation › Vegetation condition › Overall SCM condition
Storm Discharge Points	› Outlets to SCMs	› Presence of flow › Signs of contaminated flow › Sediment accumulation › Level of erosion › Pipe condition › Scour protection condition › Overall structure condition

Inspection and maintenance records can be made available using the asset management system through request with the MassDOT District 5 Environmental Engineer. Records will be kept for at least three years. Representatives of the Town's Conservation Commission(s), MassDEP, and US EPA may obtain access to these records, upon request. Additionally, MassDOT will allow members and agents of MassDEP and the Conservation Commission(s) to enter and inspect the premises, upon request, to evaluate and ensure that the Operation and Maintenance Plan requirements for each SCM are being followed.

Maintenance actions will not occur at any set frequency, but rather will be based on condition and impact to functionality. Maintenance to be performed on the stormwater system includes:

Stormwater Feature	Potential Maintenance Actions	
Surface SCMs	• Remove and properly dispose of accumulated material (e.g., sediment, trash, leaf litter, debris) • Mow vegetated areas and remove and dispose of grass clippings • Regrade areas that show signs of unwanted ponding and channelization • Stabilize or reconstruct eroded areas and reseed • Replace stones/soil and/or replant vegetation	• Remove woody growth • Treat invasive plants according to MassDOT Landscape Design Section • Infiltration and bioretention SCMs only: o Address issues of standing water o Drain and reconstruct SCM • If rehabilitation is not possible, then retrofit to be a wet SCM while considering safety implications
Underground SCMs	• Remove and properly dispose of trash, sediment, debris, and root intrusions • Clean out sumps at an interval to maintain functionality (less than 50% full of sediment) • Jet and repair pipes	• Rehabilitate filtering and infiltration materials (e.g., geotextile fabric, crushed stone) • Stabilize and replace deteriorated structures • Perform evaluations (e.g., test pits) to evaluate subsurface conditions
Inlets and Outlets to SCMs	• Clear inlet and remove and properly dispose of sediment, trash, leaf litter, debris, and vegetation • Regrade areas that show signs of ponding and channelization • Repair or replace structural components • Repair damaged or eroded areas	• Provide or rehabilitate erosion control at the outlet • Regrade and replace the channel materials • Remove woody growth • Stabilize or reconstruct eroded areas • Treat invasive plants according to MassDOT Vegetation Management Plan

Based on the results of the inspection, repairs will be made in accordance with MassDOT standard practices. Maintenance will be prioritized given the urgency of the required maintenance and availability of staff, contracts, etc. Maintenance may require contracting if existing contracts are unavailable to perform the work. More intensive remedial activities may require permitting and/or an engineering solution.

Inspection, maintenance, and record keeping on Town-owned portions of the property with be conducted in accordance with Town Standard Operating Procedures.

1.3 Erosion and Sediment Control Measures during Maintenance Activities

For maintenance activities that could result in discharges of sediments or other contaminants into wetlands, waterways, or other resource areas regulated under 310 CMR 10.00, the responsible maintenance personnel will employ measures to prevent migration of these sediments/contaminants. Such temporary measures may include, but are not necessarily limited to, the use of siltation barriers, catch basin silt sacks/filter bags, pipe plugs, cofferdams deployed within the stormwater structure, turbidity curtains, or other practices designed to prevent such discharges.

Where maintenance occurs in areas that are confined, with no risk of discharge to adjacent water bodies, no special measures may be needed. Examples include, but are not limited to: (1) cleaning of a forebay under dry conditions when the work can be completed and exposed surfaces stabilized prior to placing it back into service; and (2) catch basin cleaning where the activity is limited to removing material from a sump below the elevation of the outlet pipe.

1.4 O&M Budget

MassDOT and the Town of Mansfield perform maintenance for stormwater management systems as part of their routine respective operation and maintenance budget for roadways and bridges. MassDOT Budgets are managed at the district level and vary by fiscal year, depending on funding sources.

2

Long-Term Pollution Prevention Plan

This Long-Term Pollution Prevention Plan (LTPPP) describes the approach for pollution prevention and related maintenance activities for Chauncy Street (Route 106), Commercial Street (Route 140), Copeland Drive, and Giles Place in Mansfield, MA. In general, long-term pollution prevention and related maintenance activities will be conducted consistent with:

- The National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer System (MS4),
- MassDOT's anticipated NPDES Transportation Separate Storm Sewer System (TS4) Permit, and
- Measures outlined in MassDOT's Stormwater Management Plan (SWMP).

This LTPPP satisfies the requirements related to pollution prevention under Massachusetts Stormwater Standards 4, 5, 6, and 10.

2.1 Practices for Long-Term Pollution Prevention

For the facilities covered, long-term pollution prevention includes the following measures.

2.1.1 Litter Pick-up

MassDOT and the Town of Mansfield will conduct litter pick-up from the stormwater management facilities in conjunction with routine road maintenance activities.

2.1.2 Material Storage and Handling

The following storage and handling practices shall be implemented at the Site:

- Avoid stockpiling of soil or materials within 100 feet of wetland resources and wellhead protection areas. If necessary, provide sufficient erosion controls to prevent migration of sediments.
- All materials shall be stored or disposed in accordance with all local, state, and federal regulations.
- All sand piles shall be contained and stabilized to prevent the discharge of sand to wetlands or water bodies and, where feasible, covered.

- Minimize hazardous materials stored on site. All materials stored on site shall be stored in original containers and sealed.
- All solid waste, if encountered, shall be handled and disposed of in accordance with all local, state, and federal regulations.
- No snow shall be stored within waterbodies, resource areas, wellhead protection areas, or associated buffer zones.

2.1.3 Inspection and Maintenance of Stormwater Assets

MassDOT and the Town of Mansfield will conduct inspection and maintenance of drainage infrastructure and the stormwater control measures (SCMs) in accordance with the O&M Plan, as described in Section 1.

2.1.4 Maintenance of Landscaped Areas

Routine mowing will be conducted according to standard MassDOT and Town of Mansfield practices.

Except in rare circumstances, MassDOT does not use fertilizers, herbicides, and pesticides for the maintenance of facilities. Exceptions include using fertilizer to ensure the survival of new plantings and herbicides to control invasive plants. Use of fertilizers and herbicides is reviewed and approved by the MassDOT Landscape Design Section and District 5 Environmental Engineer prior to application. Local Conservation Commission review may also be required.

2.1.5 Snow and Ice Management

Snow and Ice Management will be conducted consistent with the practices outlined in the MassDOT Snow and Ice Control Program Environmental Status and Planning Report (ESPR), formerly known as the Snow and Ice Control Generic Environmental Impact Report (GEIR).

In accordance with the Snow and Ice Control ESPR, no sand is used on MassDOT properties for snow and ice control. The exception to this rule is within reduced salt areas where high sodium levels have been found in drinking water sources.

Operations on Town-owned roadways with be conducted in accordance with Town Snow and Ice Policy and Procedures.

2.1.6 Street Sweeping

Routine highway cleaning, with a brush-type street sweeper, will be conducted in accordance with standard MassDOT practices. Sweeping will occur annually in the Spring.

Operations on Town-owned roadways with be conducted in accordance with Town Standard Operating Procedures.

2.1.7 Prohibition of Illicit Discharges

The MassDEP Stormwater Management Standard 10 prohibits illicit discharges to the stormwater management system. Illicit discharges are discharges that do not consist entirely of stormwater, except for certain specified non-stormwater discharges.

In accordance with the existing MS4 permit and anticipated TS4 permit requirements, examples of discharges from the following sources are not considered illicit discharges:

- Firefighting activities*
- Foundation drains
- Water line flushing
- Footing drains
- Landscape irrigation
- Individual residential car washing
- Uncontaminated groundwater
- Rising groundwater
- Diverted stream flows
- Flows from riparian habitats/wetlands
- Potable water sources
- Dechlorinated swimming pool water
- Street wash waters
- Wash water from residential buildings (no detergents)
- Condensation from air conditioning units
- Run-on from private driveways caused by precipitation
- Lawn watering
- Water from crawl space pumps

*Water from firefighting activities is allowed and need only be addressed where they are identified as significant sources of pollutants to waters of the United States.

Based on plan review and confirmation in the field, there are no known or proposed illicit connections associated with the project within the project limits. Should an interconnection to the stormwater management system be identified, the MassDOT PM will coordinate with the District Permits Engineer or Mansfield DPW to confirm if the connections are authorized. For unauthorized connections, the MassDOT PM and/or MassDOT Environmental Services Section will investigate the connections and if they are determined to be illicit, the connections will be managed through MassDOT's or the Town of Mansfield's Illicit Discharge Detection and Elimination (IDDE) programs and/or through other agencies.

2.1.8 Spill Prevention and Response

The following spill prevention and response measures shall be implemented at the Site:

- Refuel construction equipment off-site.
- Any spills of hazardous materials shall be reported, contained, and removed in accordance with local, State, and Federal regulations.
- Review on-site equipment and activities to ensure no illicit discharges are created.

BMP Inspection and Maintenance Documentation Form

Inspection No.: _____ Date: _____ Weather: _____

Date & Amount of Last Precipitation Event: _____

Inspector Name: _____ Inspection Signature: _____

BMP	Condition/Stability	Comment & Recommendations	Date Corrected
Leaching Basins			
Water Quality Swale			
Catch Basins			
Outfalls			
Other			
Additional Comments			

3

Construction Period Pollution Prevention and Erosion and Sediment Control Plan

Introduction

The project is anticipated to disturb greater than one acre; therefore, filing a Notice of Intent with EPA and developing of a Stormwater Pollution Prevention Plan (SWPPP) is required. The SWPPP will be provided as part of the construction documents and will be submitted to the Town of Mansfield Conservation Commission prior to commencement of construction. The following plan provides general guidance for the prevention of pollution and erosion and sedimentation during construction.

Potential Erosion and Sedimentation

Portions of the project involve soil disturbance in areas upgradient of stormwater collection systems and wetland resources. Site preparation, scheduling, and construction practices need to be carefully planned to prevent construction debris and erosion caused by stormwater runoff over exposed soils from causing degradation of downstream wetland resources. Although it is not always possible to avoid impacts from storm events, the following guidelines shall be followed:

- Minimize land disturbance area and soil exposure to stormwater and wind erosion.
- Minimize time that area is disturbed.
- Avoid routing stormwater runoff or dewatering flows through disturbed areas.
- Inspect and maintain erosion controls until all soils are stabilized.
- Maintain good housekeeping practices.
- Stabilize disturbed soils as soon as possible to limit exposure.

Erosion and Sedimentation Plan

This Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan has been prepared in accordance with the Department of Environmental Protection's Massachusetts Erosion and Sedimentation Guidelines for Urban and Suburban Areas.

Extent of Disturbance

The total area of disturbance is approximately 3.65± acres. The project has been designed to minimize disturbance to existing woodlands and the majority of proposed work is within an existing roadway and its associated right-of-way. The existing Site will be impacted by tree clearing/trimming, grading, roadway widening, sidewalk and shared use path construction, utility installation, and other associated activities. Off-site areas are not proposed to be directly altered but may be impacted by erosion and sedimentation if the controls described in this plan are not followed. No off-site land disturbance is proposed.

Refer to construction drawings for locations of all proposed erosion and sedimentation controls and the proposed area of disturbance.

Pre-Construction and Site Preparation

- Install all erosion control barrier in accordance with the construction documents prior to commencing any land disturbance activity.
- Inspect and maintain erosion controls until all soils are stabilized.
- Monitor weather reports daily and stabilize/prepare site if storm event in excess of the 2-year storm is expected.
- Maintain an inspection logbook on-site at all times. The specific location of the logbook shall be conveyed to the Town.

Soil Description

Soils in the project area are generally mapped as HSG A (Refer to Appendix B). HSG A soils are considered to be well-draining. As a result, a substantial surface wetness problem is not anticipated.

PLANNED EROSION AND SEDIMENTATION CONTROL PRACTICES

Catch Basin Inlet Protection

Inlet protection is proposed at all existing and proposed drain inlets within the project area. Inlet protection shall also be provided at off-site drain inlets located immediately downgradient of the area of disturbance, pending coordination with the Town and/or abutting property owners.

The purpose of inlet protection is to intercept and capture sediment that would otherwise enter the drainage system. Inlet protection shall consist of manufactured polyproplylene fabric consistent with the construction details.

Inspection and maintenance shall consist of checking for sediment accumulation and removing sediment when the protection device is at least one-half full.

Erosion Control Barrier

Erosion control barrier is proposed along the downgradient limit of work, as depicted on the construction plans. Additional erosion control barrier may be required at other locations as needed.

The purpose of erosion control barrier is to intercept and capture sediment that would otherwise migrate off-site. Erosion control barrier shall consist of compost filter tubes, straw wattles, and silt fence.

Inspection and maintenance:

- Check for sedimentation accumulation and removing sediments when they reach excessive volumes (approximately 1/3 the height of the barrier).
- Remove sediments when runoff ponds for 24 or more hours to prevent potential mosquito breeding habitat. Restake/replace controls as necessary to maintain their effectiveness.

Control of Water

Control of water is proposed along the existing stream upstream of the proposed culvert extension.

The purpose of control of water is redirect flows around the work area to prevent sedimentation transport downstream. The means and methods of the controls shall be the responsibility of contractor and will be based on their construction operations and the conditions at the site .

Inspection and maintenance, as applicable:

- Check for sediment accumulation, plant growth, or debris behind the control.
- Check for stability at anchoring points and identify any breaks in the control.
- Identify any areas where turbid water is passing through the control.
- Repair as necessary to maintain effectiveness.

Tree Protection

Tree protection is proposed at existing trees to remain near to the area of disturbance, as noted on the construction plans.

The purpose of tree protection is to minimize risk of damage to trees designated to remain. Tree protection shall consist of armoring, pruning, and/or fencing consistent with the construction details.

ADDITIONAL CONTROL MEASURES

Good Housekeeping

- Minimize hazardous materials stored on site. All materials stored on site shall be stored in original containers and sealed.
- Refuel construction equipment off-site.
- Any spills of hazardous materials shall be reported, contained, and removed in accordance with local, State, and Federal regulations.

Material Stockpiling

All construction materials shall be stored in designated stockpile areas to be coordinated with the Conservation Commission. Stockpiles shall be surrounded with silt fence, straw wattles, and/or compost filter tubes to mitigate erosion potential. All waste materials shall be removed from the Site or placed in approved receptacles at the conclusion of each workday. Disposal of waste materials shall be in accordance with relevant local, state, and federal regulations.

No excavated soil material shall be stockpiled within one hundred (100) feet of rivers, streams, ponds, or reservoirs.

Potential Construction Site Pollutants

Pollutant-Generating Activity	Pollutants or Pollutant Constituents	Location on Site
Equipment Re-fueling	Diesel Fuel, Gasoline	Laydown Area
Leaking or Broken Hydraulic Lines	Hydraulic Oil	Building Work Areas and Laydown Area
Minor Equipment Maintenance	Diesel Fuel, Gasoline, Hydraulic Oil, Motor Oil, Anti-Freeze	Laydown Area
Applying Fertilizer	Nitrogen, Phosphorous	Newly Seeded Areas
Portable Sanitary Toilets	Bacteria, Parasites and Viruses	Laydown Area
Vehicle Accident	Diesel Fuel, Gasoline	Entire Site
Trash Containers/Dumpsters	Paper, Plastic, and Food Waste	Laydown Area

Refer to Long-Term Pollution Prevention Plan, included as Section 2, for measures to be implemented to minimize pollutant discharges.

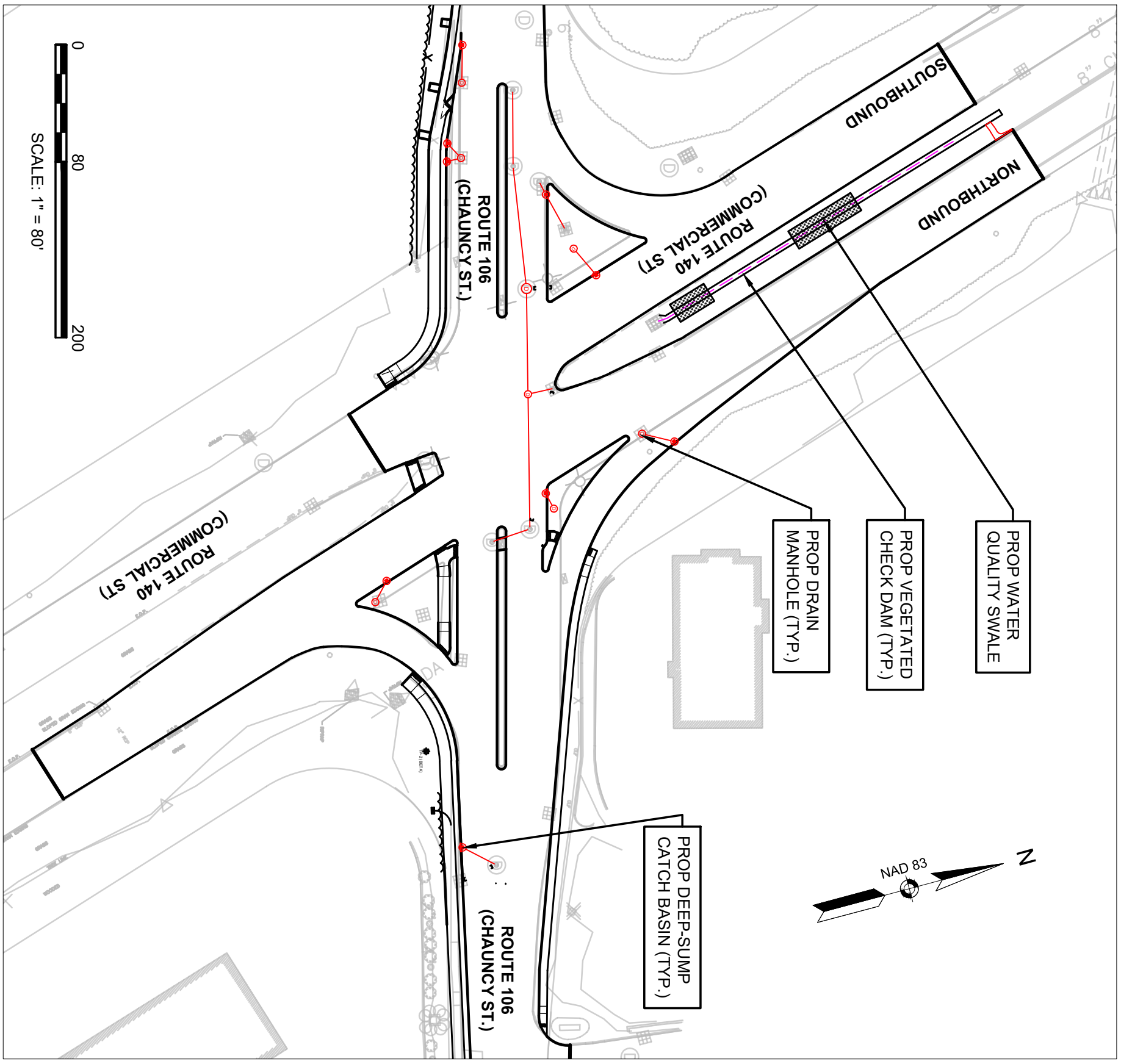
Construction Period BMP Inspection and Maintenance Documentation Form

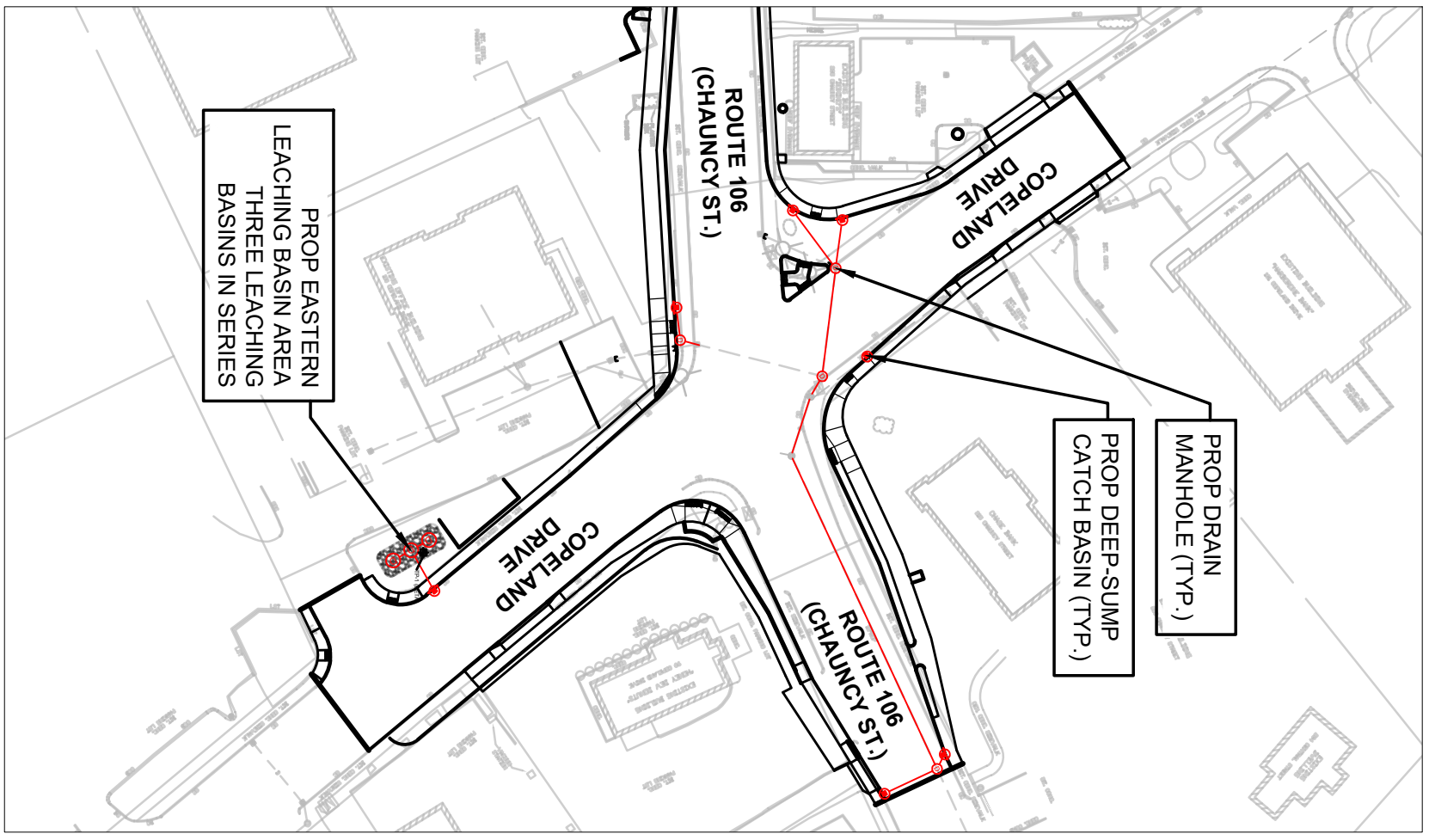
Inspection No.: Date: _____ Weather:

Date & Amount of Last Precipitation Event:

Inspector Name: _____ Inspection Signature:

BMP	Condition/Stability	Comment & Recommendations	Date Corrected
Catch Basin Inlet Protection			
Erosion Control Barrier			
Control of Water			
Tree Protection			
Other			
Additional Comments			





MANSFIELD
ROUTE 106

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		1	1
PROJECT FILE NO.	613052		

OPERATION AND MAINTENANCE MAP

608944_HD(6076_WATERSHED_O&M).DWG Plotted on 4-Feb-2025 2:18 PM

Appendix F: Watershed Plans

Proposal No. 613052-131228

MANSFIELD
ROUTE 106

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	1	4
PROJECT FILE NO.	613052		

WATERSHED PLANS

608944_HD\6076_WATERSHED_EXIST).DWG Plotted on 31-Jan-2025 12:27 PM

A00860 - 189

N

NAD 83

652
UDORTHENTS, REFUSE
SUBSTRATUM
UNRATED, USE HSG A

52A
SWANSEA MUCK
HSG B/D

8" CMP (REC)

NORTHBOUND
ROUTE 140
(COMMERCIAL ST)
SOUTHBOUND

APPROX.
FLOWPATH (TYP.)

SOIL GROUP
BOUNDARY (TYP.)

SUBCATCHMENT 2E
ROUTE 106 (WEST) &
ROUTE 140 (NORTH)

CONTINUED ON SHEET NO.2

ROUTE 106
(CHAUNCY ST.)

ROUTE 106
(CHAUNCY ST.)

APPROX. WATERSHED
BOUNDARY (TYP.)

DP 1:
E AND F SERIES
WETLANDS

DP2:
FLOW TO CULVERT
(FROM WEST)

245B
HINCKLEY
LOAMY SAND
HSG A

ROUTE 140
(COMMERCIAL ST)

51A
SWANSEA MUCK
HSG B/D

SUBCATCHMENT 1E
ROUTE 140 (SOUTH)

0 80 200

SCALE: 1" = 80'

LEGEND

- APPROX. WATERSHED BOUNDARY
- SOIL GROUP BOUNDARY
- APPROX. FLOWPATH

Proposal No. 613052-131228

MANSFIELD
ROUTE 106

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		2	4
PROJECT FILE NO.	613052		

WATERSHED PLANS

N

NAD 83

260A
SUDBURY FINE
SANDY LOAM
HSG A

SOIL GROUP
BOUNDARY (TYP.)

APPROX.
FLOWPATH (TYP.)

DP4:
EASTBOUND
FLOW ALONG
CHAUNCY ST

SUBCATCHMENT 3E
ROUTE 106 (CENTRAL)

SUBCATCHMENT 4E
ROUTE 106 (EAST) &
COPELAND DRIVE (NORTH)

COPELAND
DRIVE

ROUTE 106
(CHAUNCY ST.)

CONTINUED ON
SHEET NO. 1

ROUTE 106
(CHAUNCY ST.)

DP2:
FLOW TO CULVERT
(FROM WEST)

DP3:
FLOW TO CULVERT
(FROM EAST)

APPROX. WATERSHED
BOUNDARY (TYP.)

COPELAND
DRIVE

0 80 200

SCALE: 1" = 80'

245B
HINCKLEY
LOAMY SAND
HSG A

SUBCATCHMENT 5E
COPELAND DRIVE (SOUTH)

DP5:
COPELAND DRIVE
SOUTH

LEGEND

- APPROX. WATERSHED BOUNDARY
- SOIL GROUP BOUNDARY
- APPROX. FLOWPATH

608944_HD\6076_WATERSHED_EXIST).DWG Plotted on 31-Jan-2025 12:27 PM

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MANSFIELD
ROUTE 106

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		3	4
PROJECT FILE NO.	613052		

POST-DEVELOPMENT WATERSHED PLAN

Proposal No. 613052-131228

N

NAD 83

652
UDORTHENTS, REFUSE
SUBSTRATUM
UNRATED, USE HSG A

52A
SWANSEA MUCK
HSG B/D

PROP WATER
QUALITY SWALE

SUBCATCHMENT 2Pb
WATER QUALITY SWALE

APPROX.
FLOWPATH (TYP.)

SOUTHBOUND

NORTHBOUND

ROUTE 140
(COMMERCIAL ST)

SUBCATCHMENT 2P
ROUTE 106 (WEST) &
ROUTE 140 (NORTH)

SOIL GROUP
BOUNDARY (TYP.)

ROUTE 106
(CHAUNCY ST.)

178

175

170

ROUTE 106
(CHAUNCY ST.)

CONTINUED ON
SHEET NO.4

DP 2:
FLOW TO CULVERT
(FROM WEST)

DP 1:
#3 SERIES
WETLANDS

APPROX. WATERSHED
BOUNDARY (TYP.)

245B
HINCKLEY
LOAMY SAND
HSG A

ROUTE 140
(COMMERCIAL ST)

SUBCATCHMENT 1P
ROUTE 140 (SOUTH)

51A
SWANSEA MUCK
HSG B/D

0 80 200

SCALE: 1" = 80'

LEGEND

- APPROX. WATERSHED BOUNDARY
- SOIL GROUP BOUNDARY
- APPROX. FLOWPATH

608944_HD\6076_WATERSHED_PROP).DWG Plotted on 31-Jan-2025 12:29 PM

A00860 - 191

MANSFIELD
ROUTE 106

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		4	4
PROJECT FILE NO.	613052		

POST-DEVELOPMENT WATERSHED PLAN

608944_HD\6076_WATERSHED_PROP).DWG Plotted on 31-Jan-2025 12:29 PM

N

NAD 83

260A
SUDBURY FINE
SANDY LOAM
HSG A

SOIL GROUP
BOUNDARY (TYP.)

COPELAND
DRIVE

APPROX.
FLOWPATH (TYP.)

DP 4:
EASTBOUND
FLOW ALONG
CHAUNCY ST

SUBCATCHMENT 3P
ROUTE 106 (CENTRAL)

SUBCATCHMENT 4P
ROUTE 106 (EAST) &
COPELAND DRIVE (NORTH)

ROUTE 106
(CHAUNCY ST.)

CONTINUED ON
SHEET NO. 3

ROUTE 106
(CHAUNCY ST.)

172

170

174

170

172

170

DP 2:
FLOW TO CULVERT
(FROM WEST)

DP 3:
FLOW TO CULVERT
(FROM EAST)

APPROX. WATERSHED
BOUNDARY (TYP.)

SUBCATCHMENT 5Pa
SOUTHEAST LEACHING
BASINS

245B
HINCKLEY
LOAMY SAND
HSG A

PROP EASTERN
LEACHING BASIN AREA

TP-1

SUBCATCHMENT 5P
COPELAND DRIVE (SOUTH)

DP 5:
COPELAND DRIVE
SOUTH

COPELAND
DRIVE

0 80 200

SCALE: 1" = 80'

LEGEND

- APPROX. WATERSHED BOUNDARY
- SOIL GROUP BOUNDARY
- APPROX. FLOWPATH

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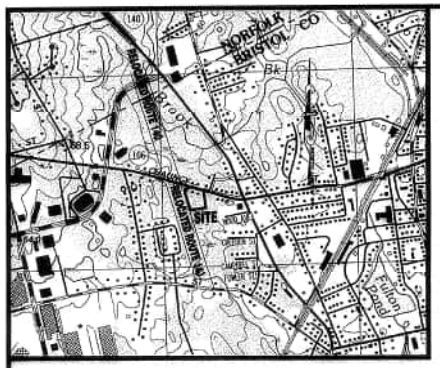
APPENDIX D – As-Built Plan, Corner of Chauncy Street and Route 140


NORFOLK
BRISTOL CO
SITE
CHAUNCY STREET
STATE ROUTE 140
Bk
Bk
Bk

APPENDIX E – Project Plans

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	1	28
PROJECT FILE NO.	613052		

TITLE SHEET & INDEX

PLAN AND PROFILE OF

IMPROVEMENTS OF CHAUNCY STREET (ROUTE 106)
ROUTE 140 TO COPELAND DRIVE (PHASE 1)

IN THE TOWN OF

MANSFIELD

BRISTOL COUNTY

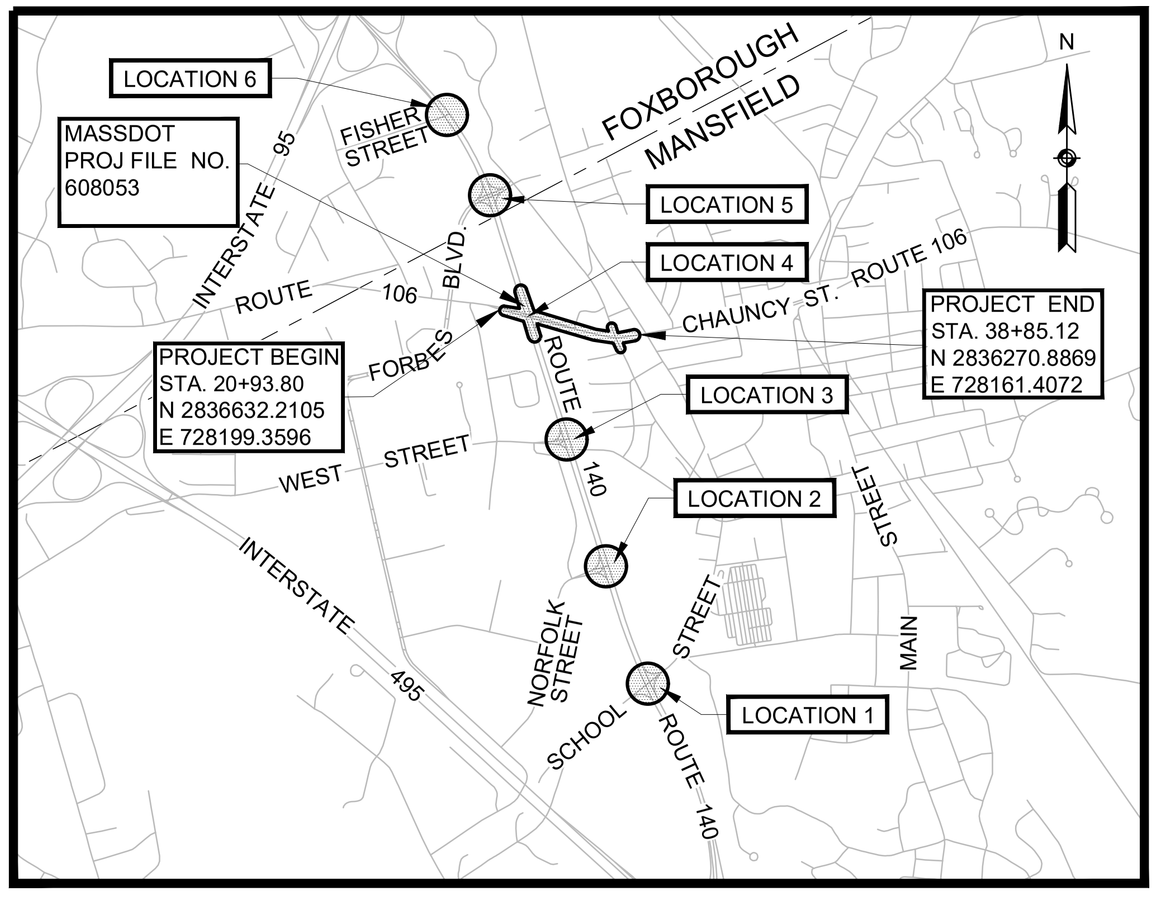
FEDERAL AID PROJECT NO.

100% SUBMITTAL

THE 2023 MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, THE 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS WITH MASSACHUSETTS AMENDMENTS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, WILL GOVERN.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
2	LEGEND & ABBREVIATIONS
3	KEY PLAN
4-8	TYPICAL SECTIONS & PAVEMENT NOTES
9	GENERAL NOTES
10-17	CONSTRUCTION DETAILS
18-22	CONSTRUCTION PLAN
23-27	DRAINAGE & UTILITY PLAN
28	IMPACT PLAN



PROJECT LOCATION

0 1500 3000 4500 6000

SCALE: 1" = 1500'

LENGTH OF PROJECT (CHAUNCY STREET) = 1,240 FEET = 0.23 MILES

DESIGN DESIGNATION - CHAUNCY STREET (ROUTE 106)

DESIGN SPEED	40 MPH
ADT (2020)	13,900
ADT (2030)	20,655
K	6.0%
D	55% (WB)
T (PEAK HOUR)	10.1%
T (AVERAGE DAY)	6.0%
DHV	1,240
DDHV	685
FUNCTIONAL CLASSIFICATION	URBAN PRINCIPAL ARTERIAL

DESIGN DESIGNATION - COPELAND DRIVE

DESIGN SPEED	40 MPH
ADT (2020)	9,365
ADT (2030)	13,915
K	9.0%
D	64% (SB)
T (PEAK HOUR)	4.3%
T (AVERAGE DAY)	1.7%
DHV	1,255
DDHV	800
FUNCTIONAL CLASSIFICATION	URBAN MINOR ARTERIAL

NOTICE OF INTENT PERMIT SET

DATE	DESCRIPTION	REV #
02/10/2025	100% SUBMISSION	REV 2
01/26/2024	75% SUBMISSION	REV 1
03/18/2021	25% SUBMISSION	REV 0

PREPARED BY:

BETA
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massDOT
Massachusetts Department of Transportation
Highway Division

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER DATE

Proposal No. 613052-131228

608944_HD(6076 TITLE).DWG Plotted on 7-Feb-2025 2:19 PM

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GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
JB	JB	JERSEY BARRIER
CB	CB	CATCH BASIN
		CATCH BASIN CURB INLET
		GUTTER INLET
FP	FP	FLAG POLE
GP	GP	GAS PUMP
MB	MB	MAIL BOX
		POST SQUARE
		POST CIRCULAR
WELL	WELL	WELL
EHH	EHH	ELECTRIC HANDHOLE
		FENCE GATE POST
GG	GG	GAS GATE
BHL #	BHL #	BORING HOLE
MW #	MW #	MONITORING WELL
TP #	TP #	TEST PIT
		HYDRANT
		LIGHT POLE
CO.BD.		COUNTY BOUND
		GPS POINT
		CABLE MANHOLE
		DRAINAGE MANHOLE OR CB WITH FRAME AND COVER
		DRAINAGE MANHOLE (5' DIA)
		ELECTRIC MANHOLE
		GAS MANHOLE
		MISC MANHOLE
		SEWER MANHOLE
		TELEPHONE MANHOLE
		WATER MANHOLE
MHB	MHB	MASSACHUSETTS HIGHWAY BOUND
MON		MONUMENT
SB		STONE BOUND
TB		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
TPL or GUY	TPL or GUY	TROLLEY POLE OR GUY POLE
HTP		TRANSMISSION POLE
UFB	UFB	UTILITY POLE W/ FIREBOX
UPDL	UPDL	UTILITY POLE WITH DOUBLE LIGHT
ULT	ULT	UTILITY POLE W / 1 LIGHT
UPL	UPL	UTILITY POLE
		BUSH
•SIZE & TYPE		TREE
		STUMP
		SWAMP / MARSH
WG	WG	WATER GATE
PM	PM	PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
100 99		CONTOURS (ON-THE-GROUND SURVEY DATA)
100 99		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
x	x	CHAIN LINK OR METAL FENCE
		WOOD FENCE
	SCB	SEDIMENT CONTROL BARRIER
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT

TRAFFIC SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
1	1	CONTROLLER PHASE ACTUATED
		TRAFFIC SIGNAL HEAD (SIZE AS NOTED)
		WIRE LOOP DETECTOR (6' x 6' TYP UNLESS OTHERWISE SPECIFIED)
		VIDEO DETECTION CAMERA
		MICROWAVE DETECTOR
		PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE
		EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED
		FLASHING BEACON
		PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
RRSG	RRSG	RAILROAD SIGNAL
OR		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
	20'	MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
	20'	MAST ARM WITH LUMINAIRE
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		CONTROL CABINET, POLE MOUNTED
		FLASHING BEACON CONTROL AND METER PEDESTAL
		LOAD CENTER ASSEMBLY
		PULL BOX 12"x12" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
		TRAFFIC SIGNAL CONDUIT

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
ONLY	ONLY	LEGEND "ONLY" - WHITE
	SL	STOP LINE - 12" WHITE LINE 4' BEHIND CW (TYP)
	CW	CROSSWALK, 2 - 12" WHITE LINES (WIDTH VARIES)
	SWL	SOLID WHITE LINE - 6"
	SWGL	SOLID WHITE GORE LINE - 12" @ 45° (SPACING NOTED)
	SWCHL	SOLID WHITE CHANNELIZING LINE - 12" (SPACING NOTED)
	SYL	SOLID YELLOW LINE - 6"
	SYGL	SOLID YELLOW GORE LINE - 12" @ 45° (SPACING NOTED)
	BWL	BROKEN WHITE LINE - 6" (10' LINE, 30' GAP)
	BYL	BROKEN YELLOW LINE - 6" (10' LINE, 30' GAP)
	DWLEx	DOTTED WHITE LINE EXTENSION - 6" LINE (2' LINE, 6' GAP)
	DBYL	DOUBLE YELLOW LINE - 2 - 6" LINES

ABBREVIATIONS

GENERAL

AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWP	DETECTABLE WARNING PANEL
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GICI	GUTTER INLET WITH CURB INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LP	LIGHT POLE
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
O.C.	ON CENTER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PCR	PEDESTRIAN CURB RAMP
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	2	28
PROJECT FILE NO.	613052		

LEGEND & ABBREVIATIONS

ABBREVIATIONS (cont.)

GENERAL

PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PWW	PAVED WATER WAY
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SGE	SLOPED GRANITE EDGING
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
T.S.	TRAFFIC SIGNAL
TYP	TYPICAL
UP	UTILITY POLE
VAR	VARIES
VERT	VERTICAL
VC	VERTICAL CURVE
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN
X-SECT	CROSS SECTION

TRAFFIC SIGNAL ABBREVIATIONS

CAB	CABINET
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
DW	STEADY UPRAISED HAND
FDW	FLASHING UPRAISED HAND
FR	FLASHING CIRCULAR RED
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR YELLOW
FYL	FLASHING YELLOW LEFT ARROW
FYR	FLASHING YELLOW RIGHT ARROW
G	STEADY CIRCULAR GREEN
GL	STEADY GREEN LEFT ARROW
GR	STEADY GREEN RIGHT ARROW
GSL	STEADY GREEN SLASH LEFT ARROW
GSR	STEADY GREEN SLASH RIGHT ARROW
GV	STEADY GREEN VERTICAL ARROW
OL	OVERLAP
PED	PEDESTRIAN
PTZ	PAN, TILT, ZOOM
R	STEADY CIRCULAR RED
RL	STEADY RED LEFT ARROW
RR	STEADY RED RIGHT ARROW
TR SIG	TRAFFIC SIGNAL
TSC	TRAFFIC SIGNAL CONDUIT
W	STEADY WALKING PERSON
Y	STEADY CIRCULAR YELLOW
YL	STEADY YELLOW LEFT ARROW

Proposal No. 613052-131228

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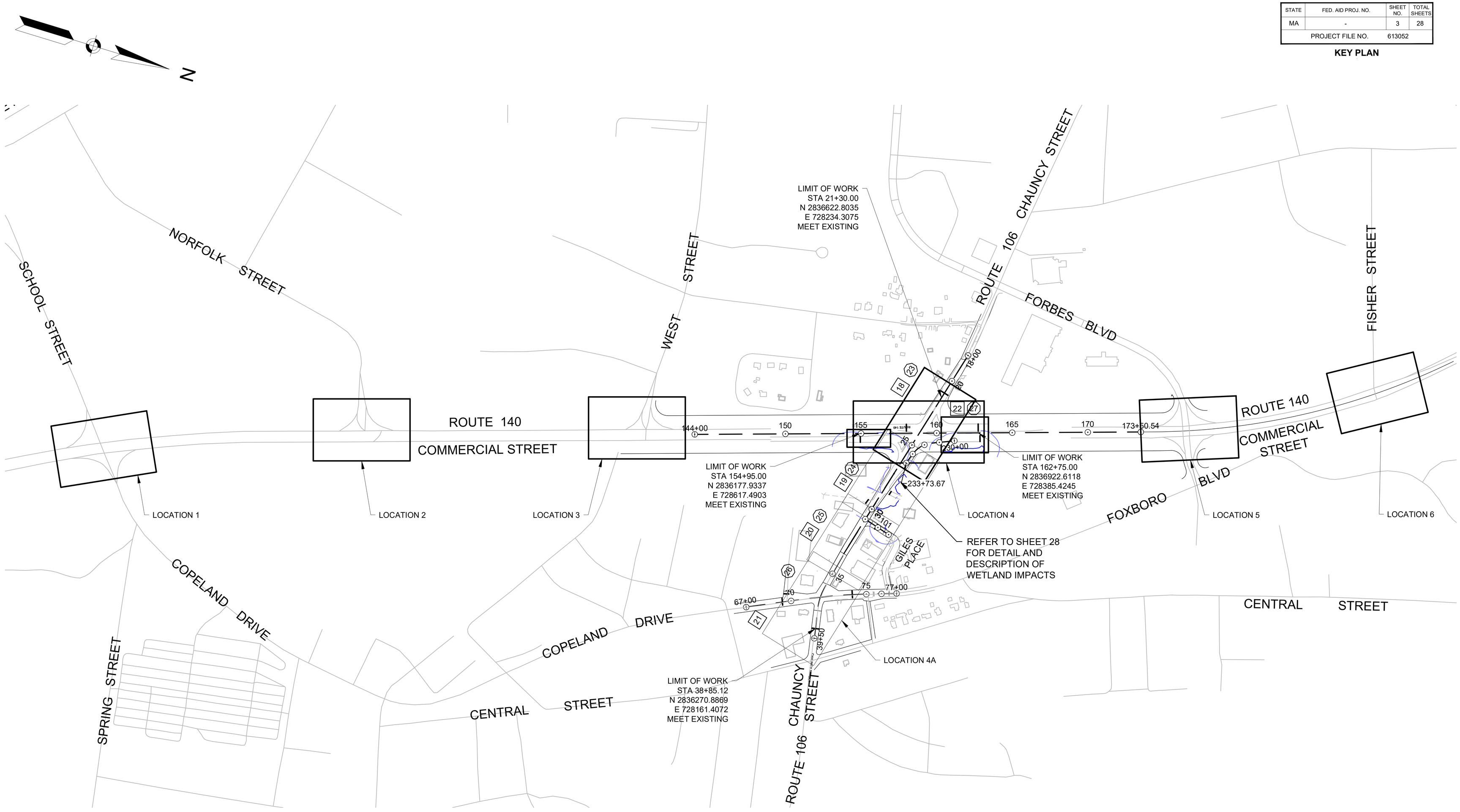
Proposal No. 613052-131228

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	3	28
PROJECT FILE NO.	613052		

KEY PLAN



SHEET NUMBER LEGEND

- XX — CONSTRUCTION PLAN
- XX — DRAINAGE & UTILITY PLAN

0 300 600 900 1200

SCALE: 1" = 300'

608944_HDJ(6076 KEY).DWG Plotted on 7-Feb-2025 2:06 PM

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PAVEMENT NOTES

PAVEMENT MILLING AND OVERLAY

SURFACE COURSE: 1-3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER

PAVEMENT MILLING: 1-3/4" FINE MILLING

LEVELING COURSE: VARIABLE DEPTH SUPERPAVE LEVELING COURSE - 12.5 (SLC-12.5), COMPACTED 1-1/2" MAX LAYERS

FULL DEPTH PAVEMENT CONSTRUCTION

SURFACE COURSE: 1-3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER

INTERMEDIATE: 1-3/4" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER ASPHALT COURSE: EMULSION FOR TACK COAT OVER

BASE COURSE: 4 " SUPERPAVE BASE COURSE 25.0 (SBC-25.0) OVER

SUB-BASE: 4" DENSE GRADED CRUSHED STONE FOR SUB-BASE OVER 8" GRAVEL BORROW, TYPE b

FULL DEPTH PAVEMENT BOX WIDENING ≤4' WIDE

SURFACE COURSE: 1-3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER

INTERMEDIATE 1-3/4" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER

BASE COURSE: 6" HES CEMENT CONCRETE BASE COURSE OVER

SUB-BASE: 8" GRAVEL BORROW, TYPE b

PROPOSED CEMENT CONCRETE SIDEWALKS, SHARED-USE PATHS, ISLANDS & PEDESTRIAN CURB RAMPS

SURFACE: 4" CEMENT CONCRETE 4000 PSI, 3/4", 610 OVER

FOUNDATION: 8" GRAVEL BORROW, TYPE b

PROPOSED CEMENT CONCRETE DRIVEWAYS

SURFACE: 6" CEMENT CONCRETE 4000 PSI, 3/4", 610 OVER

FOUNDATION: 8" GRAVEL BORROW, TYPE b

PROPOSED HMA SIDEWALKS & ISLANDS

SURFACE: 1-1/4" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER ASPHALT EMULSION FOR TACK COAT OVER
1-3/4" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER

FOUNDATION: 8" GRAVEL BORROW, TYPE b

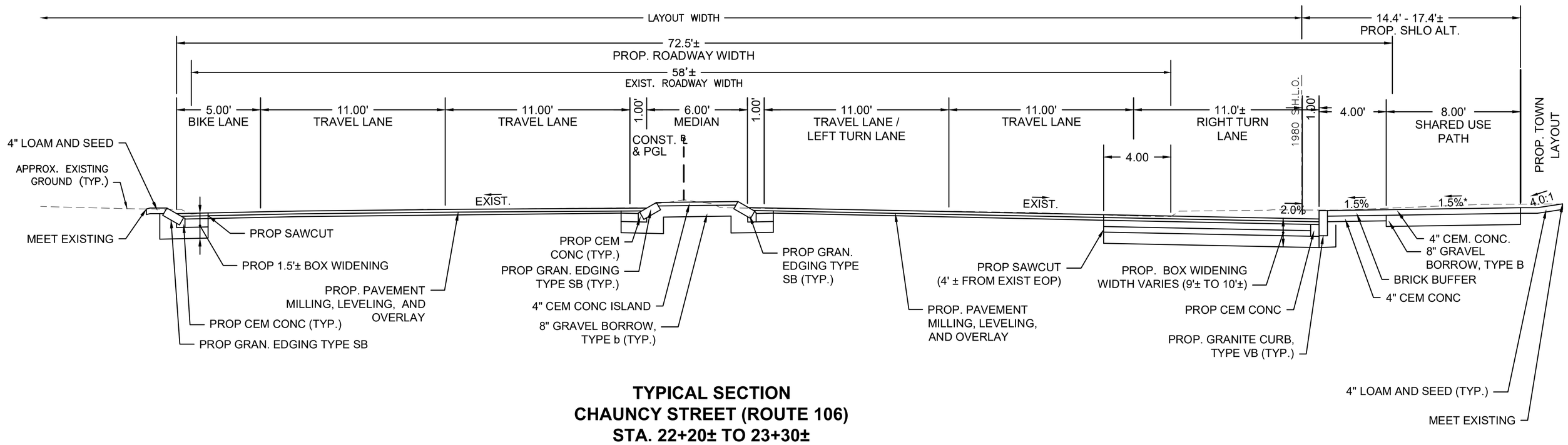
HMA DRIVEWAYS

SURFACE: 1-1/2" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER 2-1/2" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER

BASE COURSE: 8" GRAVEL BORROW, TYPE b

PROJECT TACK COAT NOTES

TACK COAT: ASPHALT EMULSION FOR TACK COAT, GRADE RS-1 SHALL BE PLACED AT A RATE OF:
0.07-0.09 GALLONS PER SQUARE YARD OVER MILLED SURFACES
0.06-0.08 GALLONS PER SQUARE YARD OVER SMOOTH TIGHT PAVEMENTS PRIOR TO PAVING AN OVERLAY



TYPICAL SECTION
CHAUNCY STREET (ROUTE 106)
STA. 22+20± TO 23+30±

NOT TO SCALE

* TOLERANCE FOR CONSTRUCTION ±0.5%

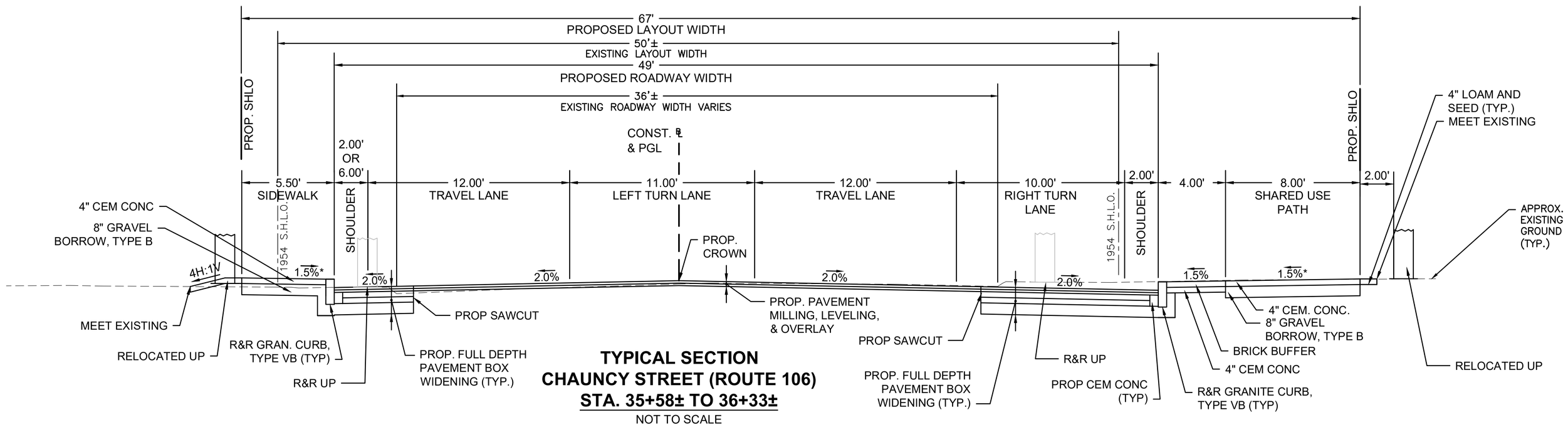
Proposal No. 613052-131228

608944_HD(6076 TYP SEC).DWG Plotted on 7-Feb-2025 2:06 PM

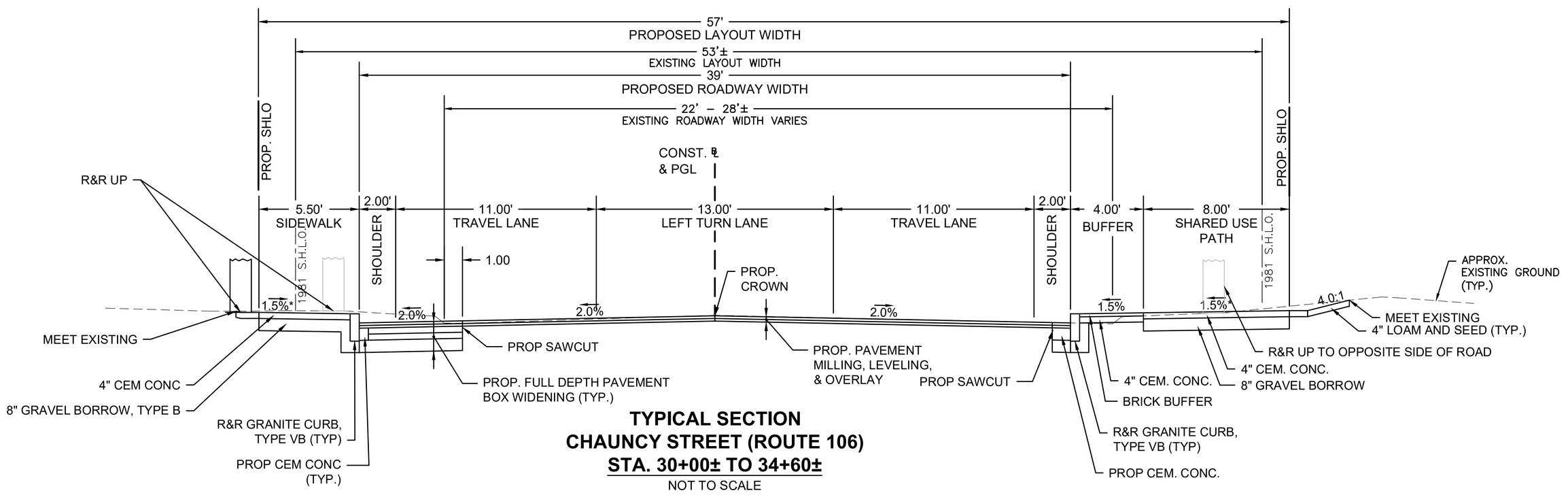
MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	5	28
PROJECT FILE NO.	613052		

TYPICAL SECTIONS



TYPICAL SECTION
CHAUNCY STREET (ROUTE 106)
STA. 35+58± TO 36+33±
NOT TO SCALE



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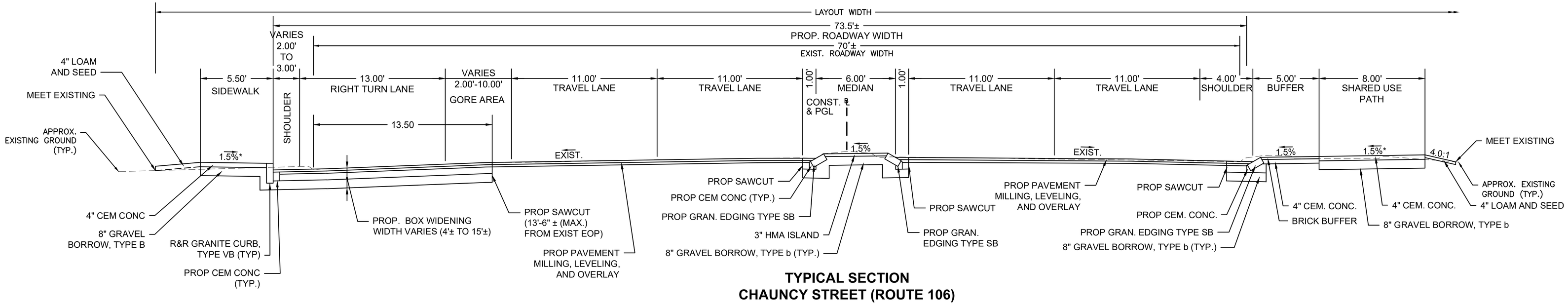
STA. 30+00± TO 34+60±
NOT TO SCALE



TYPICAL SECTION
CHAUNCY STREET (ROUTE 106)
STA. 25+00± TO 25+71±
NOT TO SCALE

* TOLERANCE FOR CONSTRUCTION ±0.5%

Proposal No. 613052-131228

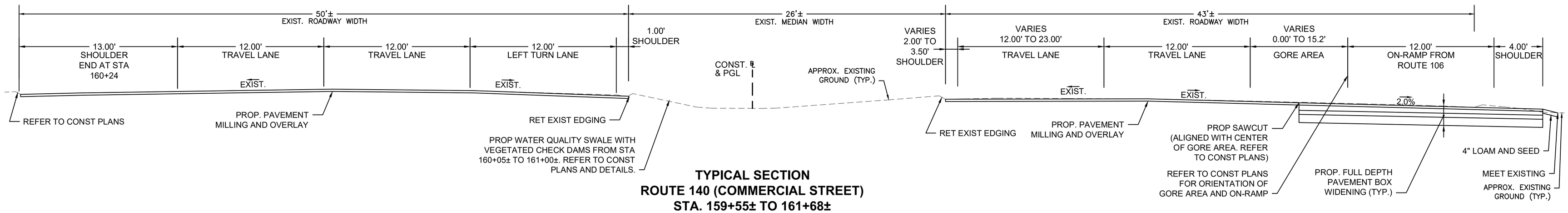
608944_HD(6076 TYP SEC).DWG Plotted on 7-Feb-2025 2:06 PM

A00860 - 201

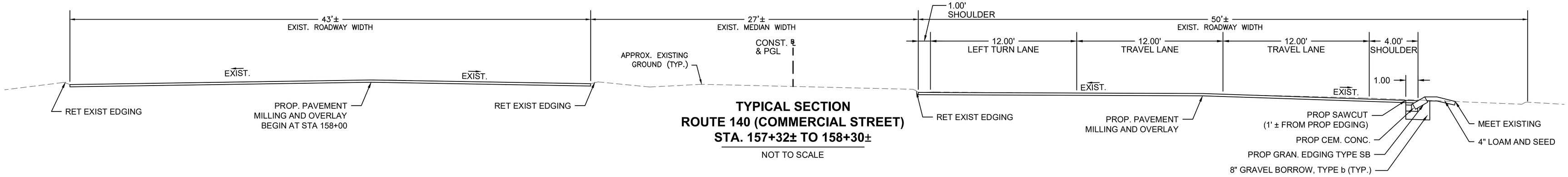
MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	6	28
PROJECT FILE NO.	613052		

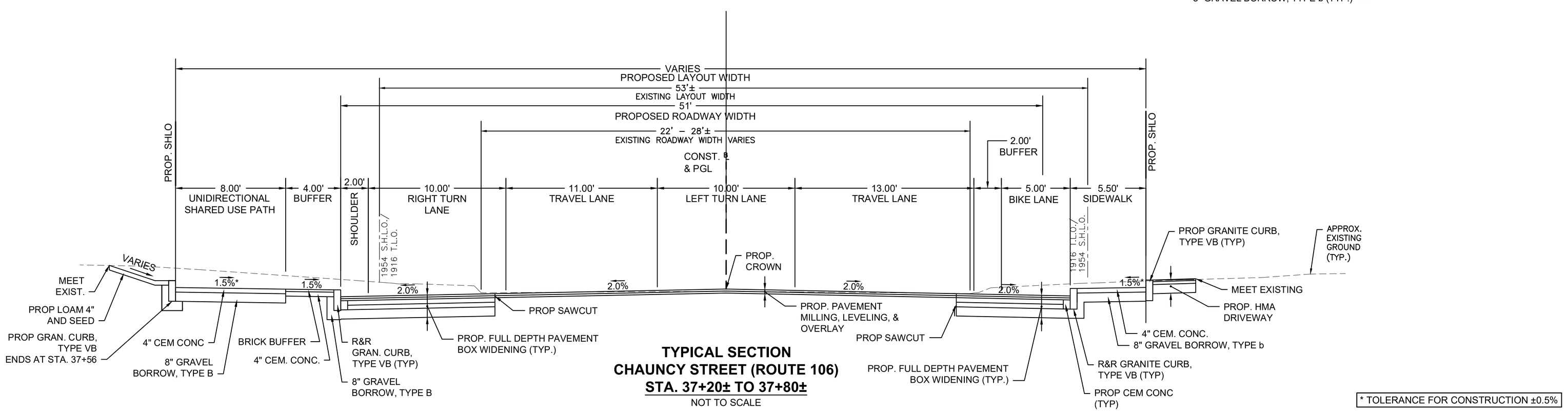
TYPICAL SECTIONS



TYPICAL SECTION
ROUTE 140 (COMMERCIAL STREET)
STA. 159+55± TO 161+68±
NOT TO SCALE



TYPICAL SECTION
ROUTE 140 (COMMERCIAL STREET)
STA. 157+32± TO 158+30±
NOT TO SCALE

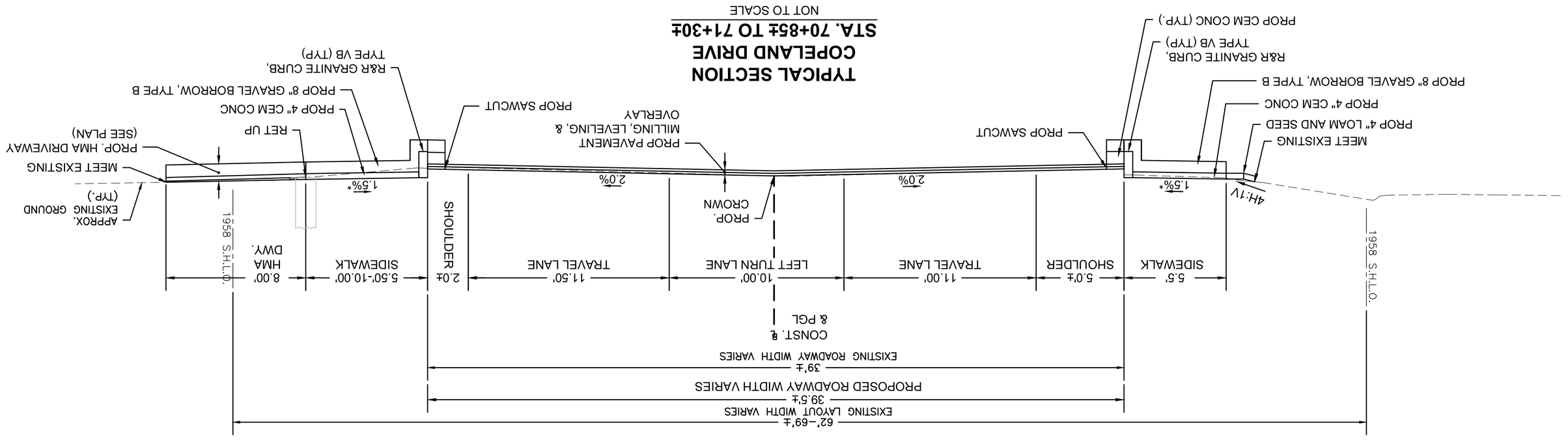


TYPICAL SECTION
CHAUNCY STREET (ROUTE 106)
STA. 37+20± TO 37+80±
NOT TO SCALE

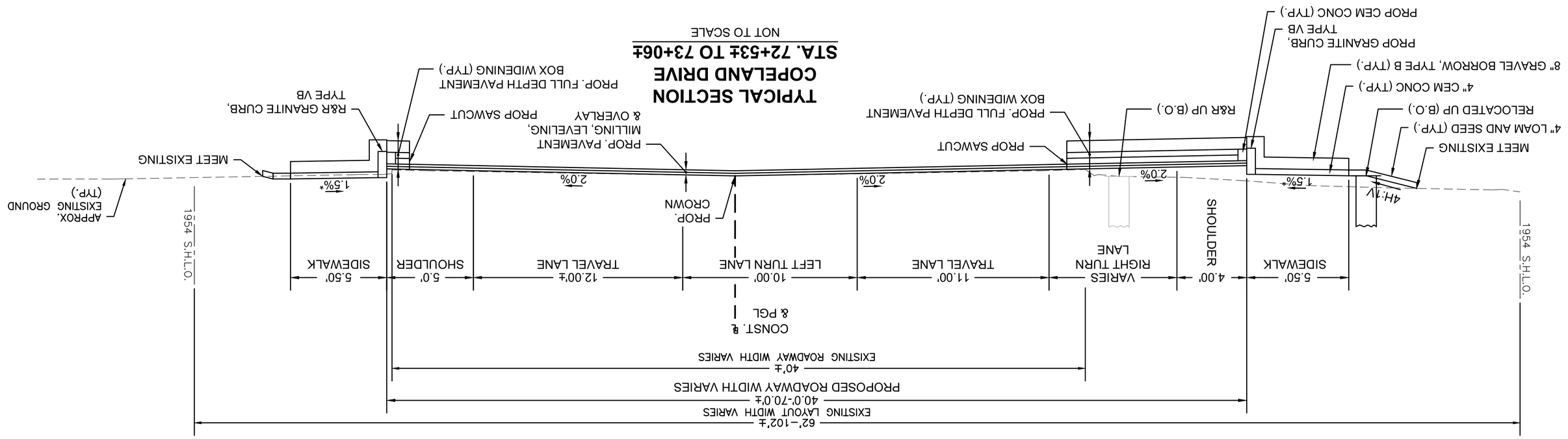
* TOLERANCE FOR CONSTRUCTION ±0.5%

Proposal No. 613052-131228

608944_HD(6076 TYP SEC).DWG Plotted on 7-Feb-2025 2:06 PM



TYPICAL SECTION
COPELAND DRIVE
STA. 70+85± TO 71+30±
NOT TO SCALE



TYPICAL SECTION
COPELAND DRIVE
STA. 72+53± TO 73+06±
NOT TO SCALE

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	7	28

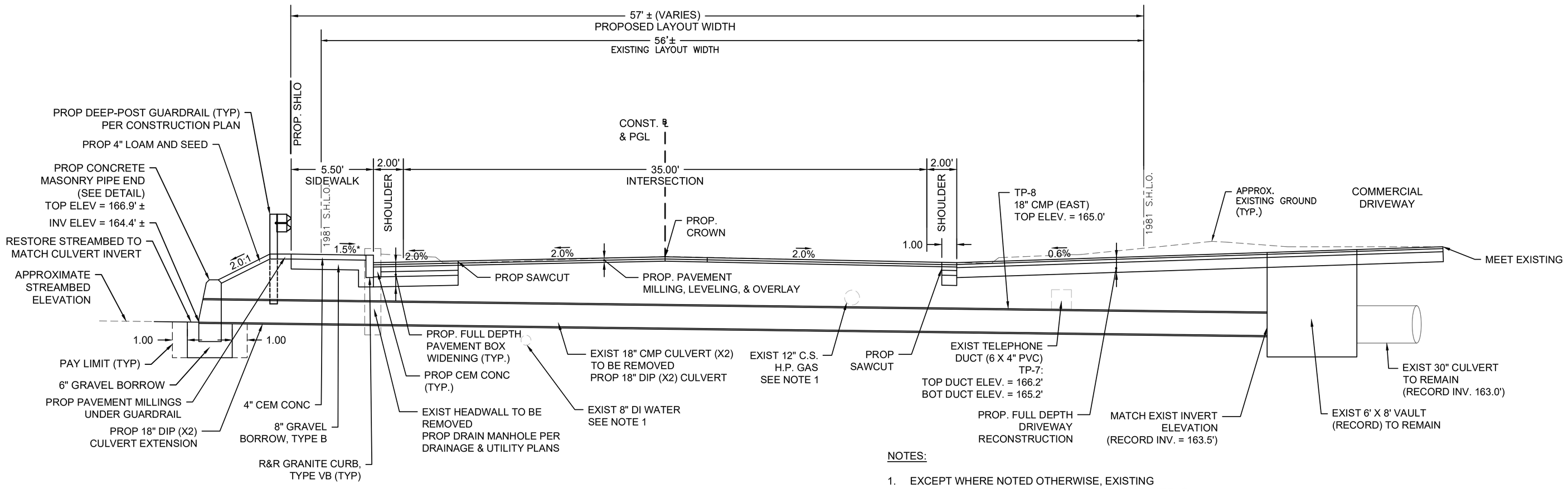
PROJECT FILE NO. 613052

TYPICAL SECTIONS

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	8	28
PROJECT FILE NO.	613052		

TYPICAL SECTIONS



NOTES:

1. EXCEPT WHERE NOTED OTHERWISE, EXISTING UTILITIES ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. ACTUAL LOCATIONS AND ELEVATIONS TO BE FIELD VERIFIED BY CONTRACTOR.

TYPICAL SECTION
CULVERT REPLACEMENT
CHAUNCY STREET (ROUTE 106)
STA. 29+77±

NOT TO SCALE

Proposal No. 613052-131228

608944_HD(6076 TYP SEC).DWG Plotted on 7-Feb-2025 2:06 PM

GENERAL NOTES

1. THE LOCATION OF SUBSURFACE UTILITIES SHOWN IS APPROXIMATE AND NOT GUARANTEED TO BE COMPLETE OR ACCURATE. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND ELEVATIONS OF EXISTING UTILITY LINES AND STRUCTURES PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR MUST NOTIFY DIG SAFE 72 HOURS PRIOR TO ANY EXCAVATION, DEMOLITION OR EXPLOSIVE WORK IN PUBLIC OR PRIVATE WAYS OR UTILITY COMPANY RIGHT-OF-WAY OR EASEMENT.
2. DRAINAGE ELEVATIONS ARE PROVIDED FOR DESIGN PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY BY TEST PIT, THE LOCATIONS OF EXISTING UTILITIES WHICH MAY CONFLICT WITH THE PROPOSED DRAINAGE DESIGN. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE AS APPROVED OR DIRECTED BY THE ENGINEER. ONLY AFTER THE CONTRACTOR VERIFIES ELEVATIONS FOR THE CONSTRUCTABILITY OF THE DRAINAGE SYSTEM SHALL ANY STRUCTURES BE ORDERED. ANY FIELD ADJUSTMENTS TO LINE & GRADE UP TO A DEPTH OF 5' SHALL BE INCLUDED IN THE COST OF THE PIPE. PIPE EXCAVATION GREATER THAN 5' WILL BE PAID UNDER CLASS B TRENCH EXCAVATION.
3. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR THE RESOLUTION OF THE CONFLICT.
4. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ABUTTING PROPERTIES AT ALL TIMES AND NOTIFY ALL ABUTTERS IN ADVANCE OF ANY INTERRUPTIONS TO ACCESS.
5. THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL EXISTING DRAINAGE AND SANITARY STRUCTURES AS NECESSARY FOR THE CHANGES IN GRADE, AND RESET ALL WATER AND DRAINAGE FRAMES, GRATES AND BOXES TO THE PROPOSED FINISH SURFACE GRADE. REQUIRED NEW MASONRY SHALL BE CLAY BRICK CONFORMING TO M4.05.2.
6. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, CABLE TV, FIRE ALARM AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES. ALL UTILITY CASTING SHALL BE ADJUSTED TO FINISH GRADE BY THEIR RESPECTIVE OWNERS.
7. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
8. THE TERM "PROPOSED" (PROP.) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET" (R&R).
9. JOINTS BETWEEN NEW BITUMINOUS CONCRETE ROADWAY PAVEMENT AND SAWCUT EXISTING PAVEMENT SHALL BE SEALED WITH BITUMEN AND BACKSANDED.
10. DRAINAGE STRUCTURES SHALL BE RETAINED UNLESS NOTED OTHERWISE.
11. CATCH BASIN AND MANHOLE FRAMES AND GRATES/COVERS SHALL CLEARLY ALIGN WITH THE OPENINGS IN THE PRECAST STRUCTURES AND THE GRADE OF THE ROADWAY.
12. ALL EXISTING DRAINAGE PIPES THAT ARE NO LONGER BEING UTILIZED BY THE NEW DRAINAGE DESIGN WITHIN THE PROJECT LIMITS SHALL BE REMOVED OR ABANDONED AS NOTED.
13. WHERE DRAINAGE PIPES OR STRUCTURES ARE ABANDONED IN PLACE THE CONTRACTOR SHALL MAKE SURE THAT ALL CONNECTING PIPES, DOWN SPOUT FROM BUILDING, INLETS AND OUTLETS ARE PLUGGED. ALL LIVE CONNECTIONS SHALL BE CONNECTED TO THE NEW SYSTEM.
14. ALL CURB TIE DIMENSIONS ARE TO THE FACE OF THE CURB (GUTTER LINE) OR EDGE OF TRAVEL WAY.
15. CONSTRUCTION BASELINE TIES ARE SHOWN ON CURB TIE & GRADING PLANS.
16. PROPOSED SIDEWALKS AND PEDESTRIAN CURB RAMPS SHALL BE CONSTRUCTED TO THE NEAREST SCORE LINE OR EXPANSION JOINT IN THE EXISTING ADJACENT WALK SURFACE AS DIRECTED BY THE ENGINEER.
17. IN ALL LOCATIONS WHERE PROPOSED SIDEWALK TRANSITIONS DOWN TO MEET EXISTING GRADE, EXISTING SIDEWALK OR PAVED AREA, SLOPE SHALL NOT EXCEED 1:12.
18. THE LOCATION OF THE PROPOSED DRIVEWAY OPENINGS ARE SHOWN ON TIE AND GRADING PLANS. EXACT LOCATIONS MAY BE ADJUSTED IF NECESSARY OR AS REQUIRED BY THE ENGINEERS IN THE FIELD.
19. CONTRACTOR SHALL VERIFY LOCATION OF ALL OBJECTS (SIGNS, TREES, GRATE, POLES ETC.) TO BE SET WITHIN SIDEWALK PRIOR TO FINAL PLACEMENT TO PROVIDE A MINIMUM CLEAR PATH OF 36" EXCLUDING THE CURB. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY LOCATION WHICH CANNOT MEET THE CLEARANCE REQUIREMENTS.
20. SIGNS, POLES AND OTHER FEATURES LOCATED IN PROPOSED CEMENT CONCRETE SIDEWALK SHALL BE BOXED AND PROVIDED FLEXIBLE JOINT FILLER.
21. CONTRACTOR SHALL VERIFY EXISTING GRADES. IF ANY ADJUSTMENT IS REQUIRED DUE TO DIFFERENT EXISTING GRADES FOUND IN THE FIELD, THE CONTRACTOR SHALL NOTIFY AND SEEK THE APPROVAL OF THE ENGINEER PRIOR TO PERFORMING THE WORK.
22. IN AREAS OF NEW SIDEWALK, NEW EDGE OF PAVEMENT OR CURB WITHOUT SIDEWALK OR ANY WORK ADJACENT TO EXISTING GRASS AREAS, EVEN WHEN NO SLOPE-MATCHING OR GRADING IS NECESSARY AND THE EXISTING GRADE IS MET, LOAM BORROW AND SEED SHALL BE PROVIDED AS NECESSARY TO REPAIR AND COMPLETE ANY DAMAGE TO THE GRADE CAUSED BY THE CONSTRUCTION PROCESS.
23. IN FILL AREAS, TOP SOIL SHALL BE REMOVED FOR A DEPTH OF 12" (MIN.) OR AS DIRECTED BY THE ENGINEER. SUBGRADE AREAS WILL BE COMPACTED PRIOR TO THE PLACEMENT OF FILL MATERIAL.
24. ALL NEW GRANITE CURB SHALL BE MASSDOT TYPE VB, UNLESS OTHERWISE NOTED ON THE PLANS.
25. ALL PROPOSED PAVEMENT MARKINGS ON ROADWAYS SHALL BE REFLECTORIZED WHITE AND YELLOW THERMOPLASTIC.
26. SAFETY CONTROLS FOR CONSTRUCTION OPERATIONS SHALL BE IN ACCORDANCE WITH MASSDOT REQUIREMENTS AND THE LATEST VERSION OF THE MUTCD.
27. TREES TO BE RETAINED WHICH RESTRICT SIGHT DISTANCE OR RESTRICT HORIZONTAL OR VERTICAL CLEARANCES SHALL BE TRIMMED AS REQUIRED BY THE ENGINEER.
28. NO TREE SHALL BE REMOVED PRIOR TO APPROVAL BY THE TOWN OF MANSFIELD AND MASSDOT.
29. WHEN WORKING NEXT TO EXISTING WALLS, BERMS, AND OTHER STRUCTURES, CONTRACTOR SHALL EXERCISE EXTREME CAUTION NOT TO DISTURB THE EXISTING STRUCTURES. ANY DAMAGE TO THE EXISTING STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.
30. SURVEY FROM WESTERLY PROJECT LIMIT TO JUST WEST OF GILES PLACE WAS PERFORMED BY ALPHA SURVEY GROUP FROM FEBRUARY TO MAY, 2018 AND PRESENTED ON A PLAN CALLED "EXISTING CONDITIONS PLAN, COMMERCIAL ST. (ROUTE 140), CHAUNCY ST. (ROUTE 106), MANSFIELD, MA" DATED MAY 31, 2018. SURVEY FROM JUST WEST OF GILES PLACE TO THE EASTERLY PROJECT LIMIT WAS PERFORMED BY SITE DESIGN ENGINEERING, LLC, ON JUNE 26-27, 2018, MAY 13-14, 2019, AND MARCH 10-20, 2020 AND PRESENTED ON A PLAN CALLED "ROUTE SURVEY, CHAUNCY STREET, MANSFIELD, MASSACHUSETTS" DATED JULY 20, 2018 AND REVISED ON APRIL 2, 2020.
31. THE COORDINATES, IN FEET, ARE BASED UPON THE NORTH AMERICAN DATUM OF 1983 (NAD 83). THE VERTICAL DATUM IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
32. ALL PAVEMENT MARKINGS AND/OR SIGN NOTES ARE SHOWN ON THE SIGNS AND PAVEMENT MARKING PLANS.
33. THE EXPOSED EDGES OF ALL LONGITUDINAL AND TRANSVERSE SAW CUT JOINTS OF CONCRETE BASE SHALL BE TREATED WITH HOT POURED RUBBERIZED ASPHALT JOINT SEALANT MEETING MASSDOT SPECIFICATIONS.
34. DAMP PROOFING SHALL BE PROVIDED ON ALL CONCRETE MASONRY PIPE END SURFACES LOCATED BELOW GROUND.

PEDESTRIAN CURB RAMP NOTES

1. ALL PEDESTRIAN CURB RAMPS SHALL CONFORM TO THE REQUIREMENTS OF THE ARCHITECTURAL ACCESS BOARD (A.A.B.) AND THE AMERICANS WITH DISABILITIES ACT (A.D.A.). AND THE LATEST MASSDOT STANDARDS.
2. THE LOCATION OF PROPOSED PEDESTRIAN CURB RAMPS ARE SHOWN ON CONSTRUCTION PLANS AND THE PEDESTRIAN CURB RAMP DETAILS. EXACT LOCATIONS MAY BE ADJUSTED, IF NECESSARY, BY THE ENGINEER IN THE FIELD.
3. ALL PROPOSED PEDESTRIAN CURB RAMPS SHALL HAVE DETECTABLE WARNING PANELS INSTALLED IN ACCORDANCE WITH MASSDOT CONSTRUCTION STANDARD DRAWINGS. THE COLOR OF THE PANEL SHALL BE YELLOW UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
4. IN INSTANCES WHERE AN EXISTING MANHOLE, HANDHOLE OR OTHER "SURFACE" TYPE STRUCTURE THAT CANNOT BE REMOVED OR RESET, IS WITHIN THE ACTUAL PEDESTRIAN CURB RAMP PATH, THE STRUCTURE SHALL BE CAREFULLY ADJUSTED SUCH THAT THE TOPMOST SURFACES OF THE STRUCTURE COVER SHALL BE FLUSH WITH THE RAMP SURFACE AND SHALL MATCH THE SLOPE OF THE NEW PEDESTRIAN CURB RAMP AS DIRECTED BY THE ENGINEER.
5. THE TRANSITION SLOPE OF ANY CURB RAMP, EXCEPT MAXIMUM LENGTH HIGH SIDE TRANSITIONS, SHALL NOT EXCEED 7.5%, +/-0.5% FOR TOLERANCE OF CONSTRUCTION. PER AAB 521 CMR, FINISHED SLOPE MAY NOT EXCEED 8.33%. PROPOSED PEDESTRIAN CURB RAMP SLOPES, ESPECIALLY HIGH SIDE TRANSITIONS, SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO POURING OF CONCRETE AND ADJUSTED, IF NECESSARY, AT THE DIRECTION OF THE ENGINEER.

TEST PIT LOGS

1. TEST PITS WERE COMPLETED IN DECEMBER OF 2024 AND LOGGED BY GARY D. JAMES, P.E. OF BETA GROUP, INC. SE# 13765.
2. THE TEST PIT LOGS PROVIDED BELOW HAVE BEEN SIMPLIFIED FOR BREVITY

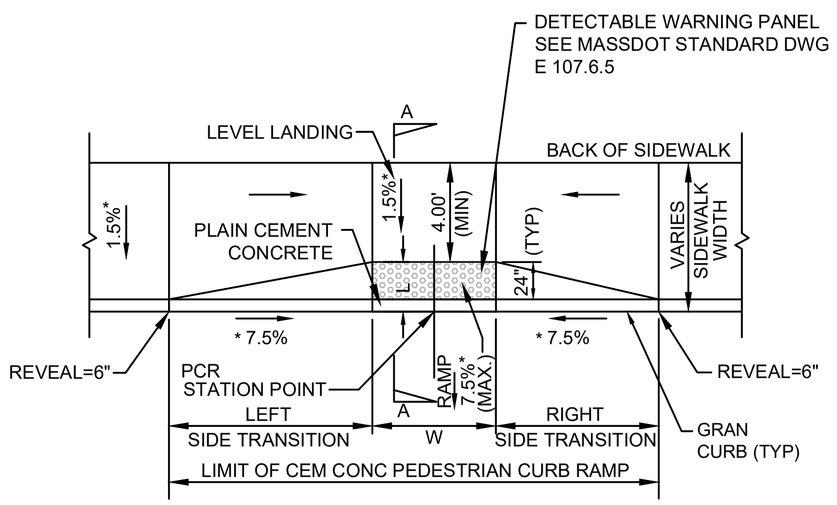
TP-1		
DEPTH (IN)	SOIL HORIZON / LAYER	SOIL TEXTURE (USDA)
0 - 18	A & FILL	LOAM
18 - 31	Bw	SANDY LOAM
31 - 120	C1	M-C SAND

GROUNDWATER: NOT ENCOUNTERED

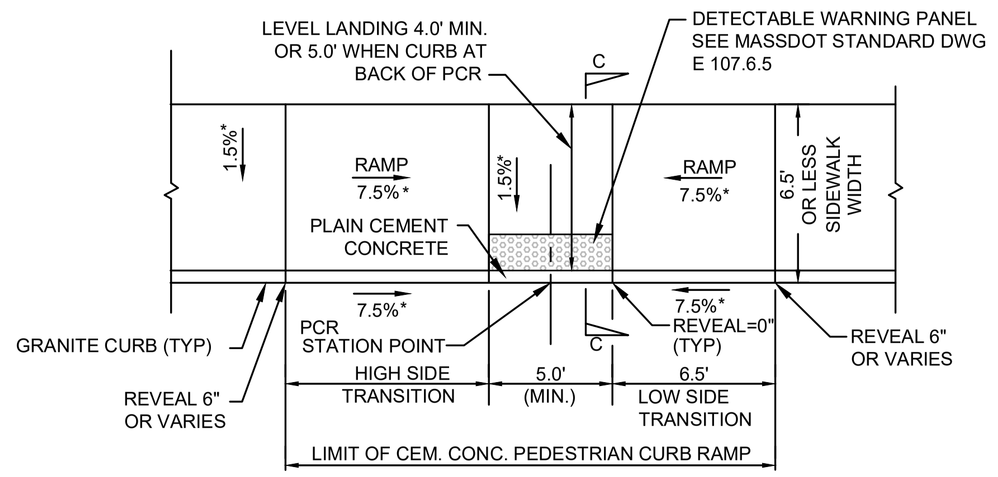
TP-2		
DEPTH (IN)	SOIL HORIZON / LAYER	SOIL TEXTURE (USDA)
0 - 18	A & FILL	
18 - 40	Bw	LOAMY SAND
40 - 68	C1	MED SAND

GROUNDWATER: DEPTH = 52" ±

Proposal No. 613052-131228
608944_HD(6076_BORDER).DWG Plotted on 30-Dec-2024 9:41 AM
A00860 - 205



PEDESTRIAN CURB RAMP DETAIL TYPE "A"
NOT TO SCALE



PEDESTRIAN CURB RAMP DETAIL TYPE "B"
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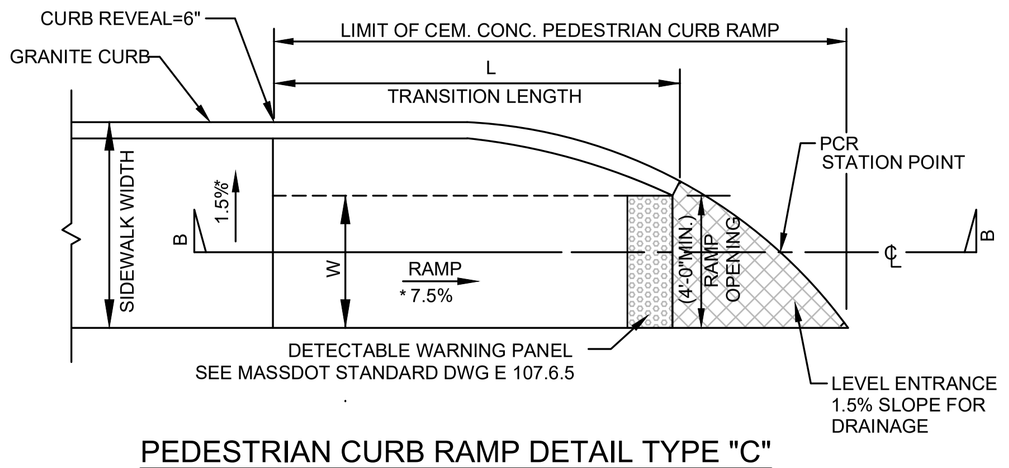

PEDESTRIAN CURB RAMP DETAIL TYPE "C"
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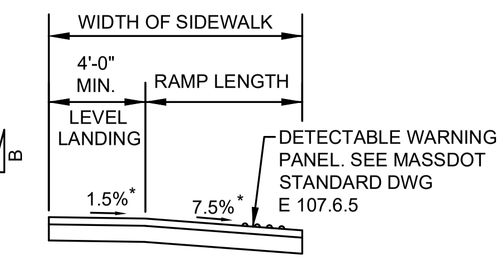
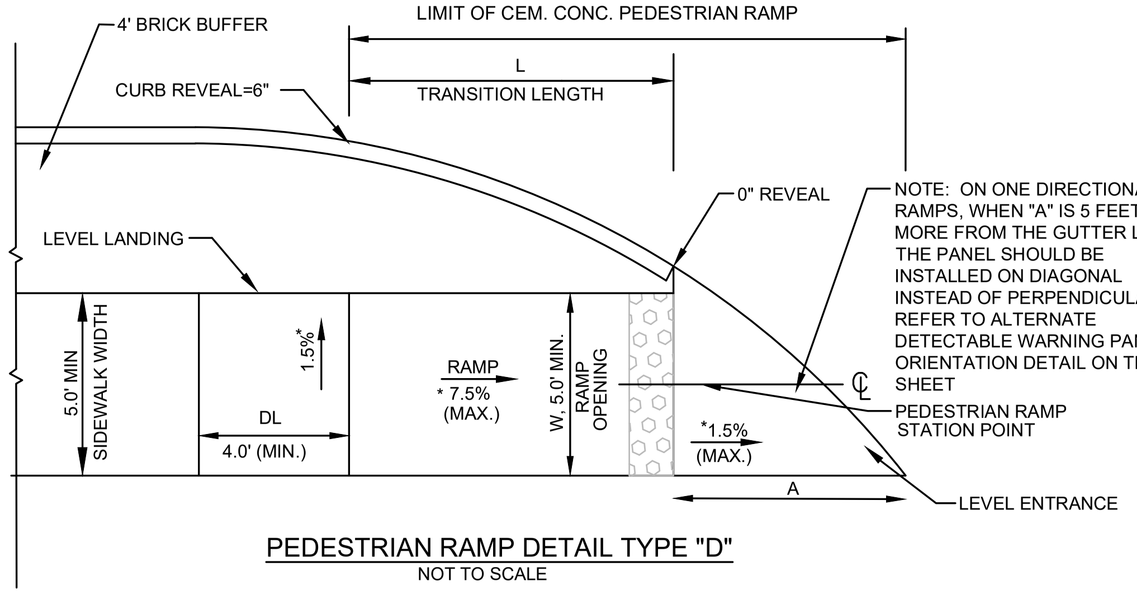
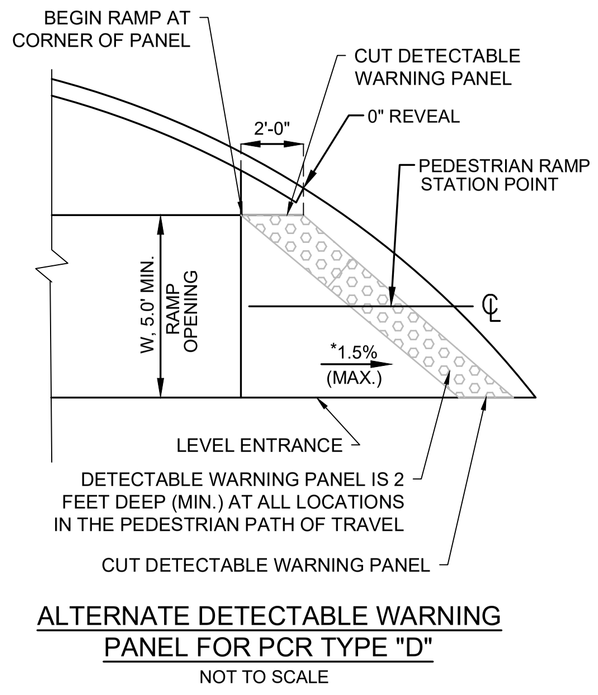


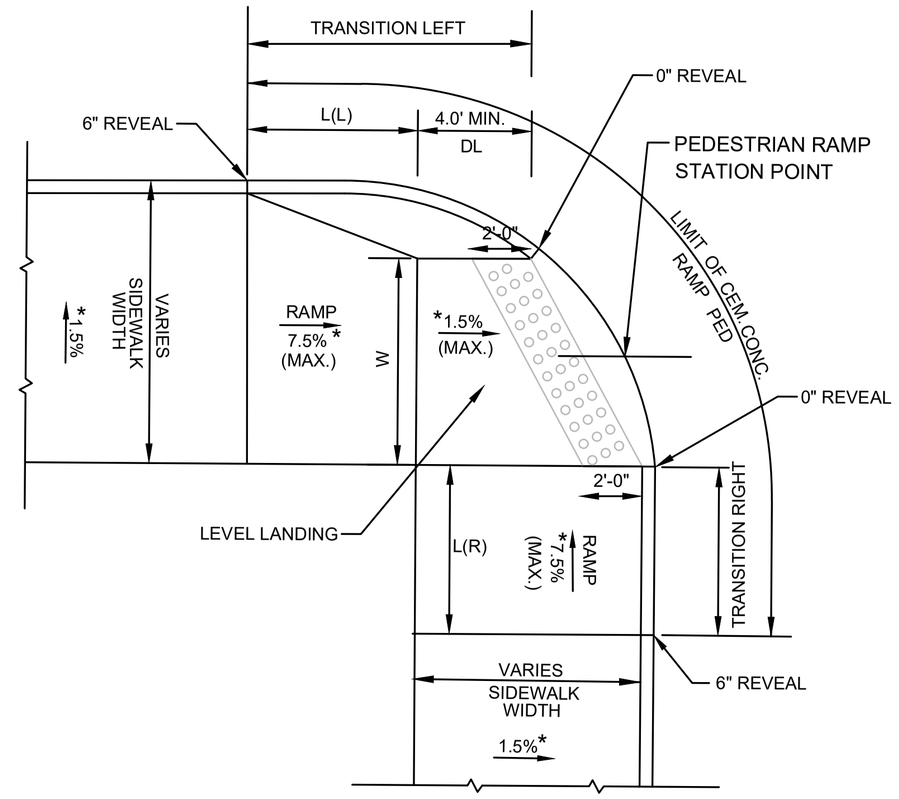
SECTION A-A
NOT TO SCALE



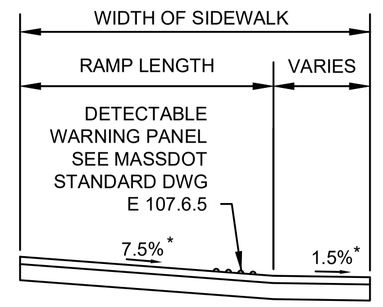
PEDESTRIAN RAMP DETAIL TYPE "D"
NOT TO SCALE



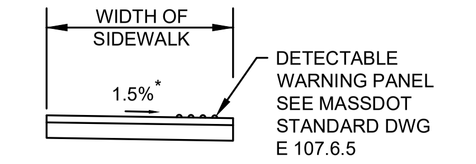
ALTERNATE DETECTABLE WARNING
PANEL FOR PCR TYPE "D"
NOT TO SCALE



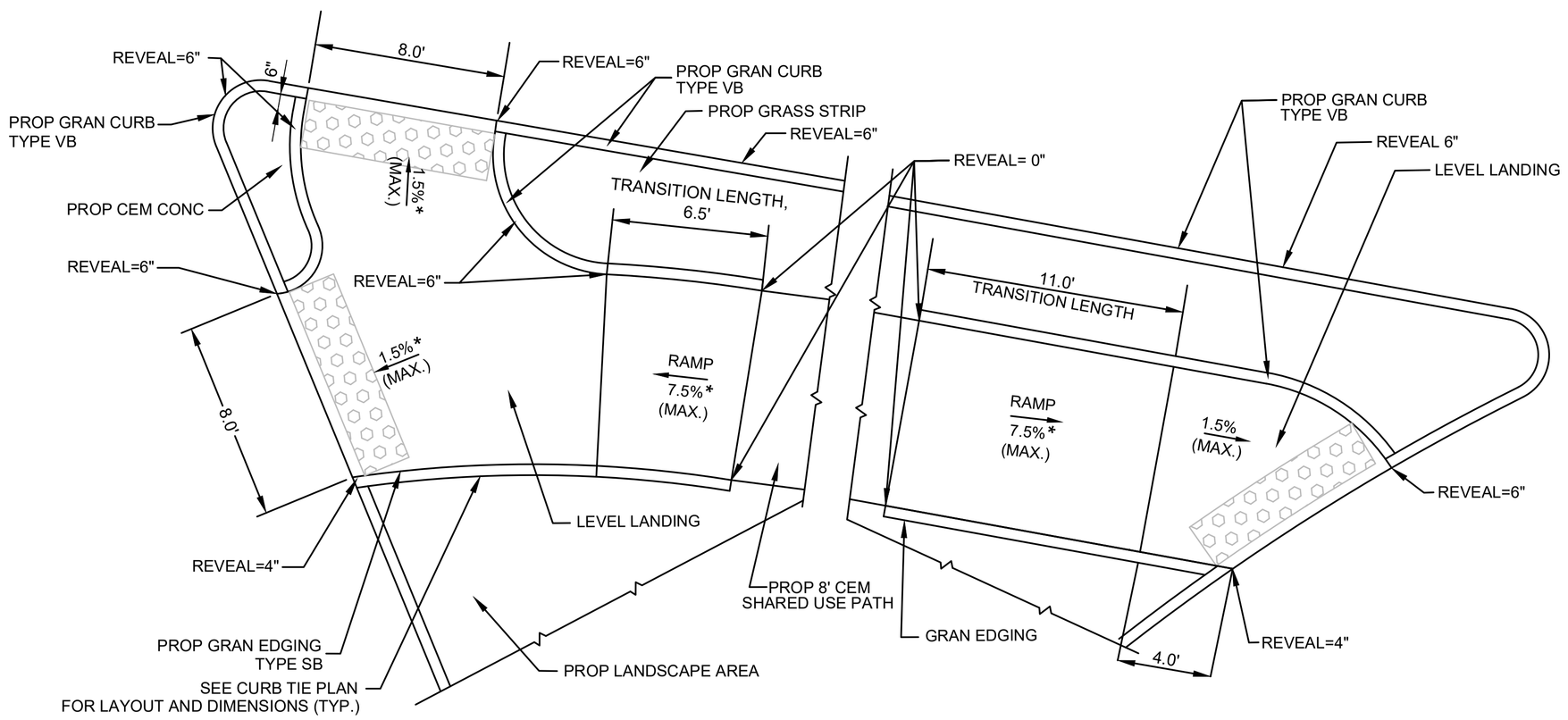
PEDESTRIAN RAMP DETAIL TYPE "E"
NOT TO SCALE



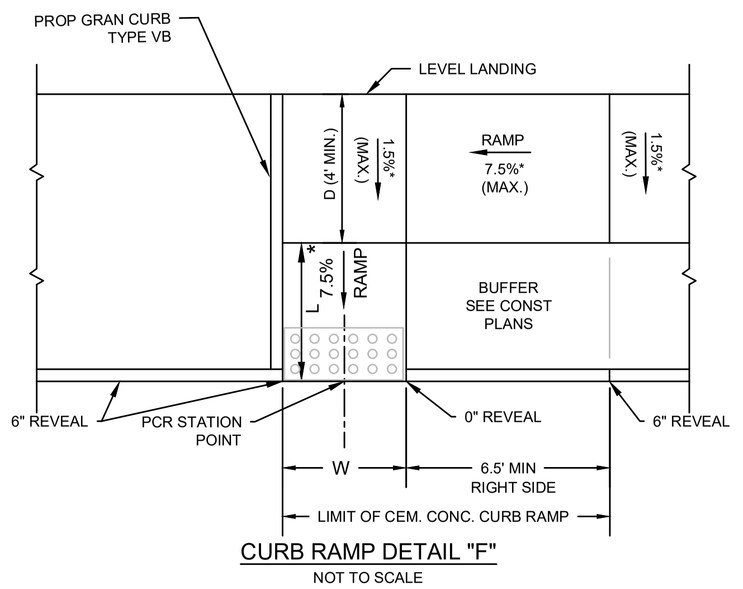
SECTION B-B
NOT TO SCALE



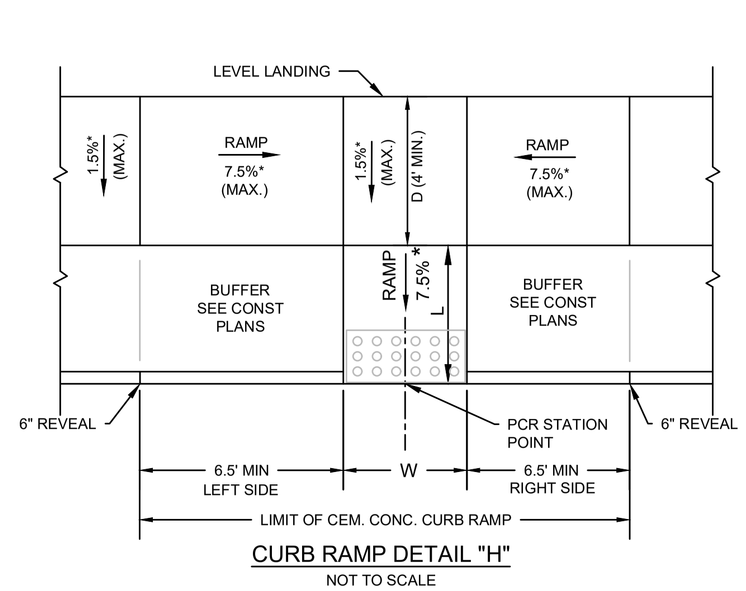
SECTION C-C
NOT TO SCALE



PEDESTRIAN RAMP SPECIAL DETAIL TYPE "S1"
NOT TO SCALE



CURB RAMP DETAIL "F"
NOT TO SCALE



CURB RAMP DETAIL "H"
NOT TO SCALE

* TOLERANCE FOR CONSTRUCTION ±0.5%

* TOLERANCE FOR CONSTRUCTION ±0.5%

Proposal No. 613052-131228

608944_HD(6076 DETAILS).DWG Plotted on 7-Feb-2025 2:06 PM

A00860 - 206

PEDESTRIAN RAMP DATA											
PED RAMP NO.	LOCATION	STATION & OFFSET	GUTTER SLOPE G	LENGTH OF PRIMARY RAMP L	WIDTH OF PRIMARY RAMP W	DEPTH OF LEVEL LANDING (DL) (MIN. 4.0')	TRANSITION LENGTH		SIDEWALK WIDTH	PCR TYPE	EXIST RAMP ID
							LEFT	RIGHT			
1	COMMERCIAL STREET ROUTE 140	158+31.5 LT	-0.44%	4.0	8.0'	8.0'	-	6.5'	8.0'	F	PED-3108
2	COMMERCIAL STREET ROUTE 140	158+03.0 RT	SEE SPECIAL DETAIL							S1	PED-8809
2	CHAUNCY STREET ROUTE 106	24+95.2 RT								S1	PED-24277
3	CHAUNCY STREET ROUTE 106	25+63.9 RT								S1	PED-3619
4	CHAUNCY STREET ROUTE 106	25+80.4 RT	-2.50%	4.0'	8.0'	8.0'	6.5'	-	8.0'	F	N/A
5	CHAUNCY STREET ROUTE 106	25+02.9 LT	-2.09%	5.5'	5.0'	5.5'	-	6.5' **	5.5'	B	N/A
6	CHAUNCY STREET ROUTE 106	28+24.1 LT	-1.45%	9.0'	4.0'	5.0'	9.0'	-	5.5'	C	N/A
7	CHAUNCY STREET ROUTE 106	28+61.9 LT	-5.22%	5.5'	5.0'	5.5'	15.0' **	6.5' **	5.5'	B	N/A
8	CHAUNCY STREET ROUTE 106	29+49.4 RT	0.10%	7.7'	8.0'	5.0'	-	7.7'	8.0'	D	N/A
9	CHAUNCY STREET ROUTE 106	29+93.5 RT	-0.90%	7.7'	8.0'	5.0'	7.7'	-	8.0'	D	N/A
10	CHAUNCY STREET ROUTE 106	30+60.7 LT	-0.70%	5.5'	5.0'	5.5'	7.7' **	6.5' **	5.5'	B	N/A
11	CHAUNCY STREET ROUTE 106	31+19.2 LT	2.10%	5.5'	5.0'	5.5'	-	11.0' **	5.5'	B	N/A
12	CHAUNCY STREET ROUTE 106	35+95.1 LT	-5.30%	5.5'	5.0'	5.5'	15.0' **	6.5' **	5.5'	B	PED-21835
14	CHAUNCY STREET ROUTE 106	36+41.3 RT	2.24%	4.0'	6.0'	8.0'	6.5'	11.0'	8.0'	H	N/A
15	CHAUNCY STREET ROUTE 106	36+70.0 RT	1.50%	9.0'	8.0'	5.0'	6.5'	9.0'	8.0'	E	PED-19687
16	CHAUNCY STREET ROUTE 106	36+80.8 LT	-2.55%	5.5'	5.0'	5.5'	11.0' **	6.5' **	5.5'	B	PED-5152
17	CHAUNCY STREET ROUTE 106	37+22.3 LT	-1.59%	4.0'	8.0'	8.0'	9.0'	6.5'	8.0'	A	N/A
18	CHAUNCY STREET ROUTE 106	37+16.3 RT	0.20%	4.1' (LT) 4.1' (RT)	8.0' (LT) 8.0' (RT)	7.1' (LT) 7.4' (RT)	6.5'	7.7'	9.5' (LT) 9.9' (RT)	S2	PED-8907
19	CHAUNCY STREET ROUTE 106	37+27.1 RT	1.20%							S2	PED-23936
20	COPELAND DRIVE	69+95.1 LT	-2.08% (LT) 1.44% (RT)	5.5'	5.0'	5.5'	11.0' **	9.0' **	5.5'	B	PED-21736
21	COPELAND DRIVE	69+56 LT	1.78%	5.5'	5.0'	5.5'	6.5' **	9.0' **	5.5'	B	PED-5025
CT1	COPELAND DRIVE	24+33 RT (1) 24+53 RT (2)	N/A	N/A	8.0'	21.7'	N/A	N/A	N/A	CT-A	N/A
CT2	COPELAND DRIVE	24+95 RT (1) 24+95 LT (2)	N/A	N/A	8.0'	6.0'	N/A	N/A	N/A	CT-A	N/A
CT5	COPELAND DRIVE	24+95 LT (1) 24+96 LT (2)	N/A	N/A	8.0'	8.9' (LT) 6.2' (RT)	N/A	N/A	N/A	CT-A	N/A
CT12	COPELAND DRIVE	36+16 LT (1) 36+25 LT (2) 36+30 LT (3)		SEE SPECIAL DETAIL						CT-B	N/A

** TRANSITION LENGTH APPLIED AT BACK OF WALK

PEDESTRIAN RAMP NOTES

1. ALL PEDESTRIAN RAMPS SHALL CONFORM TO THE REQUIREMENTS OF THE ARCHITECTURAL ACCESS BOARD (A.A.B.), THE AMERICANS WITH DISABILITIES ACT (A,D,A,) AND MASSDOT HIGHWAY DIVISION.

2. ALL PROPOSED CURB FOR PEDESTRIAN RAMP TRANSITIONS SHALL BE CUT AND TRANSITIONED AS NECESSARY TO PROVIDE THE CORRECT TRANSITION LENGTHS FOR EACH PEDESTRIAN RAMP, AS SHOWN ON THE PEDESTRIAN RAMP DETAILS OR AS DIRECTED BY THE ENGINEER. ANY EXISTING CURB INLETS, IN AREAS OF NEW PEDESTRIAN RAMP TRANSITIONS, SHALL BE REMOVED AND REPLACED WITH APPROPRIATE TRANSITION CURB, AS DIRECTED BY THE ENGINEER.

3. IN NO CASE, EXCEPT MAXIMUM LENGTH HIGH SIDE TRANSITIONS, SHALL ANY TRANSITION SLOPE OF ANY PEDESTRIAN RAMP EXCEED 7.5%. PROPOSED PEDESTRIAN RAMP SLOPES, ESPECIALLY HIGH SIDE TRANSITIONS, SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE POURING OF CONCRETE, AND ADJUSTED, IF NECESSARY, AT THE DIRECTION OF THE ENGINEER.

4. IN INSTANCES WHERE AN EXISTING MANHOLE, HANDHOLE OR OTHER "SURFACE" TYPE STRUCTURE THAT CANNOT BE REMOVED OR RESET, IS WITHIN THE PEDESTRIAN RAMP PATH OF TRAVEL, THE STRUCTURE SHALL BE CAREFULLY ADJUSTED SUCH THAT THE TOPMOST SURFACES OF THE STRUCTURE COVER SHALL BE FLUSH WITH THE RAMP SURFACE AND SHALL MATCH THE SLOPE OF THE NEW PEDESTRIAN RAMP EXACTLY, AS DIRECTED BY THE ENGINEER.

5. ANY UTILITY STRUCTURES WITHIN THE TRANSITIONS OF THE PEDESTRIAN RAMP TRANSITIONS SHALL ALSO BE ADJUSTED TO THE PROPOSED GRADE AND THE SLOPE OF THE SURFACE OF THE PROPOSED TRANSITION PANEL OR PANELS.

6. THE LOCATION OF PROPOSED PEDESTRIAN RAMPS ARE SHOWN ON THE CONSTRUCTION PLANS AND THE PEDESTRIAN RAMP DATA SCHEDULE. EXACT LOCATIONS MAY BE ADJUSTED, IF NECESSARY, BY THE ENGINEER IN THE FIELD.

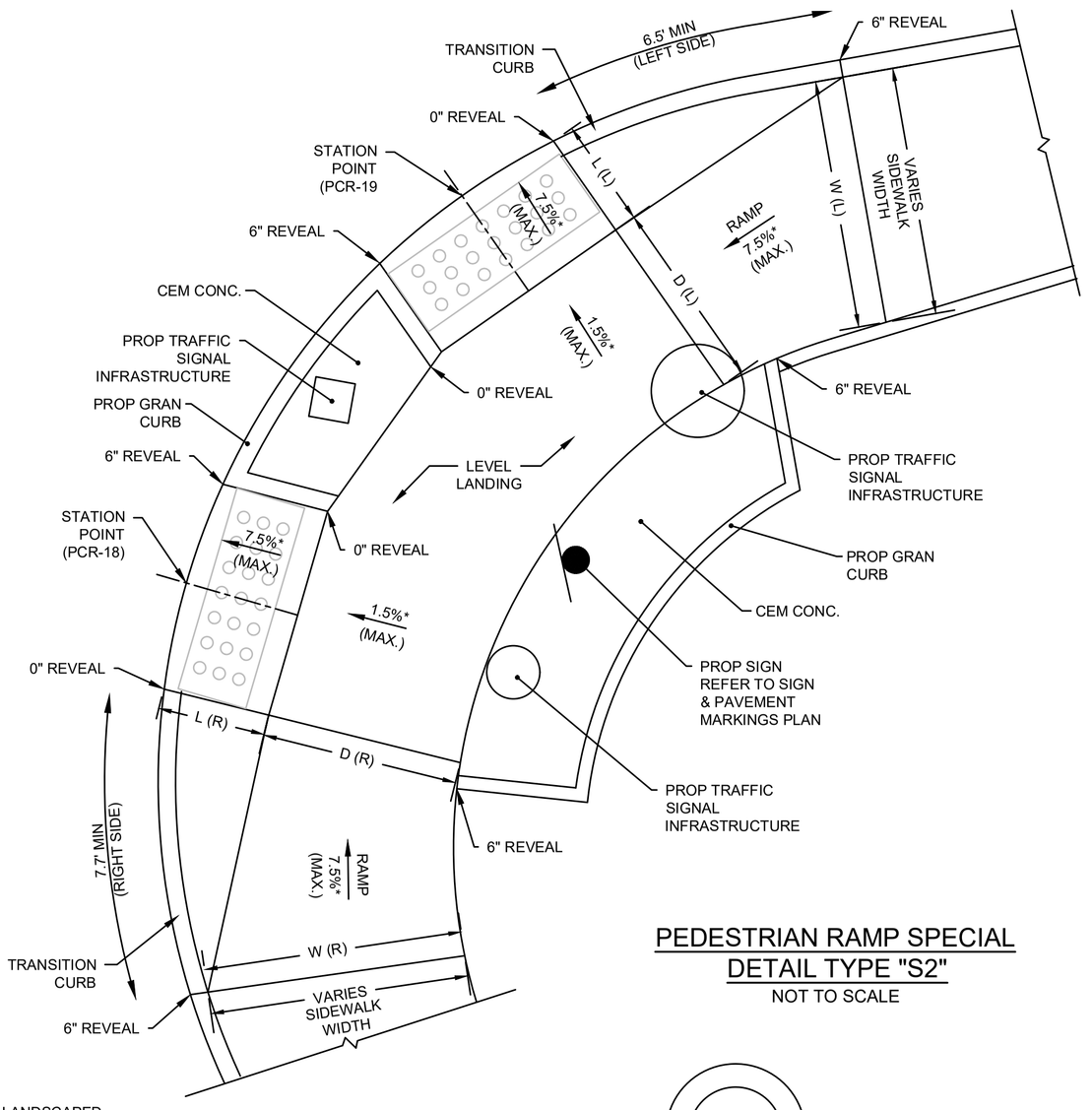
7. DETECTABLE WARNING PANELS SHALL BE INSTALLED ON ALL PEDESTRIAN RAMPS IN ACCORDANCE WITH CONSTRUCTION STANDARD E 107.6.5 (2017) AND WILL BE PAID FOR UNDER ITEM 701.2.

8. PROPOSED PEDESTRIAN RAMP SLOPES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE POURING OF CONCRETE, AND ADJUSTED, IF NECESSARY, TO CONFORM TO THE LATEST STANDARDS, AS DIRECTED BY THE ENGINEER.

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	11	28
PROJECT FILE NO.	613052		

CONSTRUCTION DETAILS



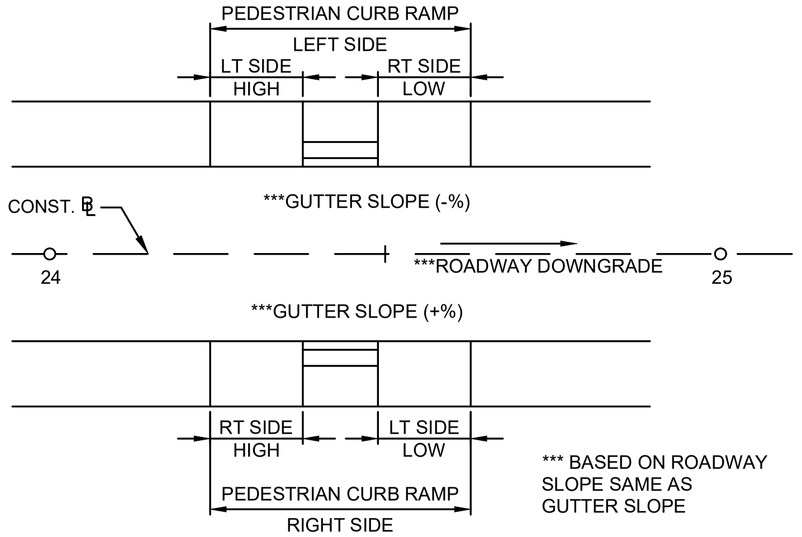
PEDESTRIAN RAMP SPECIAL DETAIL TYPE "S2"
NOT TO SCALE

PROFILE GRADE	HIGH SIDE TRANSITION LENGTH FOR 7.5% DESIGN SLOPE (FEET)
%	
0	6'-6"
>0-1	7'-8"
>1-2	9'-0"
>2-3	11'-0"
>3-4	14'-0"
>4	15'-0" MAX.

FIGURES ARE BASED ON A DESIGN SLOPE OF 7.5% AND A REVEAL OF 6".

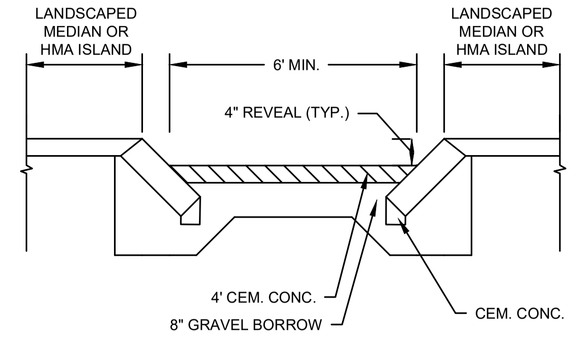
PEDESTRIAN CURB RAMP
HIGH SIDE TRANSITION LENGTHS

*TOLERANCE FOR CONSTRUCTION ±0.5%

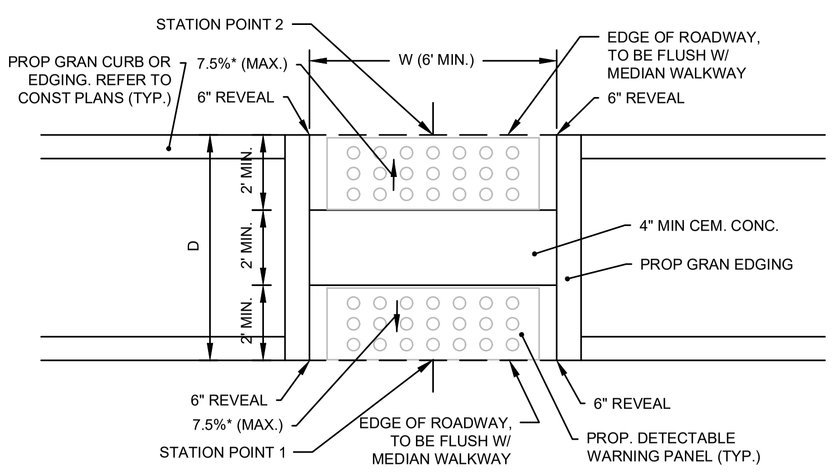


*** BASED ON ROADWAY SLOPE SAME AS GUTTER SLOPE

GUTTER SLOPE DIAGRAM
NOT TO SCALE

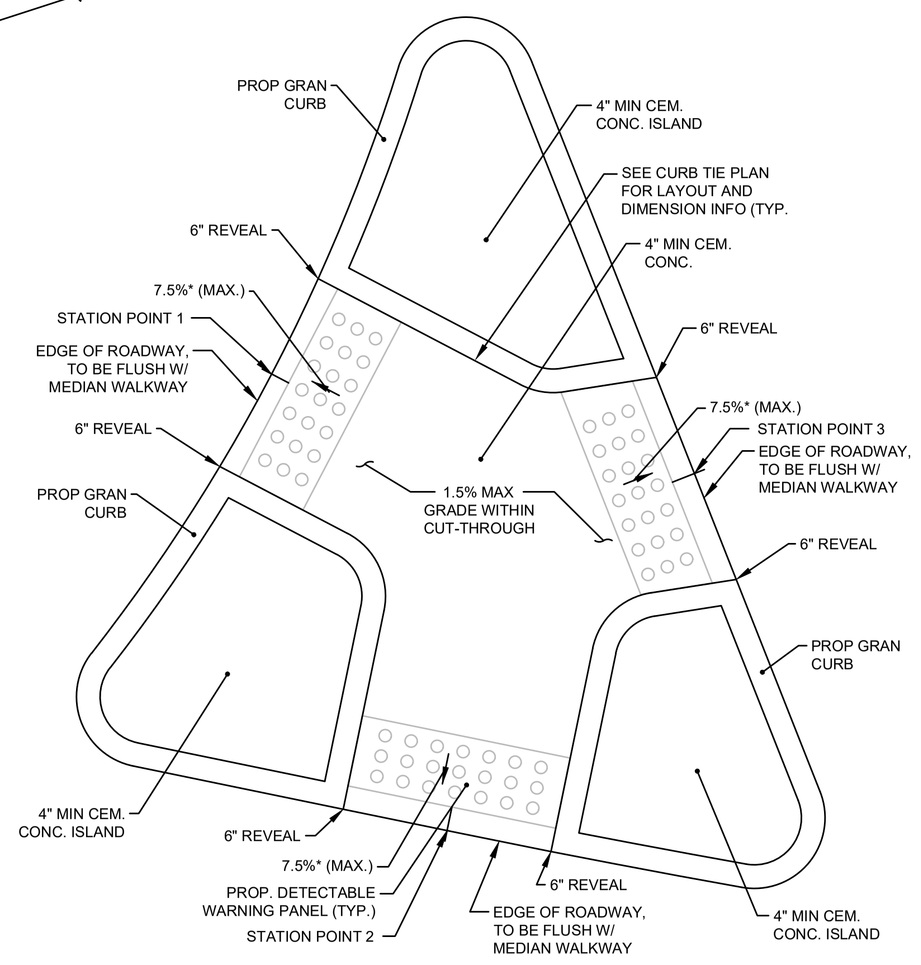


SECTION VIEW



PLAN VIEW

CUT-THROUGH AT MEDIAN (TYPE CT-A)
NOT TO SCALE



THREE WAY CUT-THROUGH AT RT 106 / COPELAND DRIVE INTERSECTION (TYPE CT-B)
NOT TO SCALE

Proposal No. 613052-131228

608944_HD(6076 DETAILS).DWG Plotted on 7-Feb-2025 2:06 PM

A00860 - 207

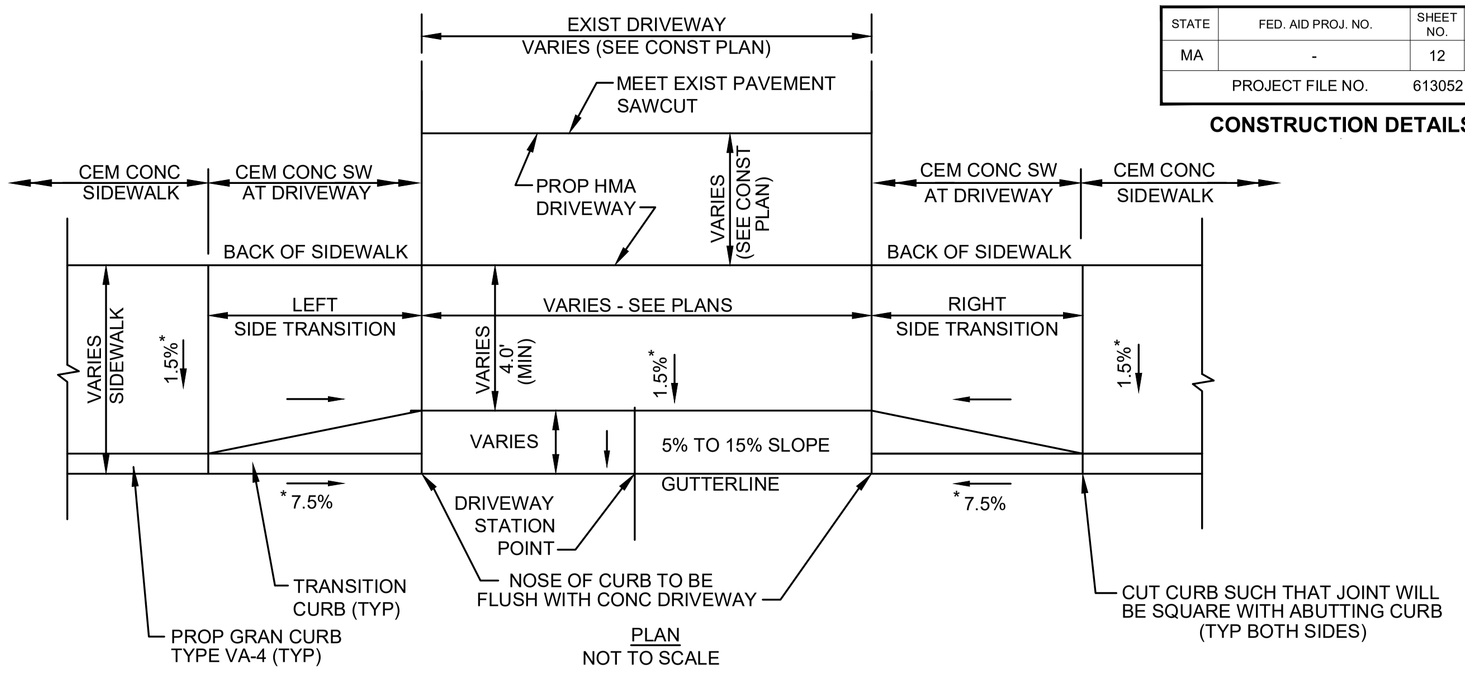
MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	12	28
PROJECT FILE NO.	613052		

CONSTRUCTION DETAILS

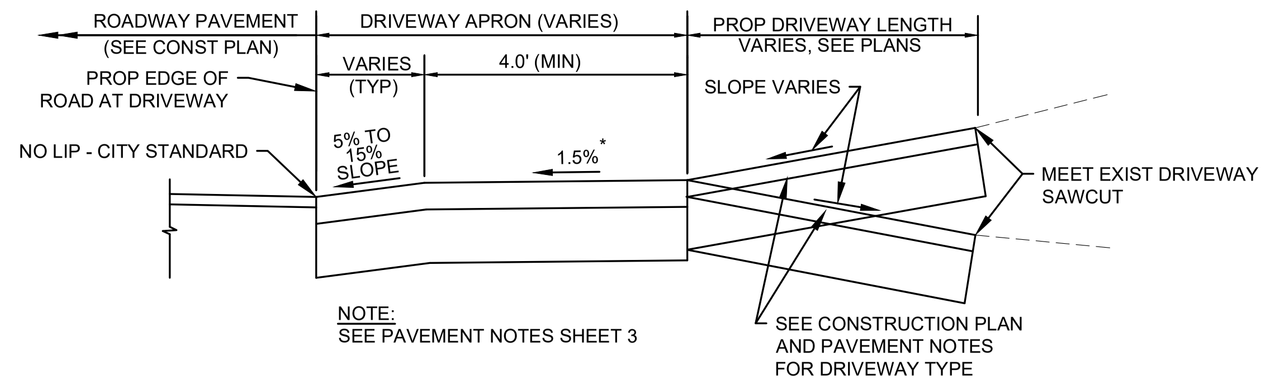
DRIVEWAY OPENING DATA

PED RAMP NO.	LOCATION	STATION & OFFSET	GUTTER SLOPE G	OPENING WIDTH W	APRON SLOPE	DEPTH FROM GUTTER TO BACK OF SIDEWALK	PATH OF TRAVEL WIDTH ACROSS DRIVEWAY	TRANSITION LENGTH		DWY TYPE
								LEFT	RIGHT	
1	CHAUNCY STREET ROUTE 106	32+19.2 RT	-1.49%	44.4'	1.5%	12.0'	12.0'	9.0'	6.5'	B
2	CHAUNCY STREET ROUTE 106	32+78.2 LT	1.51%	28.0'	12.5%	5.5'	4.0'	6.5'	6.0' REV=4"	A
3	CHAUNCY STREET ROUTE 106	33+26.9 LT	1.51%	35.0'	1.5%	5.5'	5.5'	6.0' REV=4"	9.0'	B
4	CHAUNCY STREET ROUTE 106	34+07.6 RT	-1.16%	53.2'	1.5%	12.0'	12.0'	9.0'	6.5'	B
5	CHAUNCY STREET ROUTE 106	38+34.1 RT	1.30%	36.7'	1.5%	5.5'	5.5'	-	9.0'	C
6	COPELAND DRIVE	73+76.0 LT	1.26%	32.0'	1.5%	5.5'	5.5'	6.5'	9.0'	B
7	COPELAND DRIVE	70.37.9 RT	-0.41%	30.2'	14.0%	8.0'	4.0'	7.7'	6.5'	A
8	CHAUNCY STREET ROUTE 106	38+68.1 RT	0.91%	20.0'	12.5%	5.0'	4.0'	6.5'	-	C
9	COPELAND DRIVE	73+75.2 RT	-1.25%	24.0'	1.5%	5.5'	5.5'	9.0'	6.5'	B
10	COPELAND DRIVE	73+17.1 RT	-1.30%	22.0'	2.5%	6.0'	4.0'	9.0'	6.5'	A



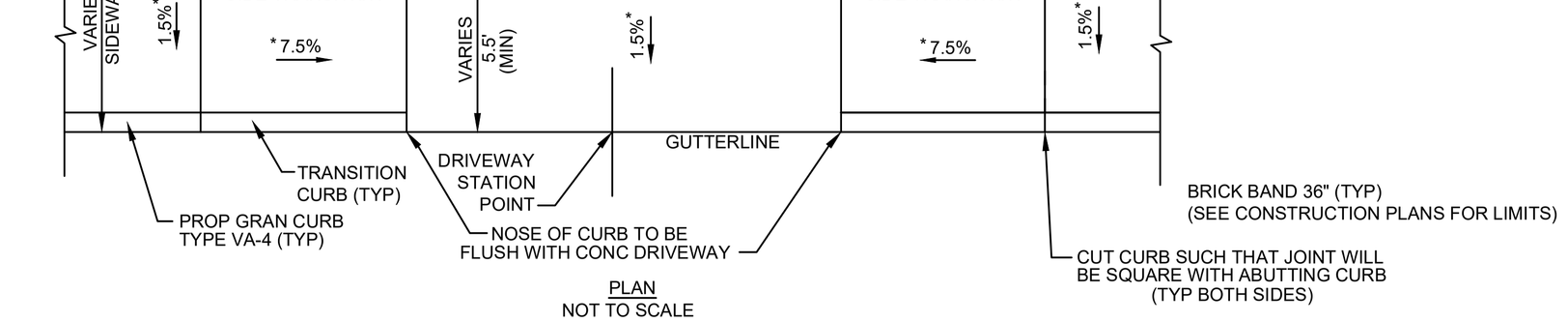
PLAN
NOT TO SCALE

DETAIL FOR TYPICAL DRIVEWAY WITH SIDEWALK - TYPE A



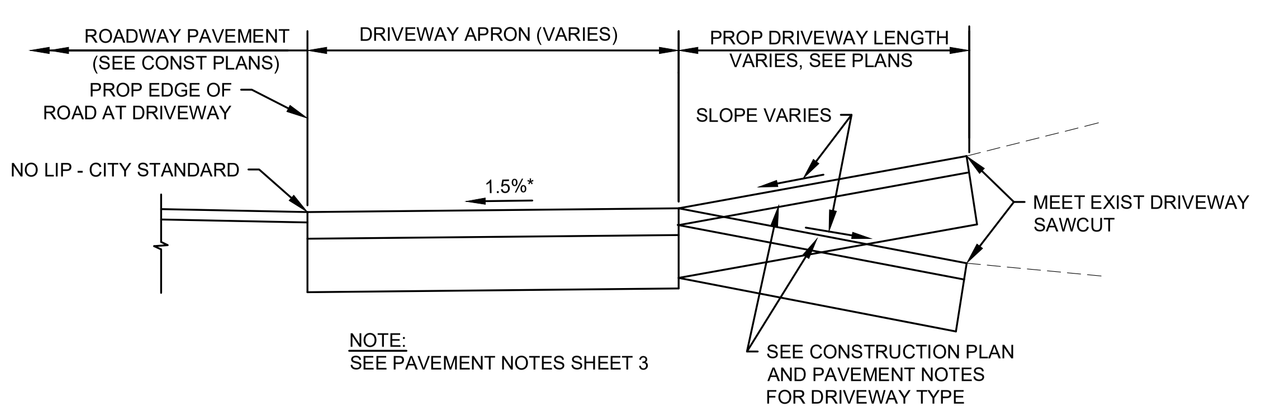
SECTION FOR TYPICAL DRIVEWAY WITH SIDEWALK - TYPE A

NOT TO SCALE



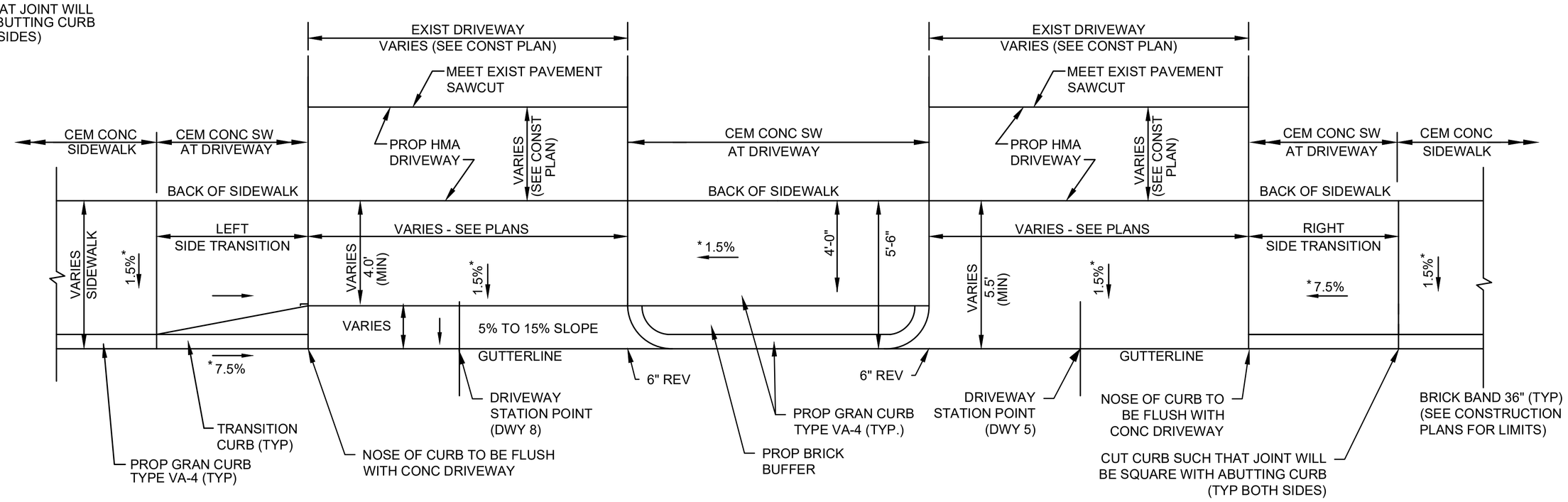
PLAN
NOT TO SCALE

DETAIL FOR DEPRESSED DRIVEWAY WITH SIDEWALK - TYPE B



SECTION FOR DEPRESSED DRIVEWAY WITH SIDEWALK - TYPE B

NOT TO SCALE

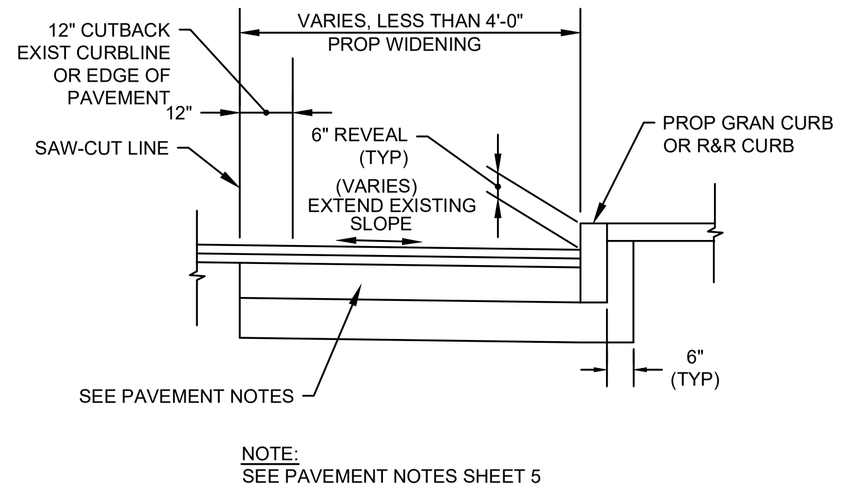


DETAIL FOR SPECIAL DRIVEWAYS DWY-5 AND DWY-8 - TYPE C

* TOLERANCE FOR CONSTRUCTION ±0.5%

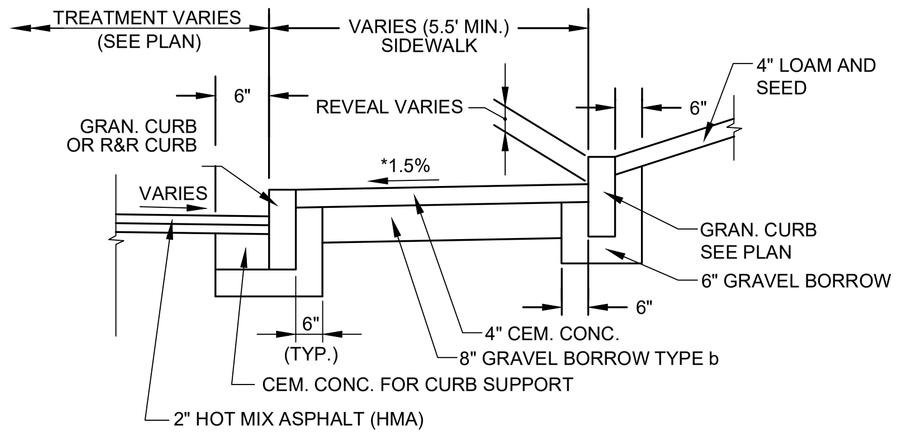
Proposal No. 613052-131228

608944_HD(6076 DETAILS).DWG Plotted on 7-Feb-2025 2:06 PM

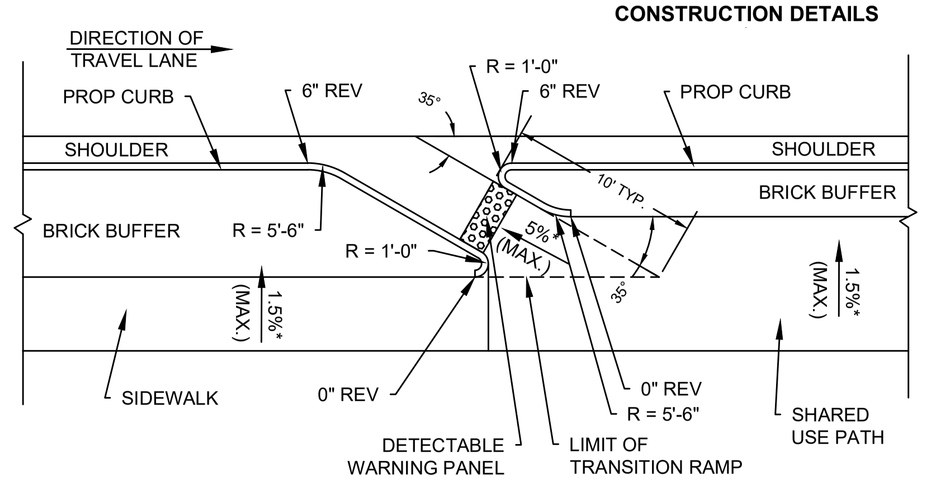


NOTE:
SEE PAVEMENT NOTES SHEET 5

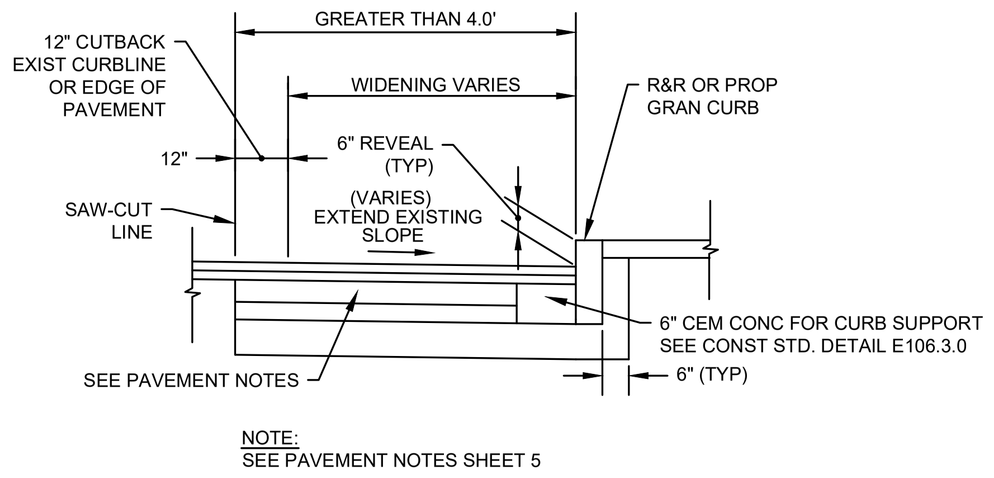
DETAIL FOR BOX WIDENING 4.0' OR LESS
NOT TO SCALE



DETAIL FOR GRANITE CURB AT BACK OF SIDEWALK
NOT TO SCALE

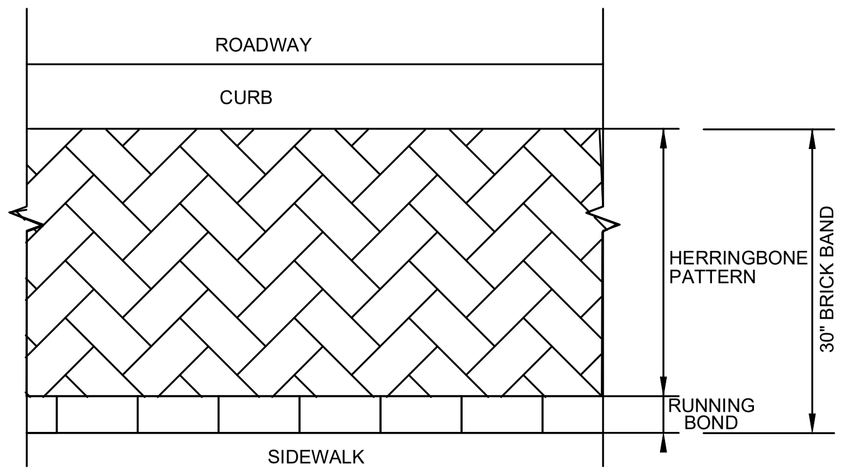


BIKE RAMP
NOT TO SCALE

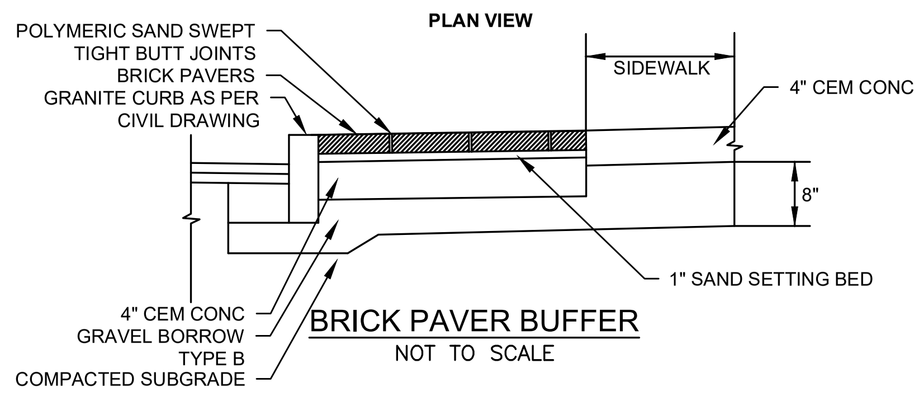


NOTE:
SEE PAVEMENT NOTES SHEET 5

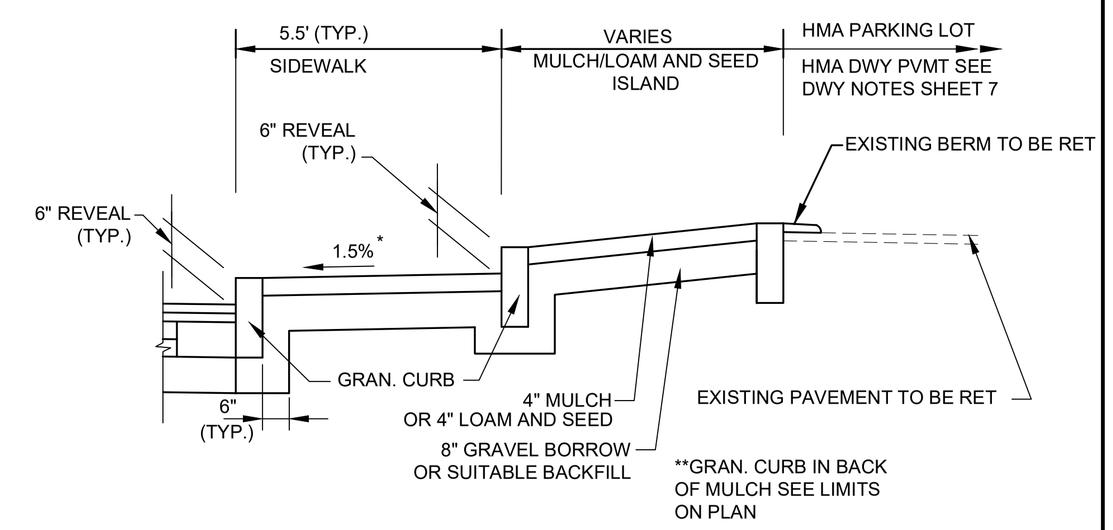
DETAIL FOR BOX WIDENING GREATER THAN 4.0'
NOT TO SCALE



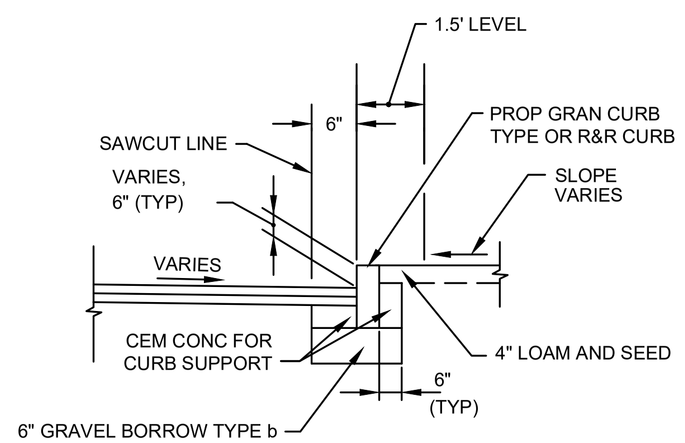
PLAN VIEW



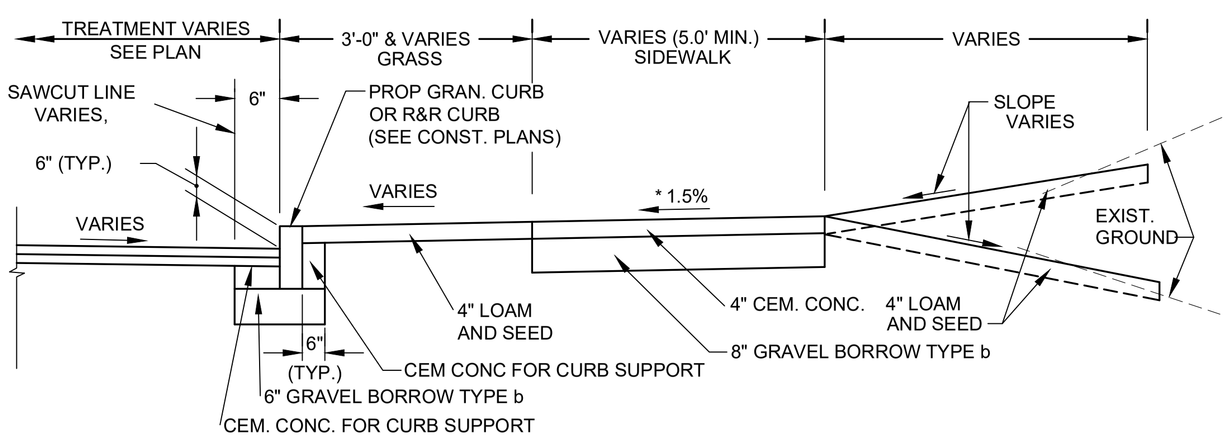
BRICK PAVER BUFFER
NOT TO SCALE



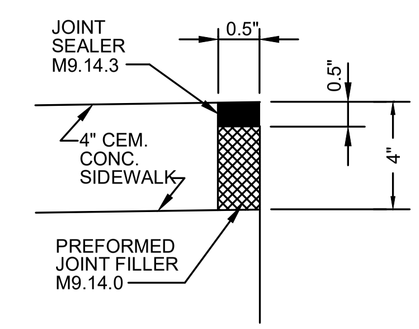
DETAIL FOR MULCH/LOAM AND SEED ISLAND AT BACK OF SIDEWALK
STA 31+24 TO 32+64 LT
NOT TO SCALE



DETAIL FOR GRANITE CURB WITHOUT SIDEWALK IN MILLING AREA
NOT TO SCALE



DETAIL FOR GRANITE CURB WITH SIDEWALK AND GRASS STRIP
NOT TO SCALE

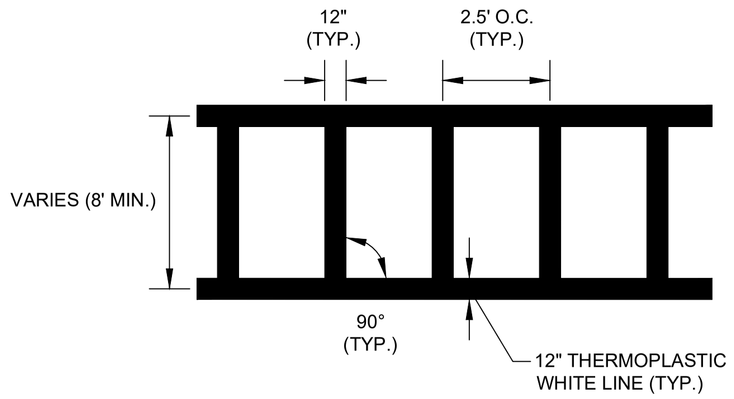


DETAIL FOR PREFORMED JOINT FILLER AND SEALER
NOT TO SCALE

NOTE
WHEN PROPOSED SIDEWALK ABUTS AN EXISTING WALL, USE PRE-FORMED JOINT FILLER AND SEALER AT BACK OF SIDEWALK AND WALL INTERFACE. (SEE JOINT DETAIL)

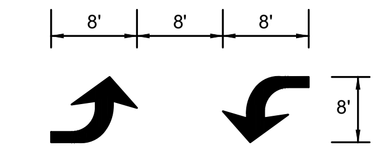
* TOLERANCE FOR CONSTRUCTION ±0.5%

Proposal No. 613052-131228
608944_HD(6076 DETAILS).DWG Plotted on 7-Feb-2025 2:06 PM
A00860 - 209



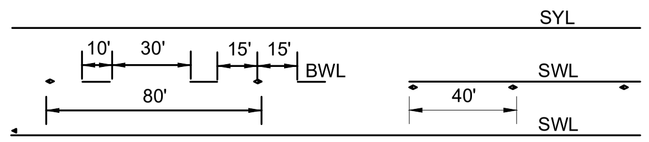
CROSSWALK STRIPING DETAIL

NOT TO SCALE



TWO-WAY LEFT-TURN LANE MARKING DETAIL

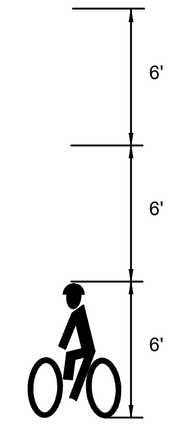
NOT TO SCALE



TWO-WAY WHITE/RED REFLECTORIZED SLOTTED PAVEMENT MARKER

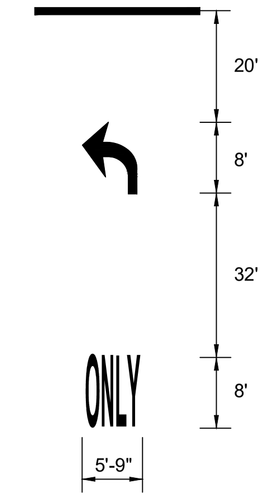
REFLECTORIZED SLOTTED PAVEMENT MARKER DETAIL

NOT TO SCALE



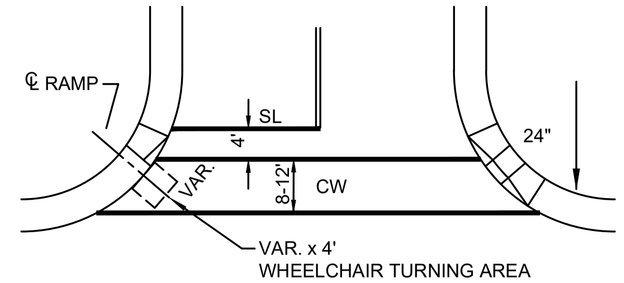
BICYCLE LANE MARKING DETAIL

NOT TO SCALE



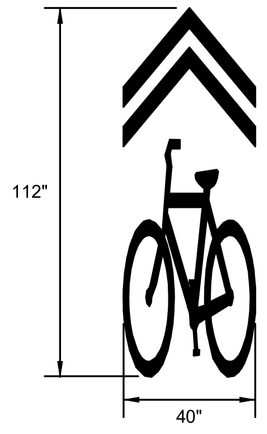
ARROW & "ONLY" MARKING DETAIL

NOT TO SCALE



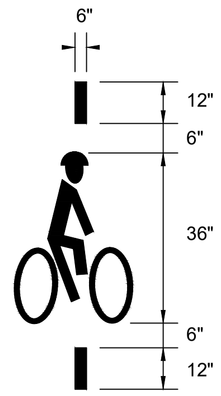
CROSSWALK LOCATION DETAIL

NOT TO SCALE



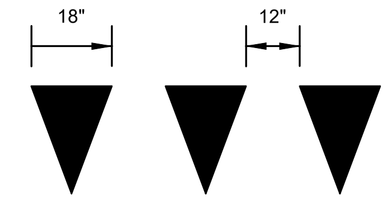
SHARED LANE MARKING DETAIL

NOT TO SCALE



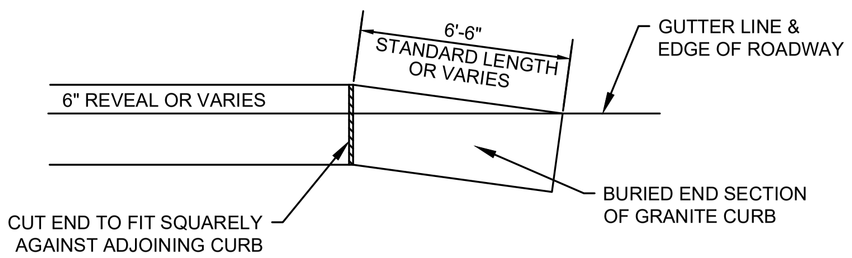
BICYCLE DETECTOR MARKING DETAIL

NOT TO SCALE



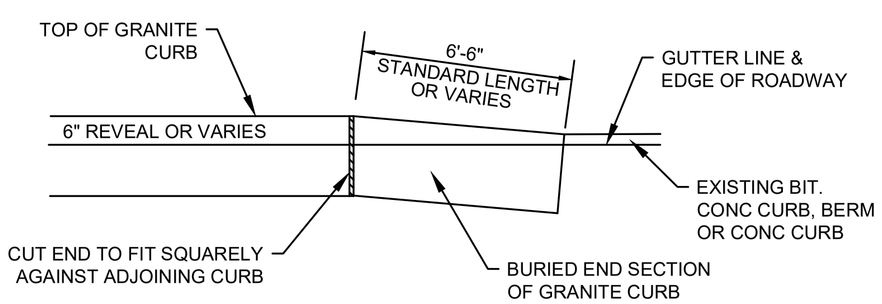
YIELD LINE MARKING DETAIL

NOT TO SCALE



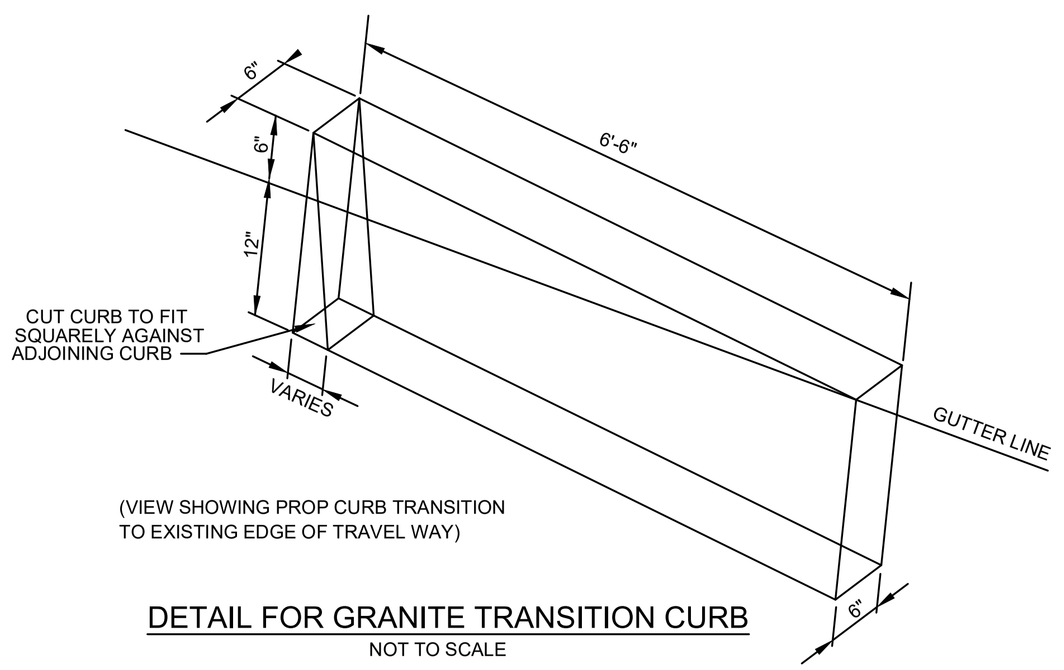
DETAIL FOR TRANSITION CURB
PROP CURB TO EXISTING EDGE OF TRAVEL WAY

NOT TO SCALE



DETAIL FOR TRANSITION CURB
TRANSITION CURB - PROP CURB TO EXISTING CURB

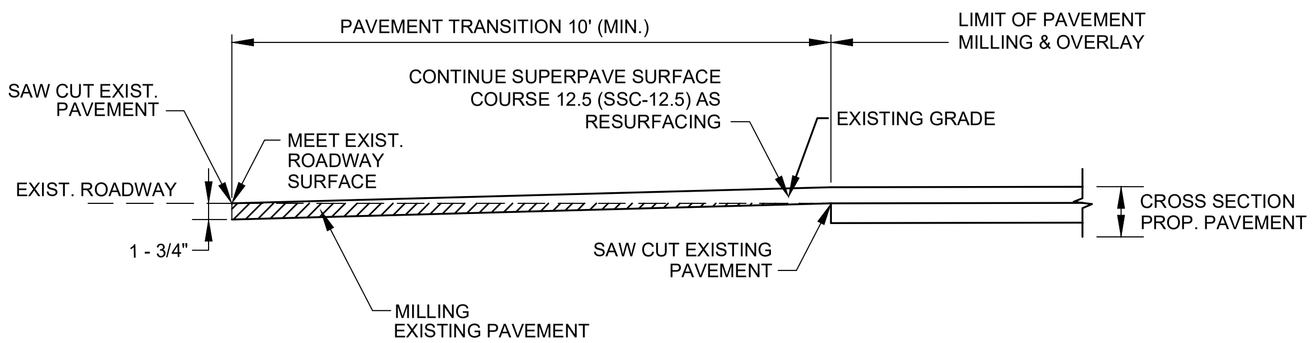
NOT TO SCALE



(VIEW SHOWING PROP CURB TRANSITION
TO EXISTING EDGE OF TRAVEL WAY)

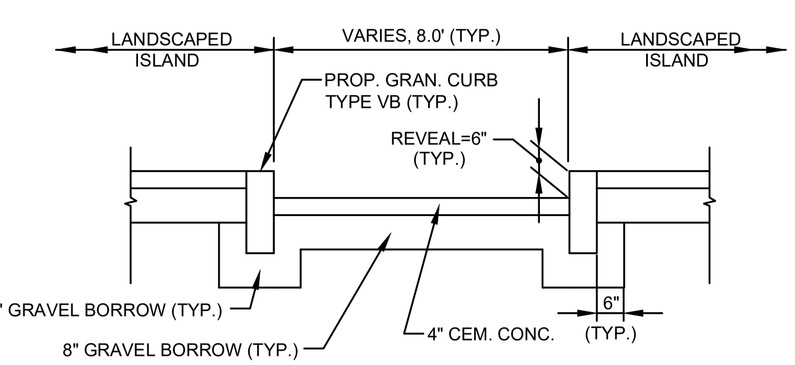
DETAIL FOR GRANITE TRANSITION CURB

NOT TO SCALE



DETAIL FOR PAVEMENT TRANSITION AT LIMIT OF WORK

NOT TO SCALE



DETAIL FOR HANDICAPPED ACCESS
CUT THROUGH ISLAND

NOT TO SCALE

* TOLERANCE FOR CONSTRUCTION ±0.5%

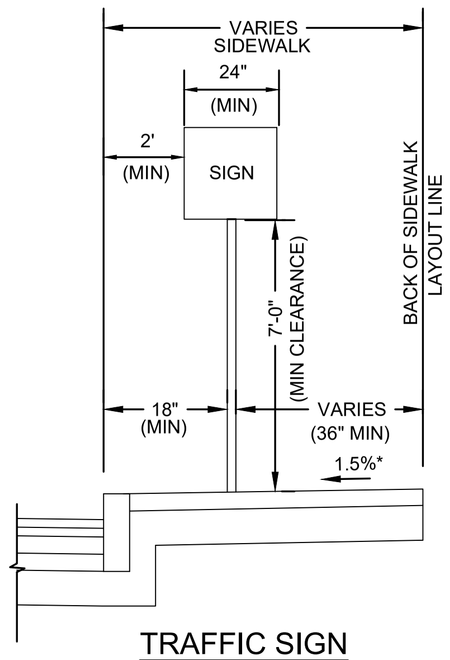
Proposal No. 613052-131228
608944_HD(6076 DETAILS).DWG Plotted on 7-Feb-2025 2:06 PM
A00860 - 210

608944_HD(6076 DETAILS).DWG Plotted on 7-Feb-2025 2:06 PM

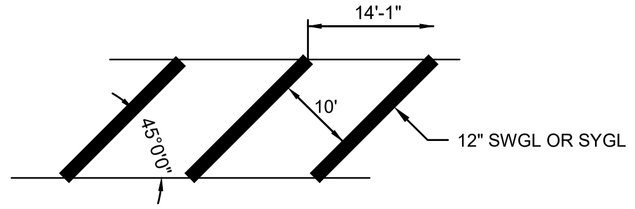
MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	15	28
	PROJECT FILE NO.	613052	

CONSTRUCTION DETAILS

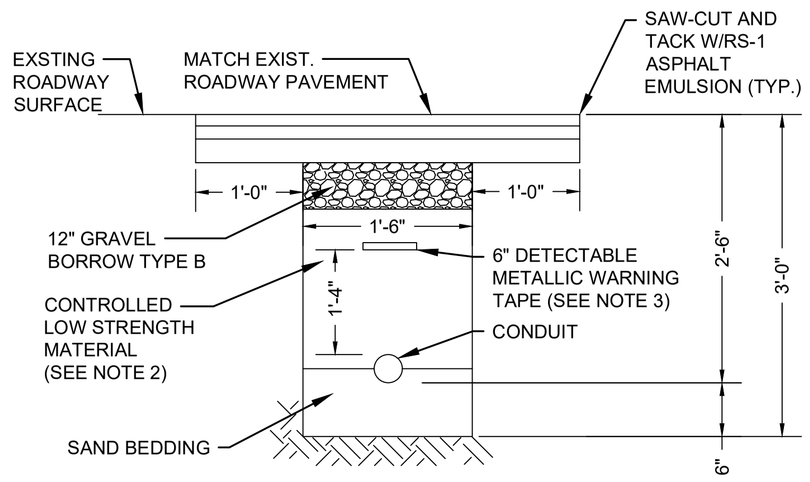


TRAFFIC SIGN
NOT TO SCALE

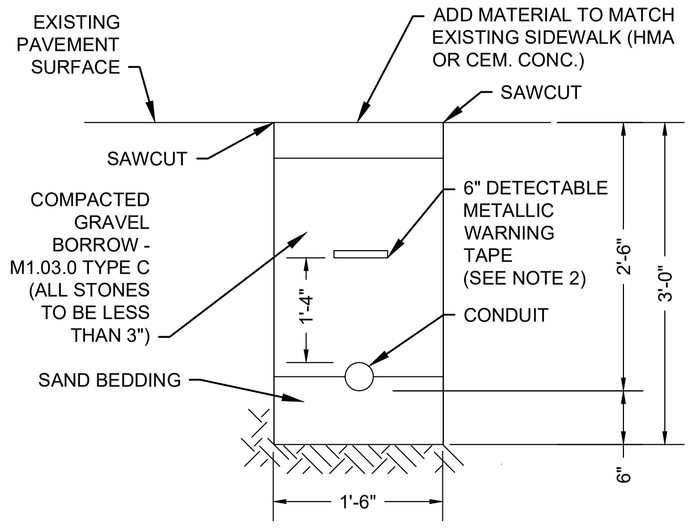


TYPICAL GORE LINE DETAIL
NOT TO SCALE

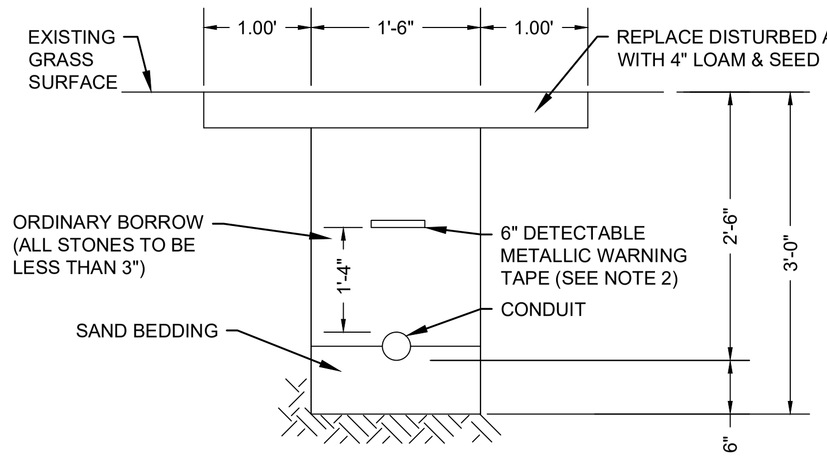
NOTES:
1. MINIMUM CLEAR PATH ON ALL SIDEWALKS SHALL BE 36 INCHES, EXCLUDING THE CURB.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL OBJECTS (SIGNS, POLES ETC.) TO BE SET WITHIN SIDEWALK PRIOR TO FINAL PLACEMENT TO PROVIDE A MINIMUM CLEAR PATH OF 36 INCHES NOT INCLUDING CURB. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY LOCATION WHICH CANNOT MEET THE CLEARANCE REQUIREMENTS.



CONDUIT CROSSING
IN ROADWAY
NOT TO SCALE



CONDUIT UNDER
SIDEWALK AREAS
NOT TO SCALE

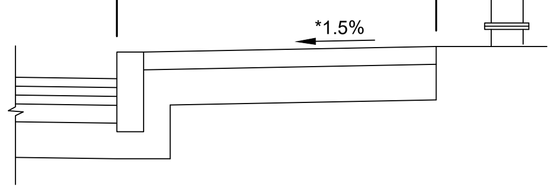


CONDUIT UNDER
GRASS AREAS
NOT TO SCALE

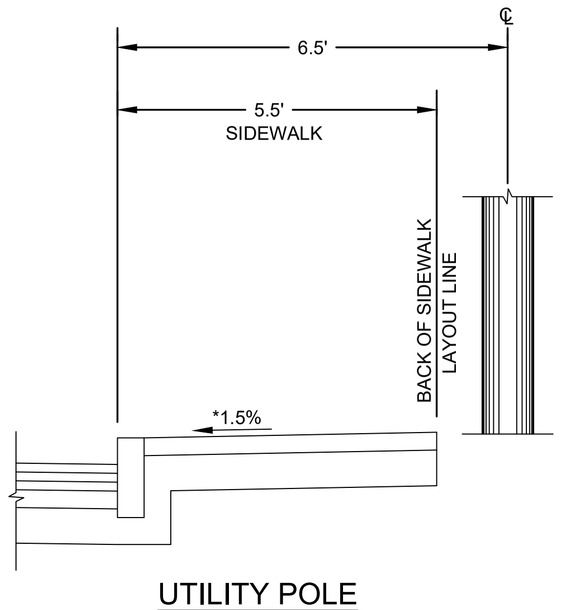
CONDUIT NOTES:

1. SCHEDULE 80 ELECTRICAL CONDUIT TYPE NM-PLASTIC (UL) WITH PULL ROPE UNLESS OTHERWISE APPROVED BY MASSDOT.
2. CONTROLLED LOW STRENGTH MATERIAL SHALL BE MECHANICAL EXCAVATABLE TYPE MEETING THE REQUIREMENTS OF SUBSECTION M4.08.0
3. WARNING TAPE SHALL BE PER CURRENT APWA STANDARDS.

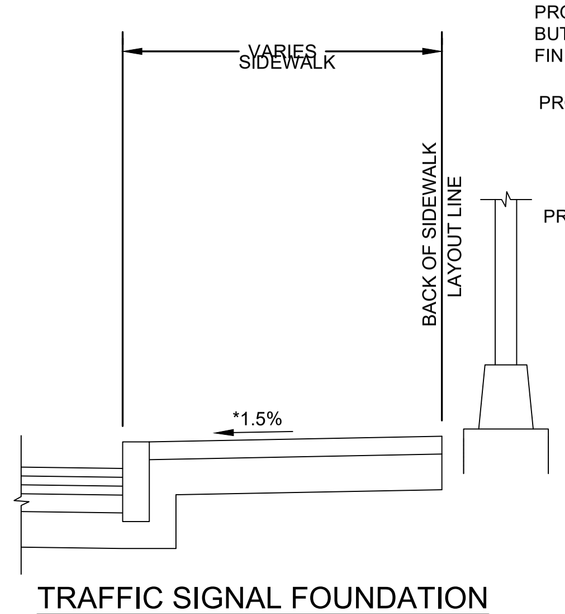
TRAFFIC SIGN
NOT TO SCALE



HYDRANT
NOT TO SCALE



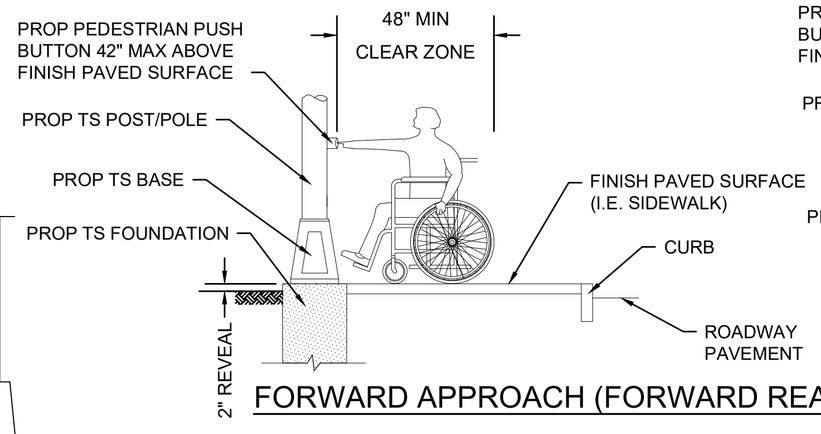
UTILITY POLE
NOT TO SCALE



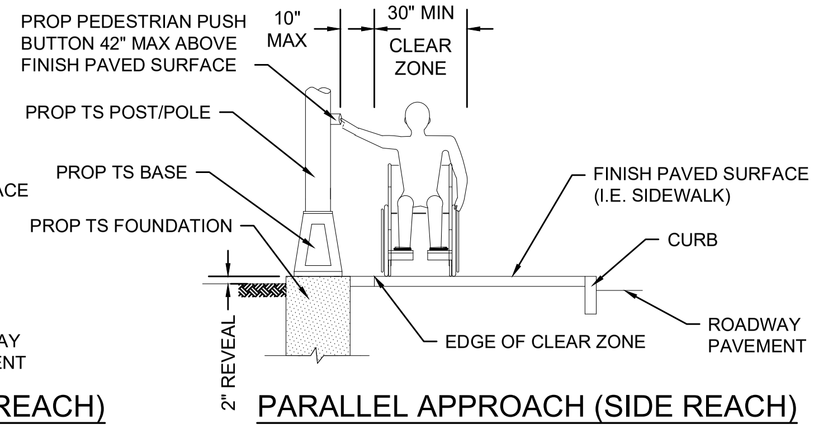
TRAFFIC SIGNAL FOUNDATION
NOT TO SCALE

* TOLERANCE FOR CONSTRUCTION ±0.5%

DETAILS SHOWING SIDEWALK CLEARANCES



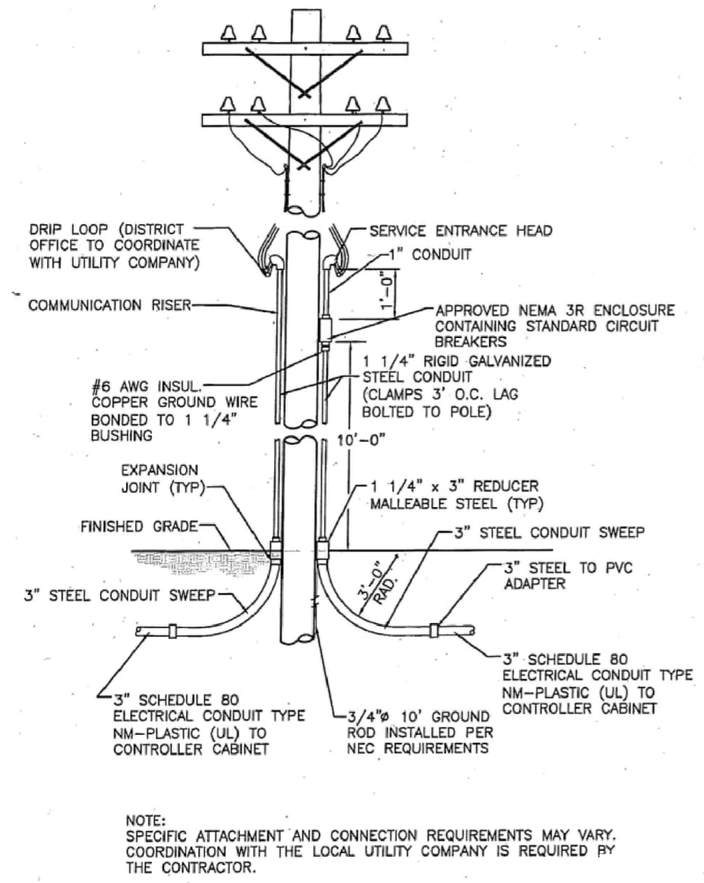
FORWARD APPROACH (FORWARD REACH)



PARALLEL APPROACH (SIDE REACH)

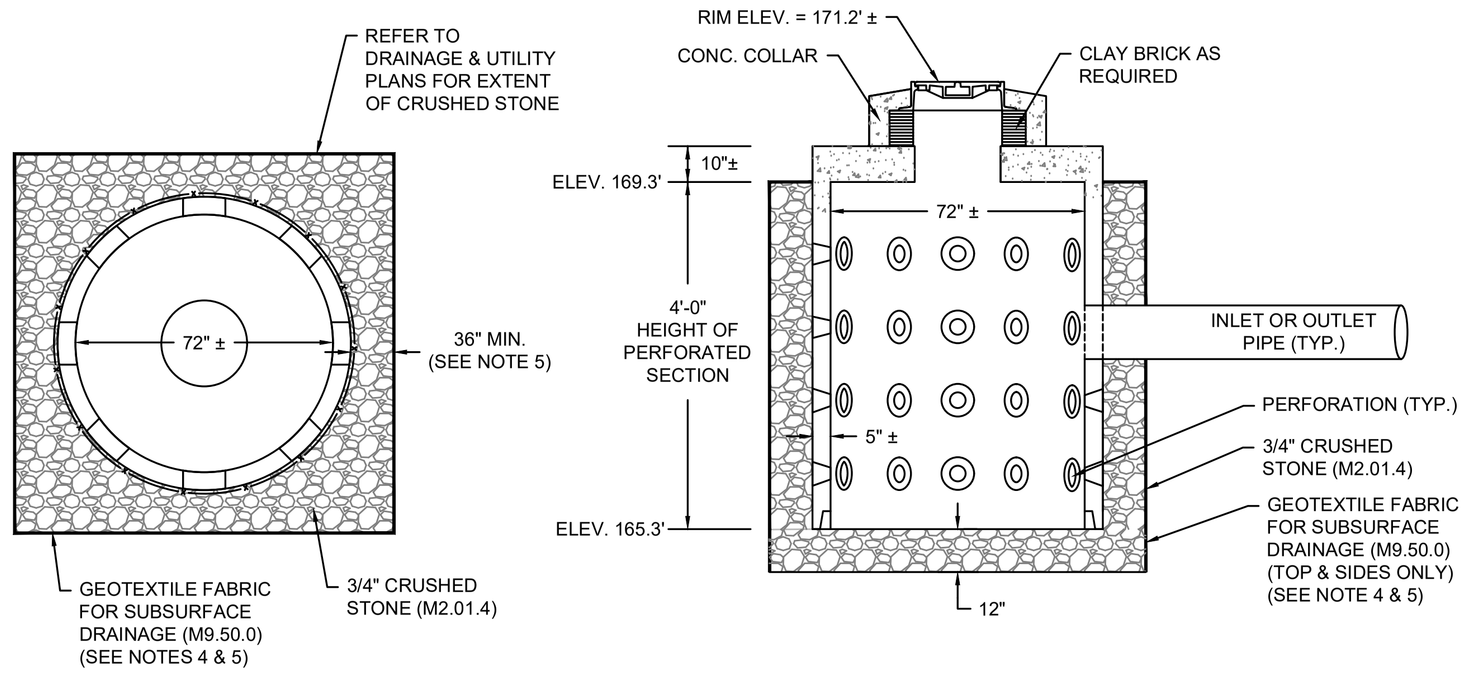
PEDESTRIAN PUSH BUTTON CLEAR ZONE
NOT TO SCALE

NOTE:
A CLEAR GROUND SPACE SHALL CONSIST OF A STABLE AND FIRM AREA, COMPLYING WITH 521 CMR 6.5 (FORWARD REACH) OR 521 CMR 6.6 (SIDE REACH) AND SHALL BE PROVIDED AT EACH OF THE PEDESTRIAN PUSH BUTTONS.
a) WHERE A FORWARD APPROACH IS PROVIDED, PEDESTRIAN PUSH BUTTONS SHALL ABUT AND BE CENTERED ON THE CLEAR GROUND SPACE.
b) WHERE A PARALLEL APPROACH IS PROVIDED, PEDESTRIAN PUSH BUTTONS SHALL BE WITHIN TEN INCHES (10") HORIZONTALLY OF AND CENTERED ON THE CLEAR GROUND SPACE.



NOTE:
SPECIFIC ATTACHMENT AND CONNECTION REQUIREMENTS MAY VARY. COORDINATION WITH THE LOCAL UTILITY COMPANY IS REQUIRED BY THE CONTRACTOR.

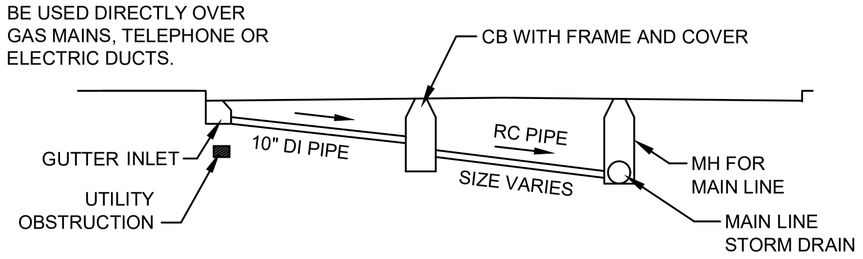
TRAFFIC SIGNAL SERVICE
CONNECTION - OVERHEAD
NOT TO SCALE



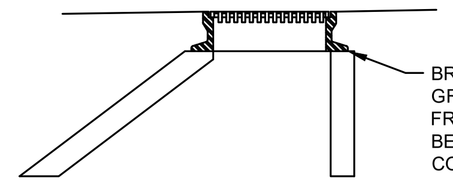
NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS
2. AASHTO H-20 LOADING
3. STEEL REINFORCEMENT PER ASTM A615 GRADE-60
4. FOR LEACHING BASINS INSTALLED IN SERIES, GEOTEXTILE SHALL ENVELOPE THE OUTER PERIMETER OF CRUSHED STONE ONLY. GEOTEXTILE SHALL NOT BE INSTALLED BETWEEN LEACHING BASINS.
5. PROVIDE A MINIMUM 12" OVERLAP BETWEEN GEOTEXTILE SHEETS.
6. A CONTINUOUS BED OF CRUSHED STONE SHALL BE PROVIDED BETWEEN LEACHING BASINS INSTALLED IN SERIES

LEACHING BASIN (LB)
NOT TO SCALE

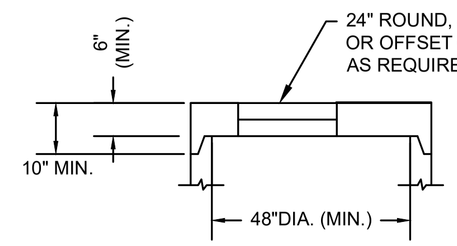
NOTE:
GUTTER INLET SHOULD NOT BE USED DIRECTLY OVER GAS MAINS, TELEPHONE OR ELECTRIC DUCTS.



CONTINGENCY DETAIL FOR STORM DRAIN LATERAL LINES
(USE ONLY IF OBSTRUCTION IS ENCOUNTERED)
NOT TO SCALE

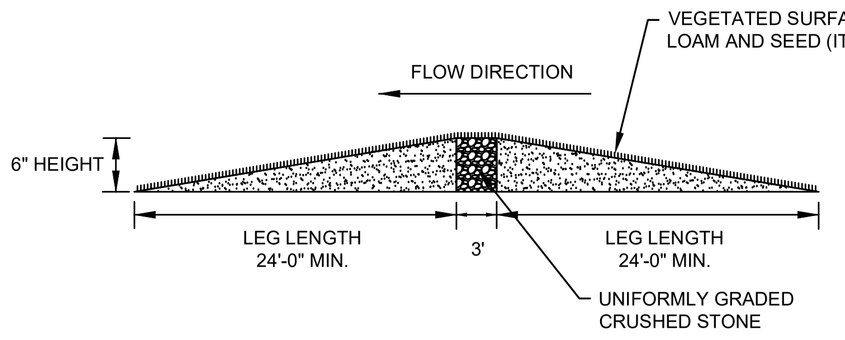


ALTERNATE ECCENTRIC CONE SECTION
NOT TO SCALE

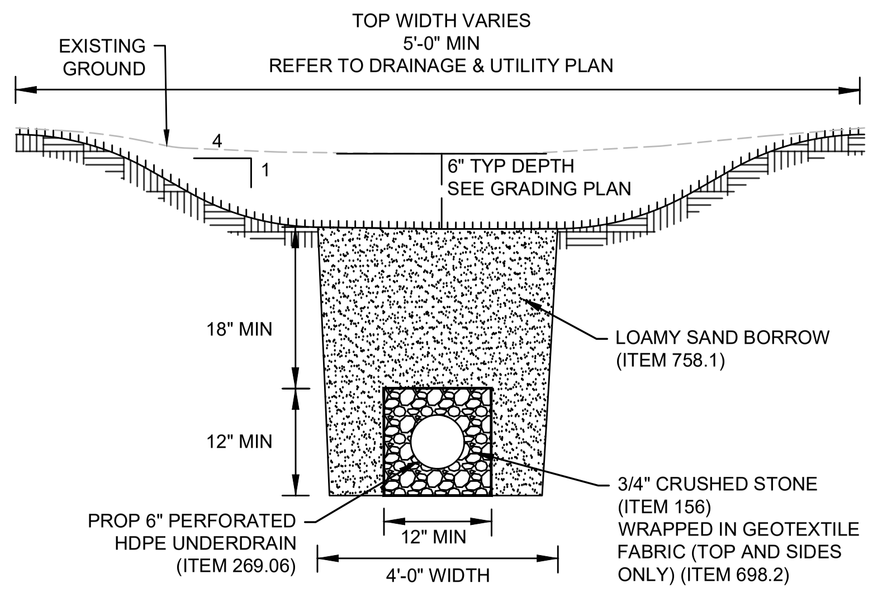


NOTES:
1. BASED ON ACTUAL FIELD CONDITIONS; THE CONTRACTOR SHALL DETERMINE WHICH STYLE OF TOP SECTION SHOULD BE USED.

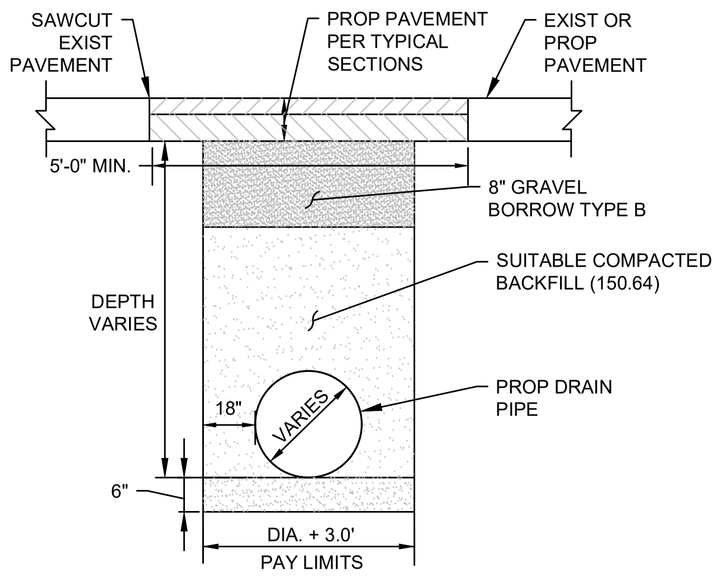
ALTERNATE FLAT TOP SLAB
NOT TO SCALE



VEGETATED CHECK DAM FOR WATER QUALITY SWALE
SCALE: NTS

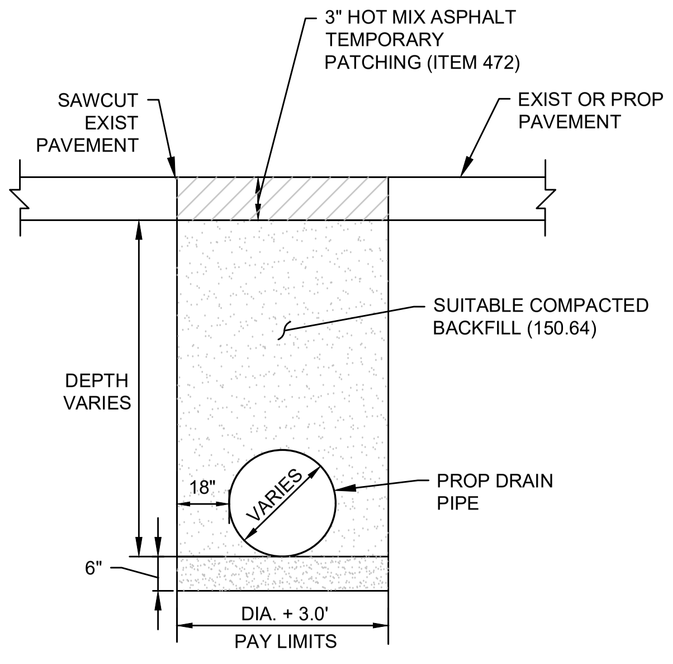


WATER QUALITY SWALE
SCALE: NTS



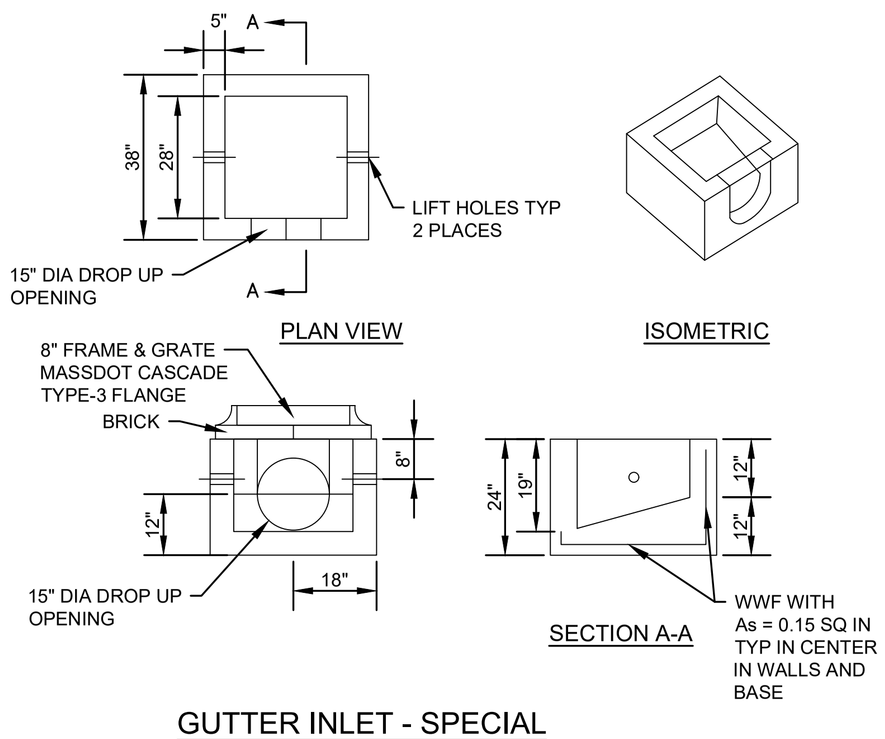
NOTES:
1. ANY EXCAVATED MATERIALS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILL SHALL BE REPLACED WITH GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES AND PAID FOR UNDER ITEM 151.2.

PERMANENT DRAINAGE TRENCH IN MILL AND OVERLAY AREAS
NOT TO SCALE



NOTES:
1. ANY EXCAVATED MATERIALS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILL SHALL BE REPLACED WITH GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES AND PAID FOR UNDER ITEM 151.2.

TEMPORARY DRAINAGE TRENCH IN FULL DEPTH AREAS
NOT TO SCALE



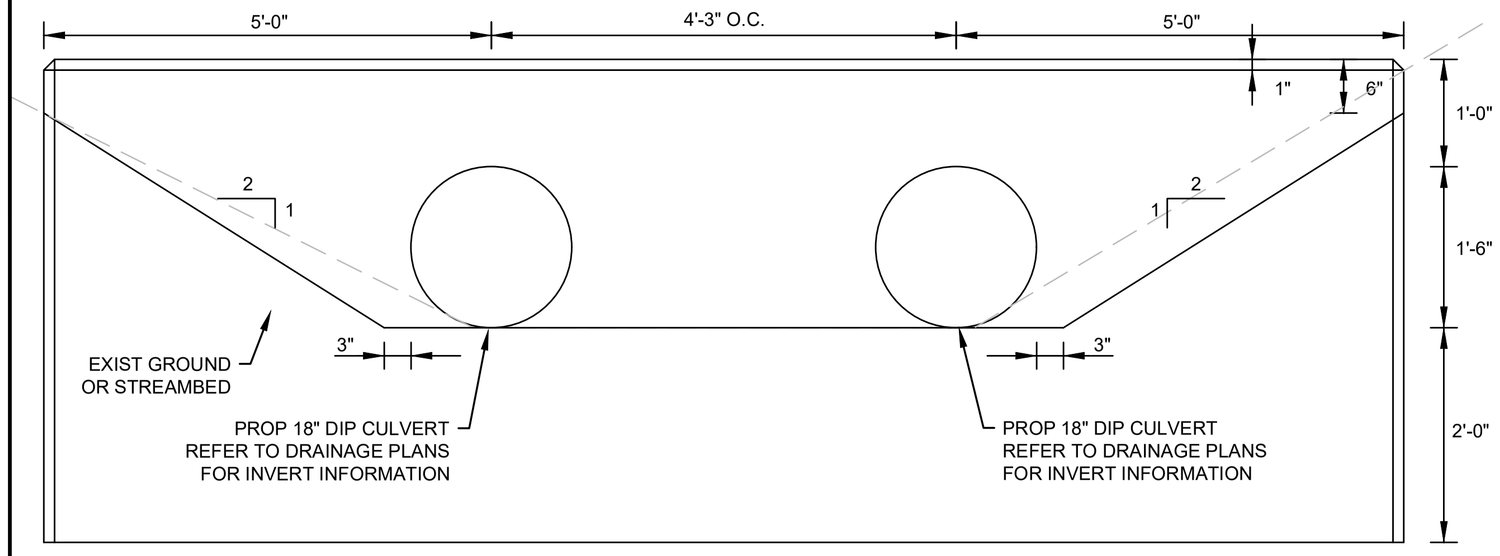
GUTTER INLET - SPECIAL
NOT TO SCALE
(ITEM 204.11)

ELEVATION NOTES
NOTES:

1. DESIGNED FOR AASHTO HS25-44 LOADING
2. CONCRETE STRENGTH fc=4000 PSI
3. REINFORCING STEEL: ASTM A185 (wwf) fy=60,000 PSI
4. CURB INLETS ARE REQUIRED WHEN GUTTER INLETS ARE INSTALLED AGAINST CURBING.

Proposal No. 613052-131228
608944_HD(6076 DETAILS).DWG Plotted on 7-Feb-2025 2:06 PM
A00860 - 212

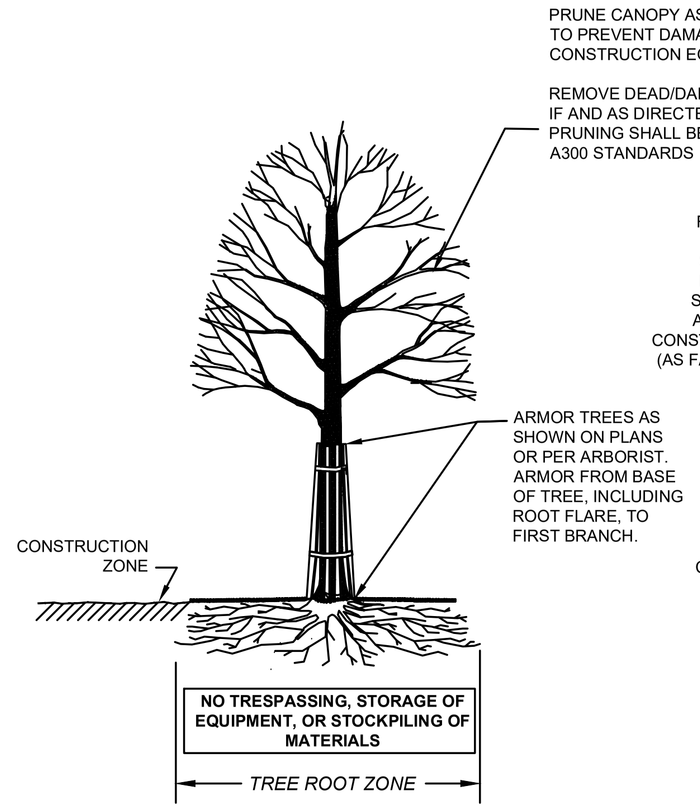
Proposal No. 613052-131228
608944_HD(6076 DETAILS).DWG Plotted on 7-Feb-2025 2:15 PM
A00860 - 213



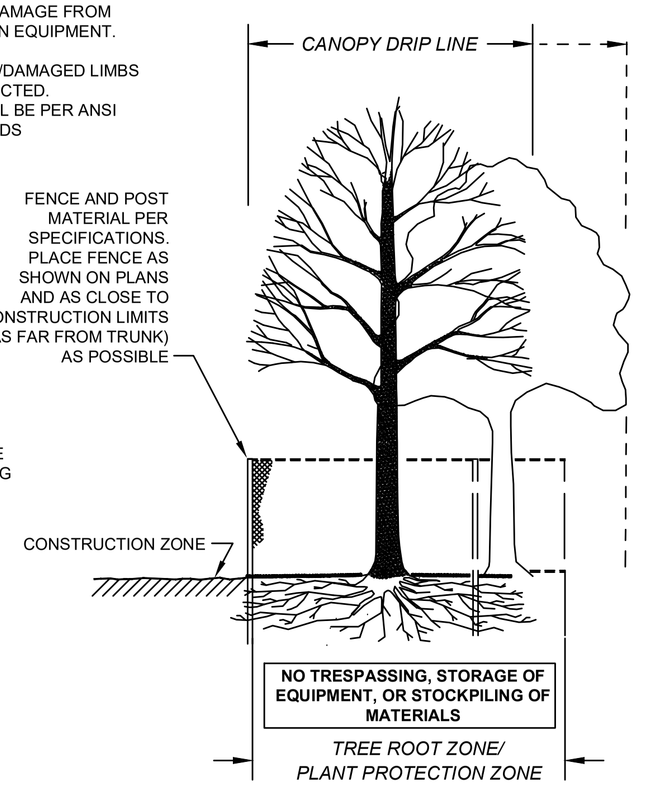
FRONT VIEW

NOTES:
1. CONCRETE MASONRY PIPE END SHALL BE CONSTRUCTED IN ACCORDANCE WITH MASSDOT STD DETAIL E 206.5.0, DESIGN NO. 12, EXCEPT FOR MODIFIED DIMENSIONS AS NOTED.
2. PROVIDE DAMP PROOFING (ITEM 970) ON ALL WALL SURFACES TO BE CONSTRUCTED BELOW GRADE

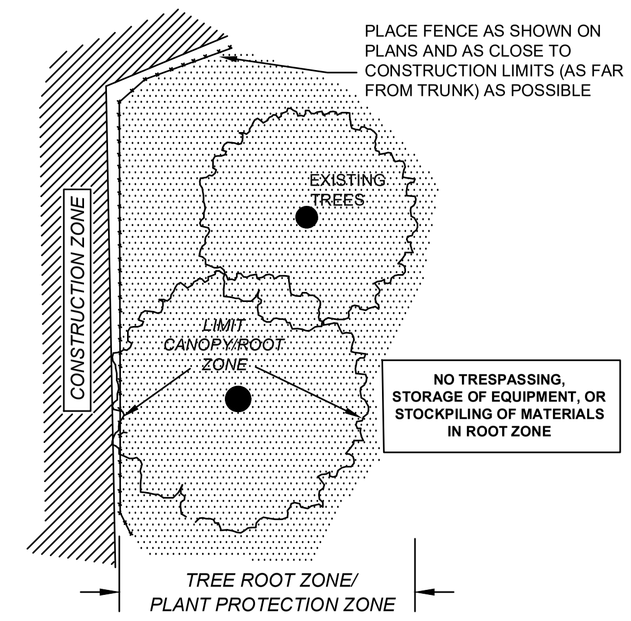
CONCRETE MASONRY PIPE END
NOT TO SCALE



SECTION - TRUNK ARMORING & PRUNING

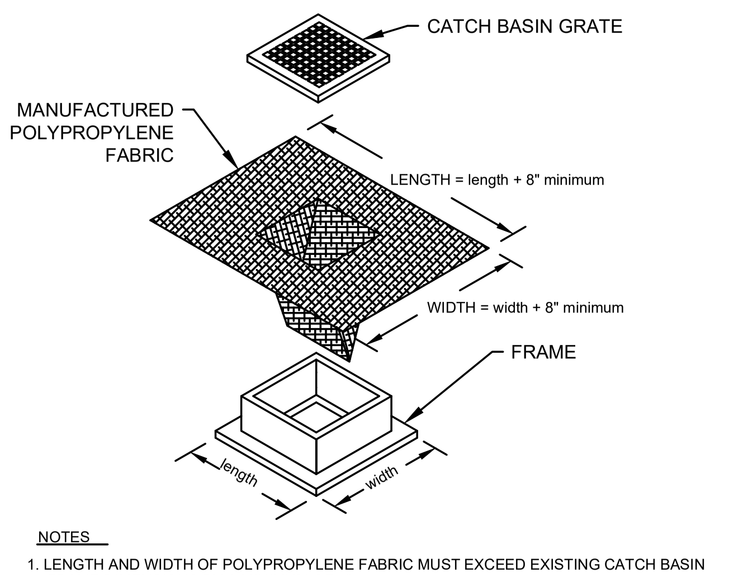


SECTION - FENCE PROTECTION OF ROOT ZONE



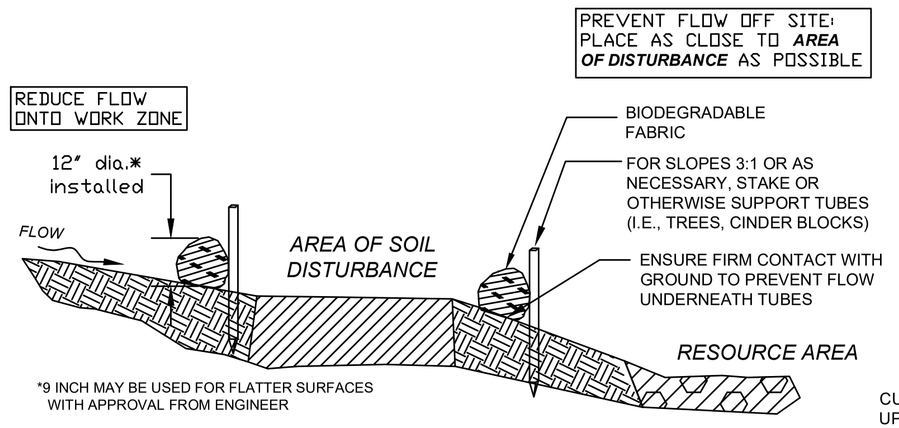
PLAN VIEW - FENCE PROTECTION OF ROOT ZONE

TREE PROTECTION DETAILS
NOT TO SCALE



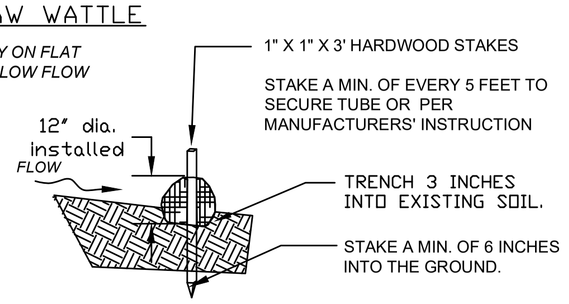
NOTES
1. LENGTH AND WIDTH OF POLYPROPYLENE FABRIC MUST EXCEED EXISTING CATCH BASIN FRAME DIMENSIONS BY A MINIMUM OF 8".
2. REMOVE CATCH BASIN GRATE AND INSTALL POLYPROPYLENE FABRIC OVER CATCH BASIN FRAME. REPLACE CATCH BASIN GRATE TO SECURE POLYPROPYLENE FABRIC IN PLACE.

CATCH BASIN EROSION CONTROL PROTECTION (TYP)
NOT TO SCALE

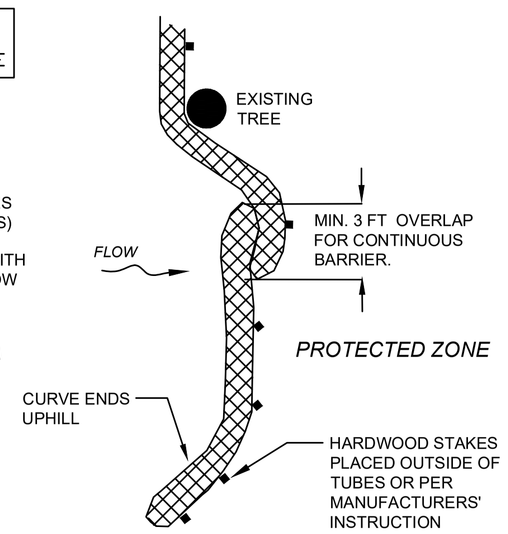


12 INCH STRAW WATTLE

TO BE USED ONLY ON FLAT SURFACES WITH LOW FLOW



SECTION



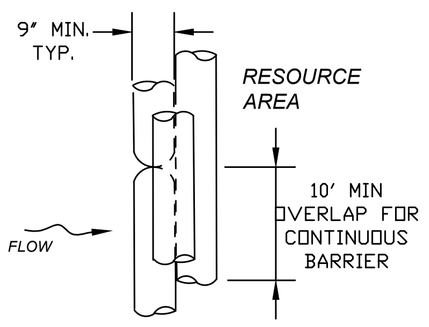
PLACE TUBE ALONG CONTOURS AND PERPENDICULAR TO FLOW.

ADJUST LOCATION AS REQUIRED FOR OPTIMUM EFFECTIVENESS. DO NOT INSTALL IN WATERWAYS.

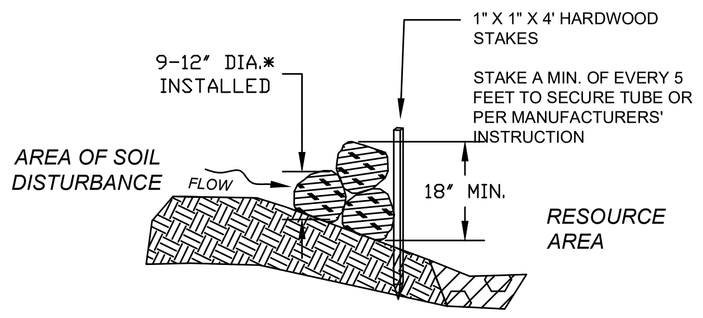
PLACE STAKES AS NEEDED TO SECURE TUBES IN PLACE.

PLAN VIEW

SEDIMENT BARRIERS - COMPOST FILTER TUBES & STRAW WATTLES
NOT TO SCALE

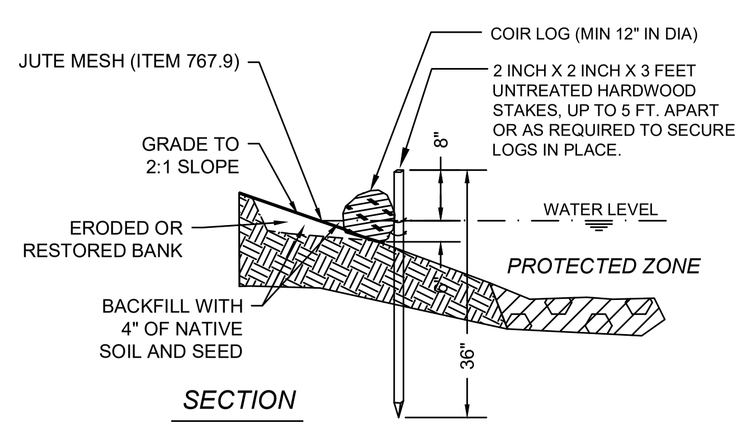


PLAN VIEW



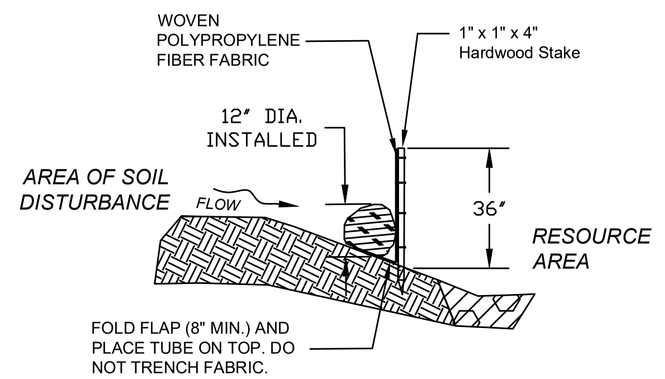
SECTION

COMPOST FILTER TUBE BERM (SLOPES 2:1 OR STEEPER)
NOT TO SCALE



SECTION

COIR LOG DETAIL
NOT TO SCALE



SECTION

COMPOST FILTER TUBE & SILT FENCE
NOT TO SCALE

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	18	28
PROJECT FILE NO.	613052		

CONSTRUCTION PLAN

CONTINUED ON SHEET NO. 22

BEGINING OF PROJECT
STA. 20+93.80
N 2836632.2105
E 728199.3596
MEET EXISTING

BEGIN GRAN EDGING +94

LIMIT OF PVMT MILLING & OVERLAY MEET EXIST

END GRAN EDGING +12

PROP GRAN EDGING, TYPE SB

PROP LOAM & SEED (TYP)

PROP GRAN EDGING, TYPE SB

SAWCUT (TYP)

PVMT MILLING AND OVERLAY

PROP GRAN EDGING, TYPE SB

SAWCUT (TYP)

RET EDGING

PVMT MILLING AND OVERLAY

PROP VEGETAGED CHECK DAM

RET EDGING

PROP GRAN EDGING, TYPE SB

PROP LANDSCAPE ISLAND

PROP GRAN EDGING, TYPE SB

MAST ARM (TYP)

SAWCUT (TYP.)

PROP 6' CEM CONC ISLAND

PROP GRAN EDGING, TYPE SB

PROP FULL DEPTH CONSTRUCTION

PROP LANDSCAPE ISLAND

PROP LOAM & SEED

PROP PROP GRAN EDGING TYPE SB

PROP 8' CUT-THROUGH (PCR #CT5)

PROP PCR #5

PROP GRAN EDGING, TYPE SB

RET FENCE FROM STA 25+10 TO 25+30

PROP LOAM & SEED (TYP)

RET GUARDRAIL

TEMP CONST EASEMENT LINE (TYP)

R&R FENCE FROM STA 25+30 TO 26+45

PROP 5.5' CC SW

RET WALL

REM GUY WIRES

PROP GRAN CURB TYPE VB

RET BOUND

PT +11.70

283+73.67

RET BOUND

PVMT MILLING AND OVERLAY

SAWCUT (TYP.)

PROP 6' CEM CONC ISLAND

PROP FULL DEPTH CONSTRUCTION

PI +50.00

PROP GRAN EDGING, TYPE SB

PROP 8' CUT-THROUGH (PCR #CT2)

SAWCUT (TYP)

PROP 5' BRICK BUFFER

PVMT MILLING AND OVERLAY

PROP GRAN EDGING, TYPE SB

PROP 8' CEM CONC SW

PROP GRAN CURB, TYPE VB

PROP BRICK STRIP

PROP PCR #2

SAWCUT (TYP.)

PROP PCR #3

SAWCUT (TYP.)

PROP 4' BRICK BUFFER

PROP 8' CC CUT-THRU (PCR #CT1)

PROP PCR #1

PROP GRAN CURB TYPE VB

END GRAN EDGING +00

PROP LOAM & SEED

PROP LANDSCAPE ISLAND

PROP 8' CC SHARED USE PATH

PROP SEDIMENT CONTROL BARRIER

PROP LOAM & SEED (TYP)

PROP PCR #4

BEGIN SW +78

BEGIN CURB +71

RET LIGHT & EHH

END SW +85

END GRAN CURB +00

LIMIT OF PVMT MILLING & OVERLAY MEET EXIST

PROP GRAN EDGING,TYPE SB

PROP BOUND (TYP.) RET EXIST CURB

BEGIN SW MEET EXIST +09

BEGIN PROP CURB R&D EXIST CURB

SAWCUT (TYP.)

PROP BRICK BUFFER

PROP BOX WIDENING >4'

R&R ELEC HANDHOLE

REM TRAFFIC SIGNAL CABINET

END PROP SHLO ALT NO. 9004 (SECTION 1)

SAWCUT (TYP)

PROP 4' BRICK BUFFER

R&R BOUND

BEGIN PROP SHLO ALT NO. 9004 (SECTION 1)

PROP BIKE RAMP REFER TO DETAIL

R&R CLF

PROP TREE TRIMMING

PROP 8' CC SHARED USE PATH

RELOCATE LIGHTING CABINET (BO)

PROP GRAN CURB TYPE VB

PROP LOAM & SEED (TYP)

24+06.44 ROUTE 106 (CHAUNCY STREET)= 158+85.71 ROUTE 140 (COMMERCIAL ST)

RET BOUND

RET MB

RET WALL

1980 SHLO NO. 6345

CHAUNCY STREET (ROUTE 106)

COMMERCIAL STREET (ROUTE 140)

1980 SHLO NO. 6345

N/F
BBK MANSFIELD LLC
377 CHAUNCY ST
ASSESS. MAP 17 – PARCEL ID: 17–23
DEED BK 26384 / PAGE 38

JAMES LESTER EPSTEIN
360 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–149
DEED BK 19124 / PAGE 31

ESTATE OF LESTER S. EPSTEIN – 1/2 INTEREST
ESTATE OF JAMES M. EPSTEIN – 1/2 INTEREST
CHAUNCY ST REAR
ASSESS. MAP 20 – PARCEL ID: 20–151
DEED BK 12215 / PAGE 15

ROSEWOOD REALTY TRUST
287 CHAUNCY ST
ASSESS. MAP 17 – PARCEL ID: 17–4
DEED BK 13234 / PAGE 164

JAMES LESTER EPSTEIN
360 CHAUNCY ST
ASSESS. MAP 20 –

SEE INSET BELOW

CONTINUED ABOVE

CONTINUED ON SHEET NO. 19

CONTINUED ON SHEET NO. 22

0 20 50 100

SCALE: 1" = 20'

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	19	28
PROJECT FILE NO.	613052		

CONSTRUCTION PLAN

N

IMPACTS LEGEND
- BANK (TEMPORARY)
- BANK (PERMANENT)
- LAND UNDER WATER (TEMPORARY)
- LAND UNDER WATER (PERMANENT)

ROSEWOOD REALTY TRUST
287 CHAUNCY ST
ASSESS. MAP 17 – PARCEL ID: 17–4
DEED BK 13234 / PAGE 164

N/F
UNITED STATES
POSTAL SERVICE
12 GILES PL
ASSESS. MAP 17
PARCEL ID: 17–7
DEED BK 3528 /
PAGE 126

GEM REALTY TRUST
273 CHAUNCY ST
ASSESS. MAP 17 – PARCEL ID: 17–6
DEED BK 21367 / PAGE 196

MANISHA REALTY, LLC
292 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–183
DEED BK 79 / PAGE 80
LC. CERT. #14689
LC. CASE #26023

MANISHA REALTY, LLC
282 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–183
DEED BK 79 / PAGE 79
LC. CERT. #14688
LC. CASE #26023

BROOKSIDE OFFICE CONDO PAR
272 CHAUNCY ST
ASSESS. MAP 20
PARCEL ID: 20–186
LC. DEED BK C6 / PAGE 1
LD. CERT. #C6
LC. CASE #28116

REGRADE TEMPORARY IMPACTED BANK TO MATCH EXISTING. RESTORE WITH WETLAND SEED - RIPARIAN MIX (ITEM 765.553) STABILIZE SLOPE WITH COIR LOG (ITEM 767.112) AND JUTE MESH (ITEM 767.9)

REFER TO SHEET 28 FOR QUANTIFICATION OF IMPACTS

BEGIN PROP SHLO ALT NO. 9004 (SECTION 3)

PROP CONTROL OF WATER

PROP GUARDRAIL TYPE TL-2

PROP SEDIMENT CONTROL BARRIER (TYP)

PROP SHLO ALT LINE (TYP)

PROP GRAN CURB TYPE VB REM BERM

PROP BOUND (TYP.)

TEMP CONST EASEMENT LINE (TYP)

R&R GRAN CURB

PROP TREE TRIMMING

END S.H.L.O. NO. 6345 1980
BEGIN S.H.L.O. NO. 6467 1981

PROP 5.5' CC SW

REM TREE

RET BIT CONC WALK

REM BOUNDS

PERM EASEMENT LINE (TYP)

EXISTING BUILDING MONARCH REALTY GROUP 273 CHAUNCY STREET #273

RET LANDSCAPING & TREE

PROP MAST ARM FOR SIGN

RET PLANTER

REM LANDSCAPING

R&R SIGN (BO)

REM HEDGES

RET FENCE FROM STA 25+10 TO 25+30

RET GUARDRAIL

R&R FENCE FROM STA 25+30 TO 26+45

RET WALL

REM GUY WIRES

TEMP CONST EASEMENT LINE (TYP)

PROP 5.5' CC SW

PROP GRAN CURB TYPE VB

RET BOUND

BIT PAVED PARKING

BIT BERM

WOOD GUARD RAIL

MHB (FND)

BOS

1980 SHLO NO. 6345

PCC +61.90

PROP PCR #5

233

RT +11.70

RET BOUND

283+73.67

PVMT MILLING AND OVERLAY

SAWCUT (TYP.)

PROP FULL DEPTH CONSTRUCTION

PROP 6' CEM CONC ISLAND

PROP BOX WIDENING > 4'

PROP PCR #7
PI +50.00

PROP COIR LOGS AT BANK OF STREAM

REM HEADWALL

PROP PCR #9

PROP PCR #10

R&R GRAN CURB

PROP BOX WIDENING > 4'

R&R GRAN CURB

CONTINUED ON SHEET NO. 18

CONTINUED ON SHEET NO. 20

PI +50.00

CONST ℄ RECORD ℄

PVMT MILLING AND OVERLAY

SAWCUT (TYP)

RET FENCE STA 26+55 TO STA 27+00

PROP 4' BRICK BUFFER

PROP 5' BRICK BUFFER

PROP 8' CEM CONC SW

PROP GRAN CURB, TYPE VB

SAWCUT (TYP.)

PROP PCR #3

RET BOUND

RET LP

END PROP SHLO ALT NO. 9004 (SECTION 2)

RET TRANSFORMER AND CONC PAD

PROP MULCH

RET CONC VAULT

20' WIDE SEWER EASEMENT L.C. DOC #29241 L.C. CER

RET SIGN

PROP CC WALK

PROP 8' CC SHARED USE PATH

RET BUSH

PROP PCR #8

RET PLANTINGS

RET LIGHT

PROP HMA DWY

SAWCUT MEET EXIST

RET LANDSCAPING

DRAINAGE EASEMENT WIDTH VARIES BOOK 20 PAGE 88

R&R SIGN & FLOOD LIGHTS (BO)

10' WIDE SEWER EASEMENT L.C. DOC #29241 L.C. CERT. #7924

20' WIDE SEWER ACCESS & UTILITY EASEMENT L.C. DOC #29241, BOOK 8019 AND 1583 L.C. CERT. #9882

25' RIGHT OF WAY EASEMENT L.C. DOC #27764 L.C. CERT. #7924

100-FT WETLAND BUFFER

PROP SLOPED GRANITE EDGING

CONST ℄ RECORD ℄

PROP 5' BRICK BUFFER

PROP 8' CEM CONC SW

PROP GRAN CURB, TYPE VB

SAWCUT (TYP.)

PROP PCR #3

PROP LANDSCAPE ISLAND

PROP GRAN EDGING,TYPE SB

PROP 8' CC SHARED USE PATH

PROP SEDIMENT CONTROL BARRIER

PROP LOAM & SEED (TYP)

PROP PCR #4

BEGIN SW +78

BEGIN CURB +71

1980 SHLO NO. 6345

PROP LOAM & SEED (TYP)

PROP TREE TRIMMING

BEGIN PROP SHLO ALT NO. 9004 (SECTION 2)

R&S FENCE STA 27+00 TO 27+10

R&R UTILITY CABINET (BO)

PROP TREE TRIMMING

RET BUSHES

PERM UTILITY EASEMENT LINE (TYP)

RET BUSHES

RET BOUNDS (8)

PROP 4' BRICK BUFFER

RET CURB

R&R GRAN CURB

PROP SAWCUT MEET EXIST

PROP GRAN CURB TYPE VB REM BERM

RET SIGNS

PROP PCR #6

PROP GRAN CURB TYPE VB

PROP BOX WIDENING > 4'

PROP LOAM & SEED (TYP)

PROP 5.5' CC SW

RET BOUND

PROP GRAN CURB TYPE VB

RET FENCE FROM STA 25+10 TO 25+30

RET GUARDRAIL

R&R FENCE FROM STA 25+30 TO 26+45

RET WALL

REM GUY WIRES

TEMP CONST EASEMENT LINE (TYP)

PROP 5.5' CC SW

PROP GRAN CURB TYPE VB

RET BOUND

BIT PAVED PARKING

BIT BERM

WOOD GUARD RAIL

MHB (FND)

BOS

1980 SHLO NO. 6345

PCC +61.90

PROP PCR #5

233

RT +11.70

RET BOUND

283+73.67

PVMT MILLING AND OVERLAY

SAWCUT (TYP.)

PROP FULL DEPTH CONSTRUCTION

PROP 6' CEM CONC ISLAND

PROP BOX WIDENING > 4'

PROP PCR #7
PI +50.00

PROP COIR LOGS AT BANK OF STREAM

REM HEADWALL

PROP PCR #9

PROP PCR #10

R&R GRAN CURB

PROP BOX WIDENING > 4'

R&R GRAN CURB

CONTINUED ON SHEET NO. 18

CONTINUED ON SHEET NO. 20

PI +50.00

CONST ℄ RECORD ℄

PVMT MILLING AND OVERLAY

SAWCUT (TYP)

RET FENCE STA 26+55 TO STA 27+00

PROP 4' BRICK BUFFER

PROP 5' BRICK BUFFER

PROP 8' CEM CONC SW

PROP GRAN CURB, TYPE VB

SAWCUT (TYP.)

PROP PCR #3

RET BOUND

RET LP

END PROP SHLO ALT NO. 9004 (SECTION 2)

RET TRANSFORMER AND CONC PAD

PROP MULCH

RET CONC VAULT

20' WIDE SEWER EASEMENT L.C. DOC #29241 L.C. CER

RET SIGN

PROP CC WALK

PROP 8' CC SHARED USE PATH

RET BUSH

PROP PCR #8

RET PLANTINGS

RET LIGHT

PROP HMA DWY

SAWCUT MEET EXIST

RET LANDSCAPING

DRAINAGE EASEMENT WIDTH VARIES BOOK 20 PAGE 88

R&R SIGN & FLOOD LIGHTS (BO)

10' WIDE SEWER EASEMENT L.C. DOC #29241 L.C. CERT. #7924

20' WIDE SEWER ACCESS & UTILITY EASEMENT L.C. DOC #29241, BOOK 8019 AND 1583 L.C. CERT. #9882

25' RIGHT OF WAY EASEMENT L.C. DOC #27764 L.C. CERT. #7924

100-FT WETLAND BUFFER

PROP SLOPED GRANITE EDGING

PROP LANDSCAPE ISLAND

PROP GRAN EDGING,TYPE SB

PROP 8' CC SHARED USE PATH

PROP SEDIMENT CONTROL BARRIER

PROP LOAM & SEED (TYP)

PROP PCR #4

BEGIN SW +78

BEGIN CURB +71

1980 SHLO NO. 6345

PROP LOAM & SEED (TYP)

PROP TREE TRIMMING

BEGIN PROP SHLO ALT NO. 9004 (SECTION 2)

R&S FENCE STA 27+00 TO 27+10

R&R UTILITY CABINET (BO)

PROP TREE TRIMMING

RET BUSHES

PERM UTILITY EASEMENT LINE (TYP)

RET BUSHES

RET BOUNDS (8)

PROP 4' BRICK BUFFER

RET CURB

R&R GRAN CURB

PROP SAWCUT MEET EXIST

PROP GRAN CURB TYPE VB REM BERM

RET SIGNS

PROP PCR #6

PROP GRAN CURB TYPE VB

PROP BOX WIDENING > 4'

PROP LOAM & SEED (TYP)

PROP 5.5' CC SW

RET BOUND

PROP GRAN CURB TYPE VB

CHAUNCY STREET (ROUTE 106)

0 20 50 100

SCALE: 1" = 20'

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	20	28
PROJECT FILE NO.	613052		

CONSTRUCTION PLAN

608944_HDI(6076 CONST).DWG Plotted on 7-Feb-2025 2:17 PM

N/F UNITED STATES POSTAL SERVICE 12 GILES PL ASSESS. MAP 17 PARCEL ID: 17-7 DEED BK 3528 / PAGE 126

GEM REALTY TRUST 273 CHAUNCY ST ASSESS. MAP 17 – PARCEL ID: 17-6 DEED BK 21367 / PAGE 196

GILES PLACE

30+78.51 ROUTE 106 (CHAUNCY STREET)= 100+00.00 GILES PLACE

CHAUNCY STREET (ROUTE 106)

EXISTING BUILDING "CVS PHARMACY" 261 CHAUNCY STREET

EXISTING BUILDING "WALGREENS" 243 CHAUNCY STREET

EXISTING BUILDING MONARCH REALTY GROUP 273 CHAUNCY STREET #273

WEC 99J-40 LLC 261 CHAUNCY ST ASSESS. MAP 20 – PARCEL ID: 20-200 DEED BK 8616 / PAGE 254

A&E BROTHERS, LLC 243 CHAUNCY ST ASSESS. MAP 20 – PARCEL ID: 20-199 DEED BK 18852 / PAGE 49

A&E BROTHERS LLC 243 CHAUNCY ST ASSESS. MAP 20 – PARCEL ID: 20-199 DEED BK 18852 / PAGE 49

BROOKSIDE OFFICE CONDO PARK 272 CHAUNCY ST ASSESS. MAP 20 PARCEL ID: 20-186 LC. DEED BK C6 / PAGE 1 LD. CERT. #C6 LC. CASE #28116

DANGELO, INC. 260 CHAUNCY ST ASSESS. MAP 20 PARCEL ID: 20-154 DEED BK 37 / PAGE 152 LC. CERT. #7909 LC. CASE #25856

254 CHAUNCY STREET, LLC 254 CHAUNCY ST ASSESS. MAP 20 – PARCEL ID: 20-156 DEED BK 22278 / PAGE 179

LARMONT REALTY TRUST 242 CHAUNCY ST ASSESS. MAP 20 – PARCEL ID: 20-136 DEED BK 2338 / PAGE 347

25' RIGHT OF WAY EASEMENT L.C. DOC #27784, L.C. CERT #7924

0 20 50 100

SCALE: 1" = 20'

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	21	28
PROJECT FILE NO.	613052		

CONSTRUCTION PLAN

COPELAND DRIVE

CHAUNCY STREET (ROUTE 106)

WOOD AVE (PRIVATE)

RET HEDGE & TREE
LIMIT OF MILL & OVERLAY MEET EXIST +07
LIMIT OF SW MEET EXIST
REM SHRUBS
PROP CC SW
RET LIGHT
1954 SHLO NO. 4230
19.75'
20.15'
74
DWY - 6
32.00'
RET SIGN
RET LIGHT (SEE NOTE 1)
RET TREE
R&R GRAN CURB
RET LIGHT (SEE NOTE 1)
PROP PVMT MILLING & OVERLAY
PROP CC SW
PROP CC WALK
PROP FULL DEPTH CONSTRUCTION
PROP CC CUT THROUGH (PCR #CT12)
PROP PCR #12
PROP BOUND (TYP.)
R&R MEMORIAL & SIGN
RET LIGHT POST
PROP 3'-9" CC WALK
PROP CC SW
BOS
1945 TOWN LAYOUT
RET TREE
PROP TREE PROTECTION (TYP)
END PROP SHLO ALT NO. 9004 (SECTION 3)
PI +54.68
PC +13.70
R&R GRAN CURB
PROP BOX WIDENING > 4'
PROP BOUND (TYP.)
BOULDER
1946 TOWN LAYOUT
PROP MULCH
REM PVMT & BERM
PROP HMA CURB TYPE 2
PROP MULCH
TEMP CONST EASEMENT LINE (TYP)
20' WIDE SEWER EASEMENT BOOK 2193 PAGE 49
RET SIGN
END MULCH BEGIN LOAM & SEED
TRIM TREES AS REQUIRED FOR PROP OHW
BEGIN R&R CURB AT BSW
PROP 4' BRICK BUFFER
REM PLANTER & SHRUBS
PROP LOAM & SEED
PROP SHLO ALT LINE (TYP)
PROP 8' CC SHARED USE PATH
PROP LOAM & SEED
REM LANDSCAPE WITHIN GRADING LIMITS
RET LIGHT
PROP PEDESTRIAN SIGNAL (TYP)
PROP LOAM & SEED
REM EXIST PAVEMENT
RET CB
PROP BOUND (TYP.)
PROP SAWCUT
PROP GRAN EDGING TYPE SB
PROP TEMP TREE PROTECTION FENCE
END GRAN CURB
END GRAN CURB, CC SW, MEET EXISTING
PROP PCR #20
PROP PCR #21
LIMIT OF MILL & OVERLAY. MEET EXIST +58
1954 SHLO NO. 4230
1954 SHLO ALT. NO. 4230
1955 SHLO ALT. NO. 4737
END S.H.L.D. NO. 4230 1954
BEGIN S.H.L.D. NO. 4230 1954
END S.H.L.D. NO. 4230 1954 END 1946 TOWN LAYOUT
END S.H.L.D. NO. 4230 1954 BEGIN S.H.L.D. ALTERNATION NO. 4737 1958
36+74.26 ROUTE 106 (CHAUNCY STREET)= 71+95.52 COPELAND DRIVE
CONTINUED ON SHEET NO. 20

ASSESS. MAP 20 – PARCEL ID: 20–181
DEED BK 16322 / PAGE 3

COBBLE HILL DEVELOPMENT, LLC, LOGAN ATWOOD, LLC, AND MANSFIELD III, LLC
205–215 CHAUNCY ST, 234 CENTRAL ST
ASSESS. MAP 20 – PARCEL ID: 20–177
DEED BK 27897 / PAGE 106

&E BROTHERS LLC
243 CHAUNCY ST
SS. MAP 20 – PARCEL ID: 20–199
BK 18852 / PAGE 49

JT BUILDING & DEVELOPMENT, LLC
235 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–165
DEED BK 12238 / PAGE 334

LARMONT REALTY TRUST
242 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–136
DEED BK 2338 / PAGE 347

COPELAND SQUARE PROFESSIONAL BUILDING CONDOMINIUM
100 COPELAND DR
ASSESS. MAP 20 – PARCEL ID: 20–139
DEED BK 3232 / PAGE 85

CHASE BANK
215 CHAUNCY STREET

"HONEY DEW DONUTS"
99 COPELAND DRIVE

BRI, INC
99 COPELAND DR
ASSESS. MAP 20 – PARCEL ID: 20–176
DEED BK 2897 / PAGE 217

TOKEN ENTERPRISES, INC
93 COPELAND DR
ASSESS. MAP 20 – PARCEL ID: 20–193
DEED BK 1662 / PAGE 251

CHAUNCY COURT CONDOMINIUM
200 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–176
DEED BK 3980 / PAGE 149

TEMPORARY EASEMENT LINE (TYP)
PROP BOUND (TYP.)
R&R GRAN CURB
LIMIT OF SW MEET EXIST
PROP SHLO ALT LINE
PROP 4' BRICK BUFFER
PERM EASEMENT LINE
PROP 8' CC SW
BEGIN PROP SHLO ALT NO. 9004 (SECTION 6)
PROP BOUND (TYP.)
RET "CHASE" SIGN & LANDSCAPING
REM TREE
PROP LOAM AND SEED
TOS
1916 TOWN LAYOUT
CONST ℄
PROP PVMT MILLING & OVERLAY
DWY - 8
20.00'
38
28.00'
36.73'
DWY - 5
R&R GRAN CURB
PROP PCR #16
PROP CC ISLAND
PROP MA (TYP)
PROP PCR #17
PT +45.36
25.00'
PROP BOX WIDEN > 4'
PROP CC DWY
PROP HMA DWY
SAWCUT MEET EXIST
END GRAN CURB TYPE VB AT BSW
PROP GRAN CURB TYPE VB
PROP HMA DWY AT BACK OF SIDEWALK
PROP CC SIDEWALK
PROP PCR #19
PROP PCR #18
REM BOUNDS
REM CONC PAD
BEGIN GRAN CURB TYPE VB
END PROP SHLO ALT NO. 9004 (SECTION 6)
PROP PCR #14
PROP PCR #15
PROP BOUND (TYP.)
END PROP SHLO ALT NO. 9004 (SECTION 5)
R&R CURB
PROP HMA DWY AT BACK OF SIDEWALK
PROP CC SW
SAWCUT MEET EXIST
PROP HMA DWY
PROP CC DWY
RET SHRUB
RET SIGN
LIMIT OF SW MEET EXIST
END GRAN CURB
R&D SHRUBS
END R&R CURB AT BSW
R&R GRAN CURB TYPE VB
PROP CC SW
19.82'
5.50'
20.04'
PVC PI +86.68
5.50'
DWY - 7
30.22'
20.11'
70
70+00
69+50
RET SHRUB
RET CURB
RET BIT CURB
RECORD ℄
39+50
39
RET TREE
END OF MILL & OVERLAY
LIMIT OF SW MEET EXIST
RET TREE
PROP CC DWY
PROP HMA DWY
PROP OH SERVICE CONNECTION
PROP BOUND (TYP.)
END OF PROJECT
STA. 40+32.78
N 2836297.5019
E 730083.8662
MEET EXISTING

NOTES:

1. EXISTING LIGHTS SHALL BE REMOVED AND RESET (BY OTHERS) IF NECESSARY FOR INSTALLATION OF OVERHEAD WIRE OR AS DIRECTED BY ENGINEER.

0 20 50 100
SCALE: 1" = 20'

Proposal No. 613052-131228

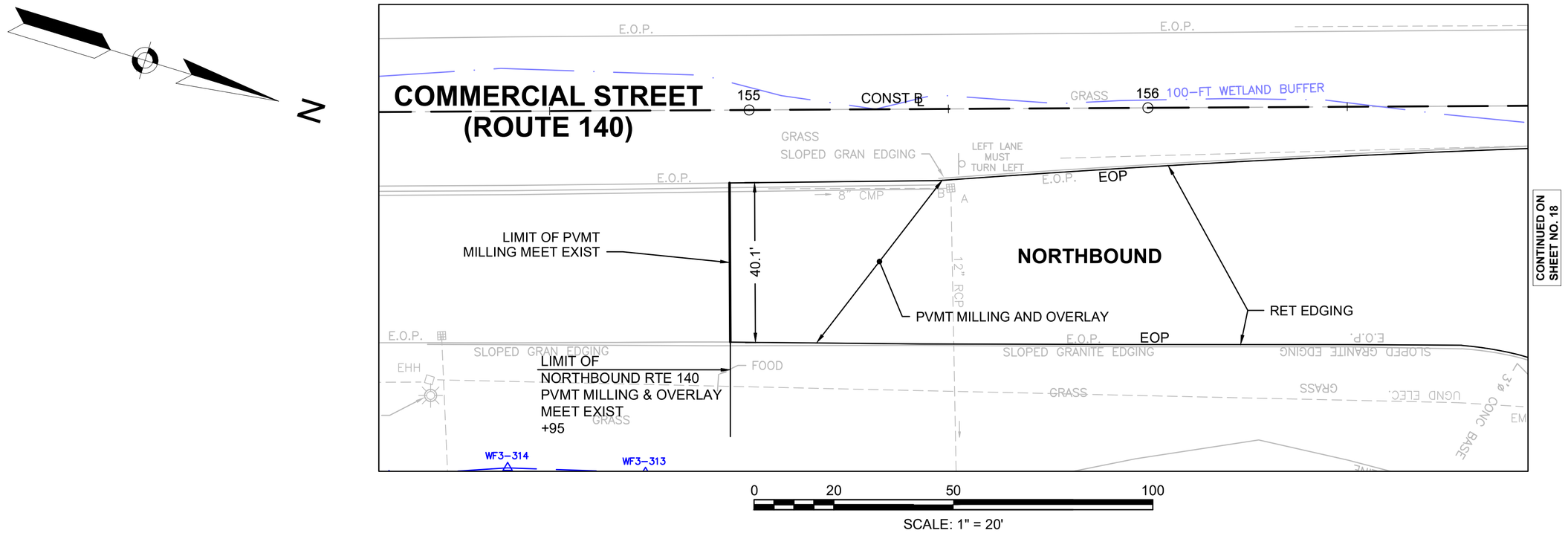
608944_HDI(6076 CONST).DWG Plotted on 7-Feb-2025 2:07 PM

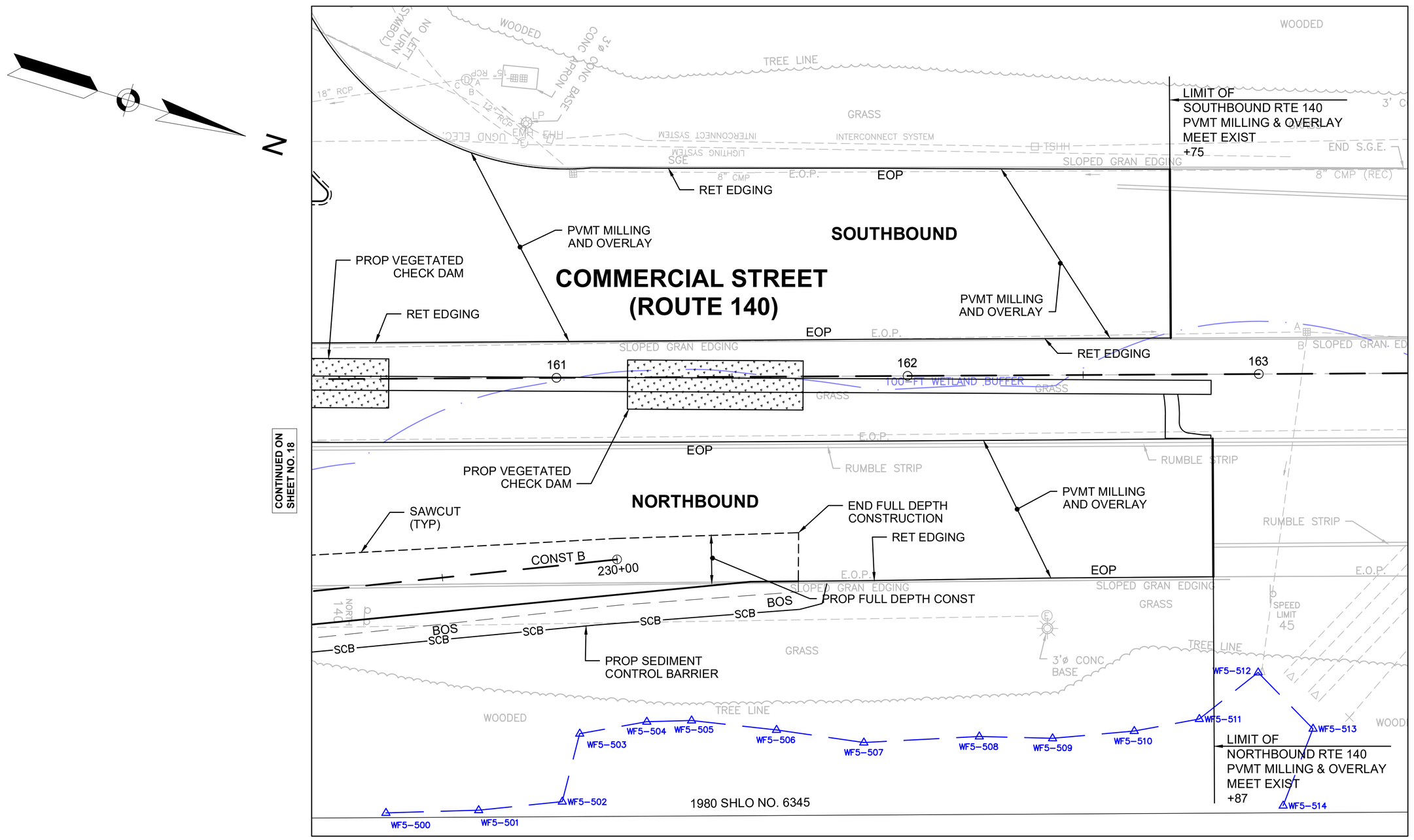
A00860 - 217

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	22	28
PROJECT FILE NO.	613052		

CONSTRUCTION PLAN





Proposal No. 613052-131228
608944_HDI(6076 CONST).DWG Plotted on 7-Feb-2025 2:07 PM
A00860 - 218

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	23	28
PROJECT FILE NO.	613052		

DRAINAGE & UTILITY PLAN

CONTINUED ON SHEET NO. 27

CONTINUED ABOVE

CHAUNCY STREET (ROUTE 106)

COMMERCIAL STREET (ROUTE 140)

CONTINUED ON SHEET NO. 24

CONTINUED ON SHEET NO. 27

CONTINUED BELOW

1980 SHLO NO. 6345

1980 SHLO NO. 7253

PROP 6" PERFORATED HDPE UNDERDRAIN

PROP VEGETATED CHECK DAM (ONE LEG ONLY)

BEGIN WATER QUALITY SWALE

CONNECT PROP UNDERDRAIN TO EXIST CB INV. = 174.7' ±

ADJ CB

RET

UPGRADE 55' UP #303 PROP 15' GUY (BO)

REM GUY POLE #305S (BO)

RET EX-CB-22-2

25 LF - 12" RCP

CB-22 (LP)

10 LF - 12" RCP

ADJ EX-DMH-22-1

ADJ CB (LP)

ADJ EX-DMH-21

52 LF - 16" DI (REM EXIST)

REM EX CB & PIPE

REM EX DMH

DMH-23-2

24 LF - 12" RCP

CB-23-2

REM EX CB

ABAN

DMH-23

ADJ EX-CB-24

16 LF - 15" RCP

DMH-24

PROP MAST ARM (TYP)

CB-159

23 LF - 12" RCP

CIT-159

R&R LP (BO)

PROP 3" CONDUIT TYPE NM (BO)

REMOD EMH (BO)

REM UP #34-2 & GUY WIRES (BO)

ABAN

CBCI-25

8 LF - 12" DI

DMH-25

ADJ EX-DMH-24

ADJ DMH

26 LF - 12" RCP

14 LF - 12" RCP

ADJ EX-DMH-22

84 LF - 18" RCP (REM EXIST)

70 LF - 21" RCP (REM EXIST)

90 LF - 21" RCP (REM EXIST)

27 LF - 21" RCP (REM EXIST)

ADJ EX-DMH-25

CBCI-21

CIT-21

CBCI-23

CIT-23

10 LF - 12" RCP

CBCI-24 (LP)

R&R 55' UP #304 (BO)

PROP 55' UP #304.5 PROP 20' GUY (BO)

R&R 55' UP #305 PROP 20' DE GUY (BO)

R&S TRAFFIC SIGNAL CABINET

RELOCATE ELECTRIC CABINET (BO)

R&R ELEC HANDHOLE (BO)

PROP CONTROLLER, CABINET, FOUNDATION & CONCRETE PAD

ADJ (BO)

R&R 55' UP #306 (BO)

CB-157

14 LF - 12" RCP

CIT-157

R&R 55' UP #307 PROP 2-20' GUYS (BO)

100-FT WETLAND BUFFER

DEED BK 13234 / PAGE 164

0 20 50 100

SCALE: 1" = 20'

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
CB-157	157+61 50.2' RT	176.13		I=172.10' (CIT-157)	BAR STYLE GRATE
CB-159	159+77.8 74.7' RT	177.37		I=173.40' (CIT-159)	BAR STYLE GRATE
CIT-157	157+46.7 58.4' RT	176.14	I=172.00' (CB-157) I = 171.4' ± (EXIST)	I = 171.5' ± (EXIST)	CHANGE-IN-TYPE
CIT-159	159+62.1 58.5' RT	177.53	I=173.30' (CB-159)	I = 172.9' ± (EXIST)	CHANGE-IN-TYPE SECURED COVER

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
CB-22	22+51.6 -30.0' LT	177.31	I=173.90' (EX-CB-22-2)	I=173.80' (EX-DMH-22-1)	BUILD ON EXIST LOW POINT
CBCI-21	21+49.6 27.2' RT	177.72		I=173.50' (CIT-21)	
CBCI-23	22+16.7 37.5' RT	177.18		I=172.40' (CIT-23)	OFFSET COVER
CBCI-24	22+29.2 37.7' RT	177.17		I=172.40' (CIT-23)	LOW POINT OFFSET COVER
CIT-21	21+75.4 27.5' RT	177.54	I=173.20' (CBCI-21)	I = 172.9' ± (EXIST)	CHANGE-IN-TYPE
CIT-23	22+26.8 28.0' RT	177.36	I=172.30' (CBCI-24) I=172.30' (CBCI-23)	I = 172.2' ± (EXIST)	CHANGE-IN-TYPE
EX-CB-22-2	22+75.5 -43.2' LT	177.43		I=174.10' (CB-22)	
EX-DMH-21	21+80.3 -7.2' LT	177.97	I = 172.5' ± (EXIST) I = 172.6' ± (EXIST) I = 172.6' ± (EXIST)	I=172.40' (EX-DMH-22)	
EX-DMH-22	22+32.3 -7.5' LT	177.77	I = 172.0' ± (EXIST) I=171.90' (EX-DMH-21) I = 172.0' ± (EXIST) I = 172.0' ± (EXIST)	I=171.80' (DMH-23)	
EX-DMH-22-1	22+42.7 -25.2' LT	177.39	I=173.70' (CB-22)	I = 172.4' ± (EXIST)	

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
CB-23-2	23+06.6 -64.3' LT	179.01		I=175.00' (DMH-23-2)	
CBCI-25	24+55.7 -30.0' LT	176.80		I=172.70' (DMH-25)	
DMH-23	23+15.9 -16.8' LT	178.49	I=171.20' (EX-DMH-22) I = 171.8' ± (EXIST)	I=171.10' (DMH-24)	6' DIA
DMH-23-2	22+88.6 -49.0' LT	178.22	I = 172.1' ± (EXIST) I=174.20' (CB-23-2)	I = 172.0' ± (EXIST)	BUILD ON EXIST
DMH-24	23+88.1 -17.9' LT	178.47	I=170.60' (DMH-23) I=172.70' (EX-CB-24)	I=170.50' (EX-DMH-24)	SECURED COVER
DMH-25	24+66.2 -35.7' LT	176.54	I = 170.6' ± (EXIST) I=172.50' (CBCI-25)	I = 170.5' ± (EXIST)	BUILD ON EXIST
EX-CB-24	23+84 -35.3' LT	178.21	I = 174.2' ± (EXIST) I = 173.8' ± (EXIST)	I=173.40' (DMH-24)	
EX-DMH-24	24+80.1 -19.3' LT	176.46	I = 169.9' ± (EXIST) I=169.80' (DMH-24)	I=169.70' (EX-DMH-25)	
EX-DMH-25	24+89 6.6' RT	176.63	I=169.60' (EX-DMH-24)	I = 169.5' ± (EXIST)	

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MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	24	28
PROJECT FILE NO.	613052		

DRAINAGE & UTILITY PLAN

NOTES:
1. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY OWNER TO PROVIDE TEMPORARY UTILITY SUPPORT, AS NEEDED. COSTS ASSOCIATED WITH TEMPORARY UTILITY SUPPORT SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS CONTRACT ITEMS.

DRAINAGE STRUCTURE TABLE

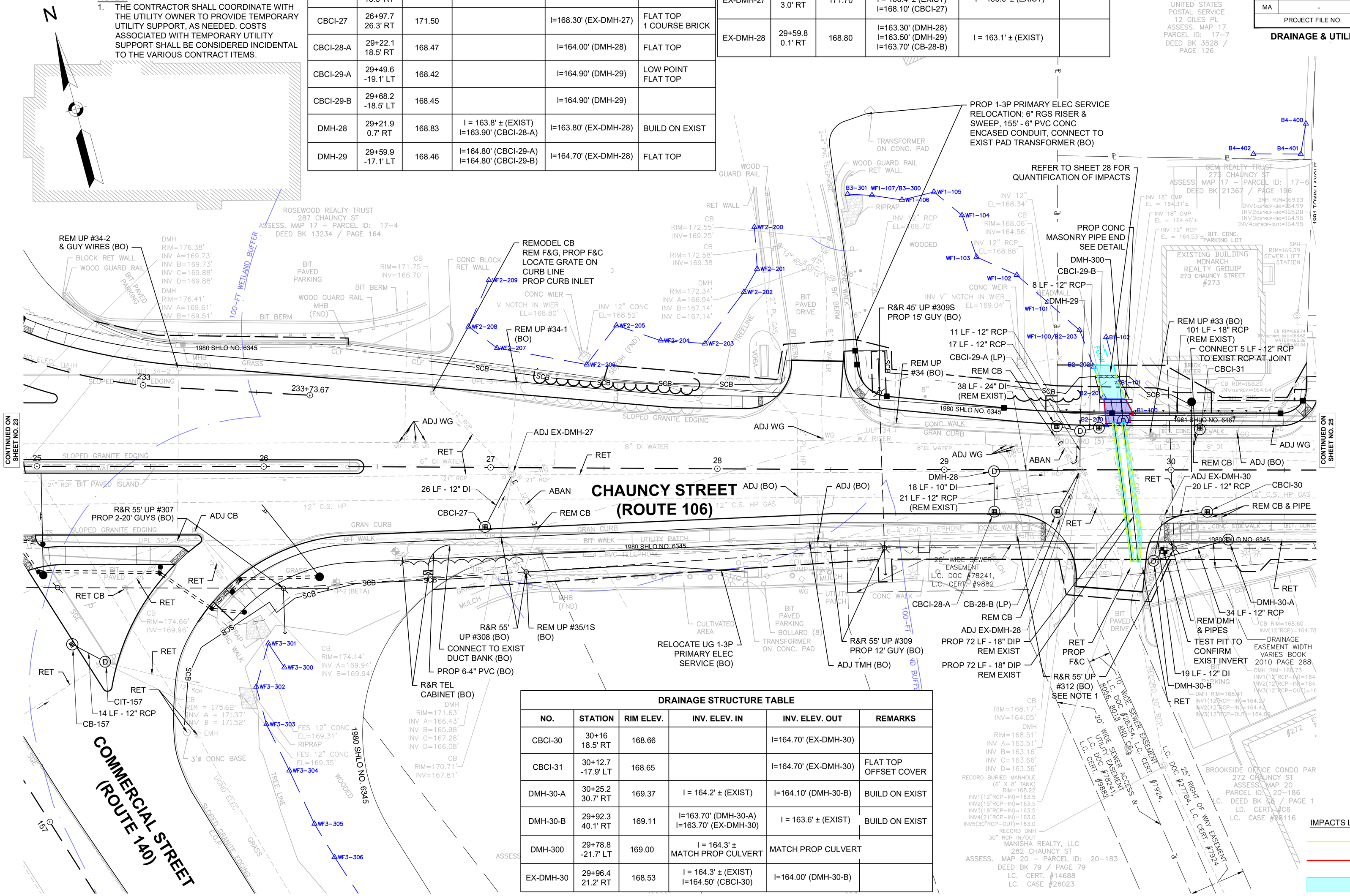
NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
CB-28-B	29+49.9 18.5' RT	168.43		I=164.05' (EX-DMH-28)	LOW POINT
CBCI-27	26+97.7 26.3' RT	171.50		I=168.30' (EX-DMH-27)	FLAT TOP 1 COURSE BRICK
CBCI-28-A	29+22.1 18.5' RT	168.47		I=164.00' (DMH-28)	FLAT TOP
CBCI-29-A	29+49.6 -19.1' LT	168.42		I=164.90' (DMH-29)	LOW POINT FLAT TOP
CBCI-29-B	29+68.2 -18.5' LT	168.45		I=164.90' (DMH-29)	
DMH-28	29+21.9 0.7' RT	168.83	I = 163.8' ± (EXIST) I=163.90' (CBCI-28-A)	I=163.80' (EX-DMH-28)	BUILD ON EXIST
DMH-29	29+59.9 -17.1' LT	168.46	I=164.80' (CBCI-29-A) I=164.80' (CBCI-29-B)	I=164.70' (EX-DMH-28)	FLAT TOP

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
EX-DMH-27	27+09.5 3.0' RT	171.70	I = 166.1' ± (EXIST) I = 166.4' ± (EXIST) I=168.10' (CBCI-27)	I = 166.0' ± (EXIST)	
EX-DMH-28	29+59.8 0.1' RT	168.80	I=163.30' (DMH-28) I=163.50' (DMH-29) I=163.70' (CB-28-B)	I = 163.1' ± (EXIST)	

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
CBCI-30	30+16 18.5' RT	168.66		I=164.70' (EX-DMH-30)	
CBCI-31	30+12.7 -17.9' LT	168.65		I=164.70' (EX-DMH-30)	FLAT TOP OFFSET COVER
DMH-30-A	30+25.2 30.7' RT	169.37	I = 164.2' ± (EXIST)	I=164.10' (DMH-30-B)	BUILD ON EXIST
DMH-30-B	29+92.3 40.1' RT	169.11	I=163.70' (DMH-30-A) I=163.70' (EX-DMH-30)	I = 163.6' ± (EXIST)	BUILD ON EXIST
DMH-300	29+78.8 -21.7' LT	169.00	I = 164.3' ± MATCH PROP CULVERT	MATCH PROP CULVERT	
EX-DMH-30	29+96.4 21.2' RT	168.53	I = 164.3' ± (EXIST) I=164.50' (CBCI-30)	I=164.00' (DMH-30-B)	



SCALE: 1" = 20'

0 20 50 100

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
CB-32	31+24.7 -20.4' LT	169.76		=166.20' (CIT-32)	FLAT TOP
CBCI-101	100+81.9 -13.4' LT	169.08		=165.90' (DMH-101)	FLAT TOP 1 COURSE BRICK
CIT-32	31+20.7 -13.0' LT	169.88	=166.40' (CBCI-34)	I = 165.8' ± (EXIST)	CHANGE-IN-TYPE
DMH-101	100+77.4 3.6' RT	168.92	=165.80' (CBCI-101) I = 165.8' ± (EXIST)	=165.70' (EX-DMH-100)	BUILD ON EXIST FLAT TOP 6" FRAME 1 COURSE BRICK
EX-DMH-100	30+79.6 -21.5' LT	169.23	I = 165.3' ± (EXIST) I = 165.0' ± (EXIST) =165.00' (DMH-101)	=164.95' (DMH-300)	

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
CB-261	32+60 -31.0' LT	172.68	=168.50' (CB-262)	=168.50' (DMH-261)	
CB-262	32+90.9 -30.6' LT	172.73		=168.70' (CB-261)	
CBCI-33	31+94.2 18.5' RT	170.63		=167.00' (DMH-33)	FLAT TOP
CBCI-34	32+33 -18.5' LT	171.19		=167.50' (CIT-32)	FLAT TOP
DMH-33	31+74.3 20.5' RT	170.89	=166.80' (CBCI-33)	I = 168.1' ± (EXIST)	BUILD ON EXIST OFFSET COVER
DMH-261	32+38.1 -29.1' LT	172.64	=168.35' (CB-261)	I = 168.2' ± (EXIST)	BUILD ON EXIST

NOTES:
1. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY OWNER TO PROVIDE TEMPORARY UTILITY SUPPORT, AS NEEDED. COSTS ASSOCIATED WITH TEMPORARY UTILITY SUPPORT SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS CONTRACT ITEMS.

CHAUNCY STREET (ROUTE 106)

1946 TOWN LAYOUT

1981 S.H.L.O. NO. 6467

1980 S.H.L.O. NO. 6345

1991 TOWN LAYOUT

GILES PLACE

CONTINUED ON SHEET NO. 26

CONTINUED ON SHEET NO. 24

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	25	28
PROJECT FILE NO. 613052			

DRAINAGE & UTILITY PLAN

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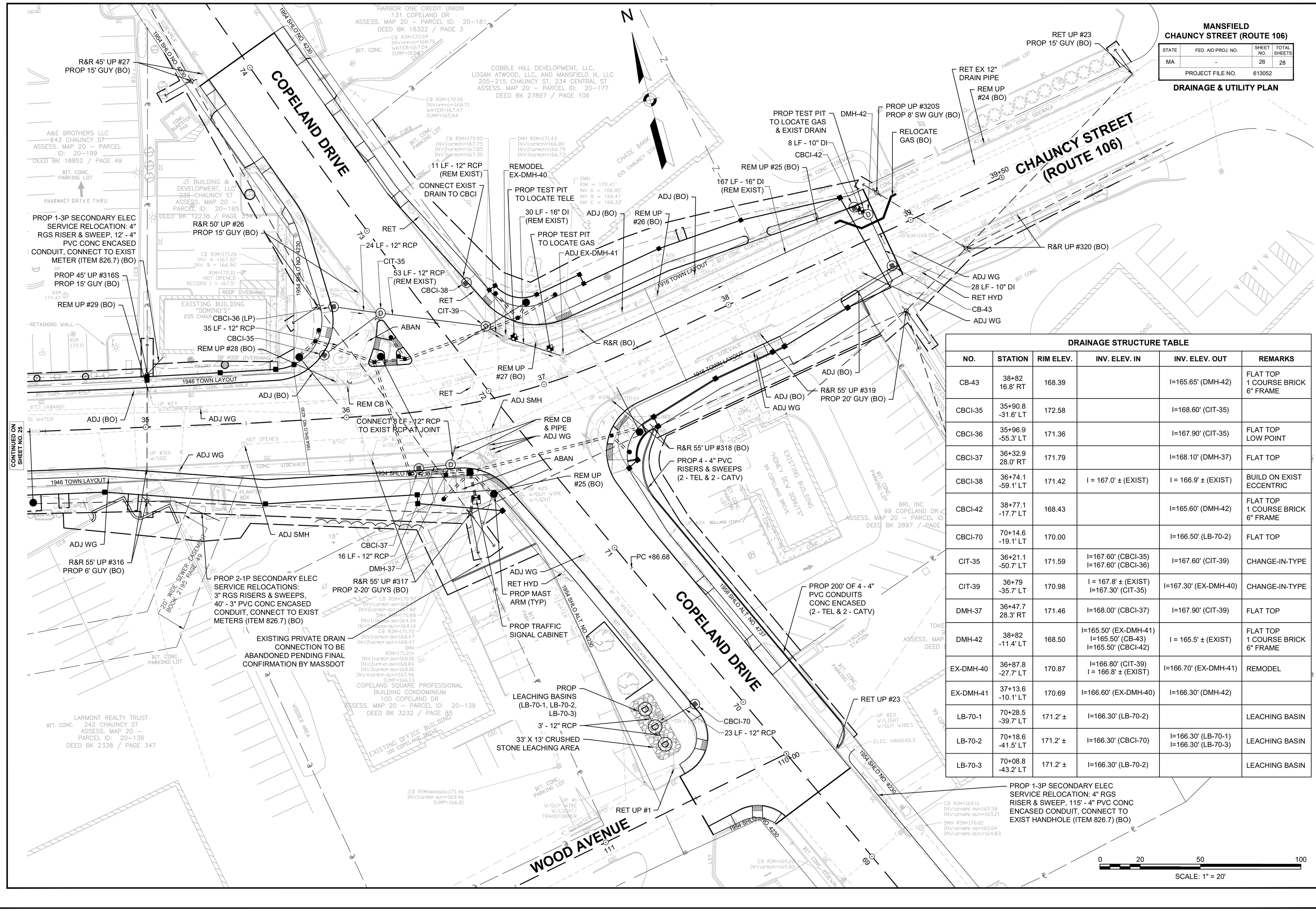
MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	26	28
PROJECT FILE NO.		613052	

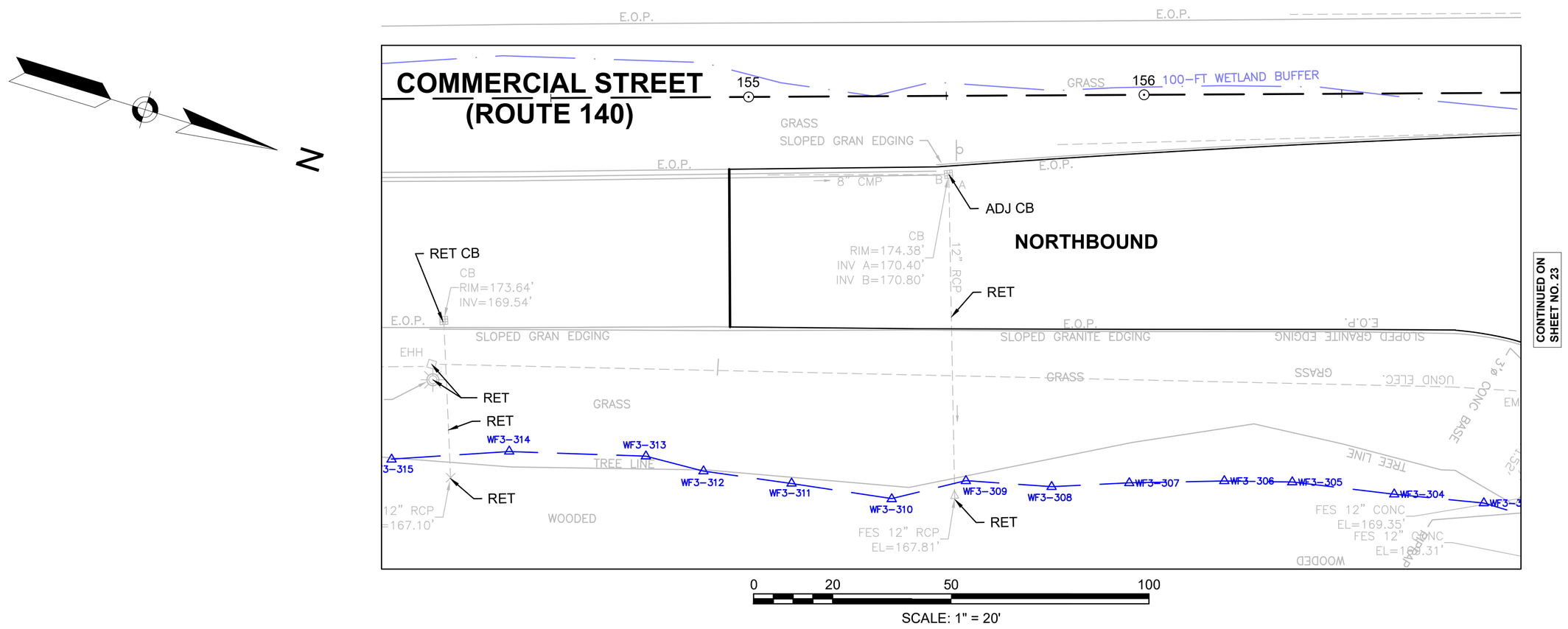
DRAINAGE & UTILITY PLAN

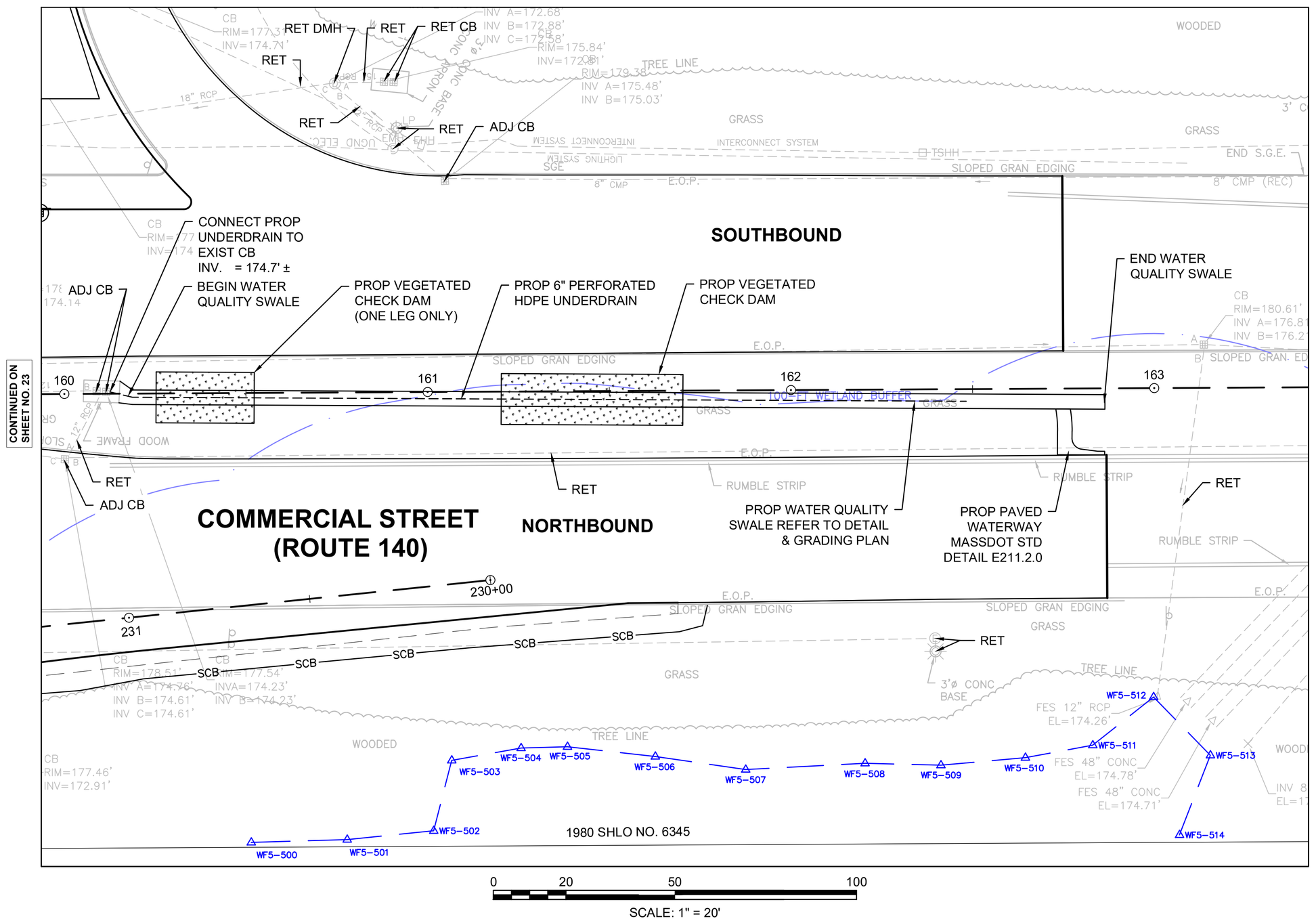

N
COPELAND DRIVE
CHAUNCY STREET (ROUTE 106)
WOOD AVENUE
HARBOR ONE CREDIT UNION
131 COPELAND DR
ASSESS. MAP 20 – PARCEL ID: 20–181
DEED BK 16322 / PAGE 3
COBBLE HILL DEVELOPMENT, LLC, LOGAN ATWOOD, LLC, AND MANSFIELD III, LLC
205–215 CHAUNCY ST, 234 CENTRAL ST
ASSESS. MAP 20 – PARCEL ID: 20–177
DEED BK 27897 / PAGE 106
A&E BROTHERS LLC
243 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–199
DEED BK 18852 / PAGE 49
JT BUILDING & DEVELOPMENT, LLC
235 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–165
DEED BK 12238 / PAGE 334
EXISTING BUILDING 'DOMINO'S' 235 CHAUNCY ST
CHASE BANK 215 CHAUNCY ST
EXISTING BUILDING 'HONEY DEW DONUTS' 99 COPELAND DRIVE
BRI, INC 99 COPELAND DR
ASSESS. MAP 20 – PARCEL ID:
DEED BK 2897 / PAGE
COPELAND SQUARE PROFESSIONAL BUILDING CONDOMINIUM
100 COPELAND DR
ASSESS. MAP 20 – PARCEL ID: 20–139
DEED BK 3232 / PAGE 85
EXISTING OFFICE BUILDING 100 COPELAND DRIVE
LARMONT REALTY TRUST
242 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–136
DEED BK 2338 / PAGE 347
R&R 45' UP #27
PROP 15' GUY (BO)
PROP 1-3P SECONDARY ELEC SERVICE RELOCATION: 4" RGS RISER & SWEEP, 12' - 4" PVC CONC ENCASED CONDUIT, CONNECT TO EXIST METER (ITEM 826.7) (BO)
R&R 50' UP #26
PROP 15' GUY (BO)
PROP 45' UP #316S
PROP 15' GUY (BO)
REM UP #29 (BO)
CBCI-36 (LP)
35 LF - 12" RCP
CBCI-35
REM UP #28 (BO)
1946 TOWN LAYOUT
ADJ (BO)
ADJ WG
CONTINUED ON SHEET NO. 25
R&R 55' UP #316
PROP 6' GUY (BO)
20' WIDE SEWER EASEMENT BOOK 2195 PAGE 49
PROP 2-1P SECONDARY ELEC SERVICE RELOCATIONS: 3" RGS RISERS & SWEEPS, 40' - 3" PVC CONC ENCASED CONDUIT, CONNECT TO EXIST METERS (ITEM 826.7) (BO)
EXISTING PRIVATE DRAIN CONNECTION TO BE ABANDONED PENDING FINAL CONFIRMATION BY MASSDOT
ADJ SMH
CBCI-37
16 LF - 12" RCP
DMH-37
R&R 55' UP #317
PROP 2-20' GUYS (BO)
ADJ WG
RET HYD
PROP MAST ARM (TYP)
PROP TRAFFIC SIGNAL CABINET
PROP LEACHING BASINS (LB-70-1, LB-70-2, LB-70-3)
3' - 12" RCP
33' X 13' CRUSHED STONE LEACHING AREA
RET UP #1
1954 SHLO NO 4230
1954 SHLO ALT NO 4237
1954 SHLO ALT NO 4236
1954 SHLO NO 4230
1954 SHLO NO 4230
1954 SHLO NO 4230

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	27	28
PROJECT FILE NO.	613052		

DRAINAGE & UTILITY PLAN





Proposal No. 613052-131228

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MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	28	28
PROJECT FILE NO.	613052		

IMPACT PLAN

REGRADE TEMPORARY IMPACTED BANK TO MATCH EXISTING. RESTORE WITH WETLAND SEED - RIPARIAN MIX (ITEM 765.553) STABILIZE SLOPE WITH COIR LOG (ITEM 767.112) AND JUTE MESH (ITEM 767.9)

PROP CONTROL OF WATER

TEMP BANK IMPACT LENGTH = 12 LF

PROP SEDIMENT CONTROL BARRIER (TYP)

PROP COIR LOGS AT BANK OF STREAM

PERM BANK IMPACT LENGTH = 11 LF

TEMP BANK IMPACT LENGTH = 13 LF

TEMP LAND UNDER WATER IMPACT AREA = 132 SF

PROP COIR LOGS AT BANK OF STREAM

PERM BANK IMPACT LENGTH = 13 LF

PERM LAND UNDER WATER IMPACT AREA = 115 SF

TEMP BANK IMPACT LENGTH = 61 LF ON EACH SIDE OF CULVERT (122 LF)

TEMP LAND UNDER WATER IMPACT AREA = 92 SF

TEMP BANK IMPACT LENGTH = 62 LF ON EACH SIDE OF CULVERT (124 LF)

TEMP LAND UNDER WATER IMPACT AREA = 93 SF

CHAUNCY STREET (ROUTE 106)

GILES PLACE

IMPACTS LEGEND

- BANK (TEMPORARY)
- BANK (PERMANENT)
- LAND UNDER WATER (TEMPORARY)
- LAND UNDER WATER (PERMANENT)

0 10 20 30 40

SCALE: 1" = 10'

Proposal No. 613052-131228

A00860 - 224

608944_HDI(6076 IMPACT_CULVERT).DWG Plotted on 7-Feb-2025 3:04 PM

APPENDIX F – Landscape Plans

HIGHWAY GUARD DETAILS
NONE

TRAFFIC SIGNAL CONDUIT
SEE SHEET 51

WATER SUPPLY ALTERATIONS
NONE

DRAINAGE & UTILITY PLANS
SEE SHEET 31

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	36	81
PROJECT FILE NO.	613052		

LANDSCAPE PLAN

CHAUNCY STREET (ROUTE 106)

N/F
BBK MANSFIELD LLC
377 CHAUNCY ST
ASSESS. MAP 17 – PARCEL ID: 17–23
DEED BK 26384 / PAGE 38

ROSEWOOD REALTY TRUST
287 CHAUNCY ST
ASSESS. MAP 17 – PARCEL ID: 17–4
DEED BK 13234 / PAGE 164

JAMES LESTER EPSTEIN
360 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–149
DEED BK 19124 / PAGE 31

ESTATE OF LESTER S. EPSTEIN – 1/2 INTEREST
ESTATE OF JAMES M. EPSTEIN – 1/2 INTEREST

1980 SHLO NO. 6345

5' WIDE PAVER BORDER EDGE AT CURB, TYP.

3' WIDE PAVER BORDER EDGE AT CURB, TYP.

CATCH BASIN

6' HT X 1' W X 15'L WELCOME SIGN WALL

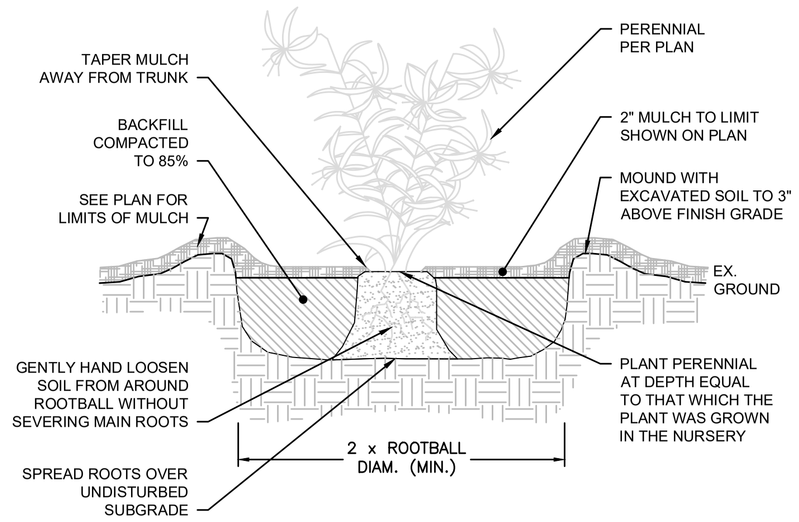
PI +50.00

PLANT LIST - MASTER

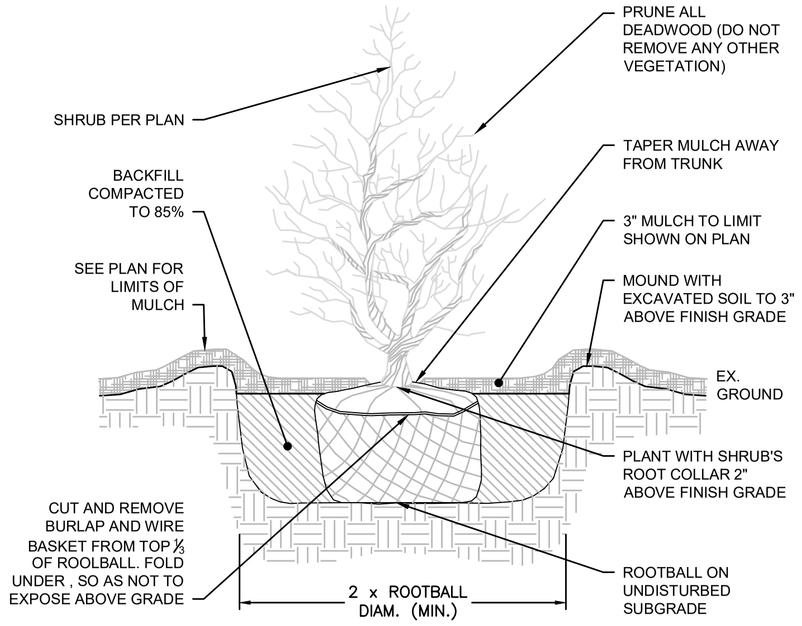
KEY	QU.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	PLANT SPACING
TREES						
AG	6	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	SERVICEBERRY - 'AUTUMN BRILLIANCE'	7'-8' HGT	B&B	
LS	12	LIQUIDAMBAR STYRACIFLUA 'SLENDER SILHOUETTE'	SWEETGUM - SLENDER SILHOUETTE	1.5-2" CAL.	B&B	
PA	3	PICEA ABIES	SPRUCE - NORWAY	7'-8' HGT	B&B	
PO	9	PICEA OMORIKA	SPRUCE - SIRBIAN	7'-8' HGT	B&B	
PK	2	PRUNUS SERRULATA 'KANZAN'	CHERRY TREE - KWANZAN	1.5-2" CAL.	B&B	
SHRUBS						
CA	18	CLETHRA ALNIFOLIA	SUMMERSWEET	3'-4' / #3	CONT.	6' O.C.
JV	48	JUNIPERUS VIRGINIANA 'GREY OWL'	JUNIPER - GREY OWL	18-24" / #2	CONT.	3-4' O.C.
KL	3	KALMIA LATIFOLIA	MOUNTAIN LAUREL	2-3' HGT	CONT.	13' O.C.
RD	28	ROSA KNOCK OUT DOUBLE	DOUBLE KNOCK OUT ROSE	18-24"	CONT.	5' O.C.
RK	20	ROSA KNOCK OUT SUNNY	SUNNY KNOCK OUT ROSE	18"-24"	CONT.	5' O.C.
RR	5	ROSA 'RADYOD' BLUSHING KNOCK OUT	KNOCK OUT ROSE -'RADYOD'	18"-24"	CONT.	5' O.C.
RA	19	RHUS AROMATICA 'GROW LOW'	SUMAC SHRUB - FRAGRANT- 'GROW LOW'	2'-3' / #2	CONT.	6' O.C.
SJ	16	SPIRAEA JAPONICA	SPIRAEA - MEADOWSWEET	2'-3' / #3	CONT.	6' O.C.
SB	38	SPIRAEA BETULIFOLIA	SPIREA - WHITE MEADOWSWEET	2'-3' / #3	CONT.	3' O.C.
ORNAMENTAL GRASS & PERENNIALS						
EP	51	ENCHINACEA PURPUREA 'LITTLE GIANT'	CONEFLOWER - 'LITTLE GIANT'	1 GAL.	CONT.	18" O.C.
HS	62	HEMEROCALLIS 'STELLA DE ORO'	DAYLILY - STELLA DE ORO	1 GAL.	CONT.	18" O.C.
PA	84	PENNISETUM ALOPECUROIDES 'HAMELN'	'HAMELN' FOUNTAIN GRASS	1 GAL.	CONT.	24" O.C.
RF	84	RUDBECKIA FULGIDA 'LITTLE GOLDSTAR'	BLACK-EYED SUSAN - 'LITTLE GOLDSTAR'	1 GAL.	CONT.	18" O.C.
SS	67	SCHIZACHYRIUM SCOPARIUM 'CAROUSEL'	LITTLE BLUESTEM - CAROUSEL	1 GAL.	CONT.	18" O.C.

0 20 50 100
SCALE: 1" = 20'

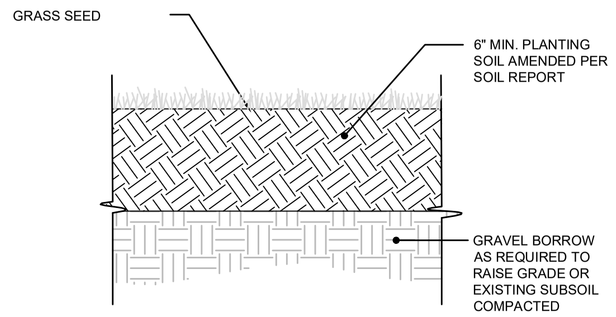
Proposal No. 613052-131228
A00860 - 226
608944_LA(6076 PLANS) OPTION 2.DWG Plotted on 7-Feb-2025 5:08 PM



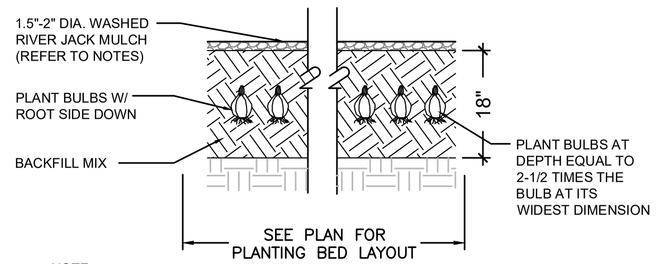
PERENNIALS & GRASSES PLANTING
NOT TO SCALE



SHRUB PLANTING
NOT TO SCALE

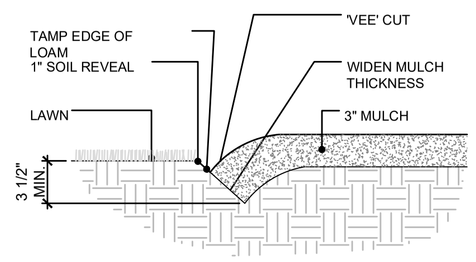


LOAM AND SEED
NOT TO SCALE



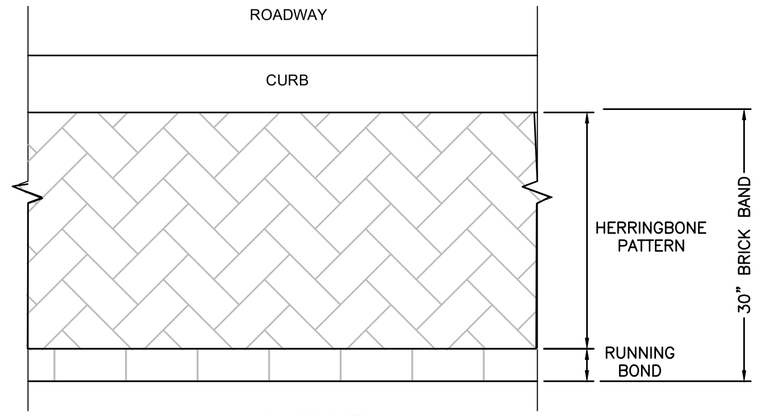
NOTE:
1. BY HAND, SPREAD BONE MEAL OVER ENTIRE PLANTING BED AT A RATE NOT TO EXCEED ONE-HALF (1/2) POUND PER TWENTY-FIVE (25) SQUARE FEET.

BULB PLANTING
NOT TO SCALE

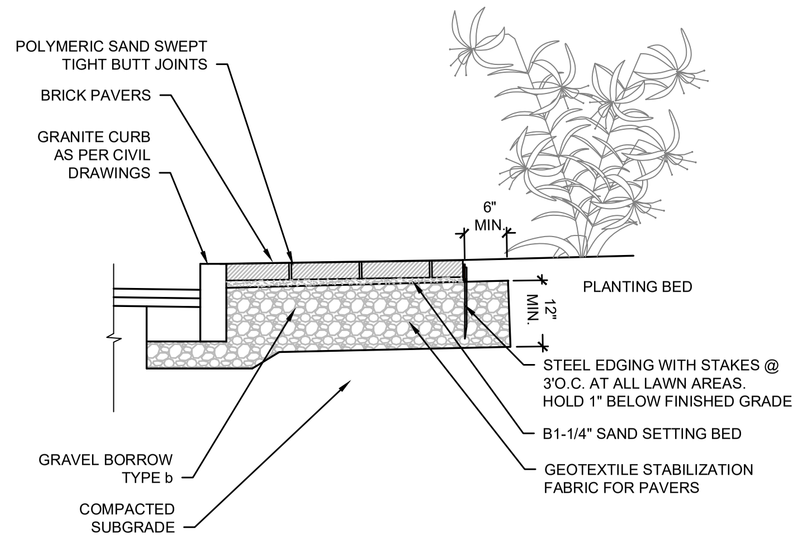


NOTE: LOCATE BEDLINE AS SHOWN ON PLAN.

PLANTING BED EDGE
NOT TO SCALE



PLAN VIEW



BRICK PAVER BANDING
NOT TO SCALE

Proposal No. 613052-131228

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MASSACHUSETTS

DEPARTMENT OF ENVIRONMENTAL PROTECTION

ORDER OF CONDITIONS

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Massachusetts Department of Environmental Protection

eDEP Transaction Copy

Here is the file you requested for your records.

To retain a copy of this file you must save and/or print.

Username:	**SHARVARR**
Transaction ID:	**1895296**
Document:	**WPA Form 5 - OOC**
Size of File:	**152.41K**
Status of Transaction:	**Submitted**
Date and Time Created:	**5/15/2025:12:32:40 PM**

Note: This file only includes forms that were part of your transaction as of the date and time indicated above. If you need a more current copy of your transaction, return to eDEP and select to “Download a Copy” from the Current Submittals page.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:211-1017
eDEP Transaction #:1895296
City/Town:MANSFIELD

A. General Information

1. Conservation Commission: MANSFIELD
2. Issuance: a. ☑ OOC b. ☐ Amended OOC

3. Applicant Details

a. First Name	ERICA	b. Last Name	LARNER		
c. Organization	MASSDOT HIGHWAY DIVISION				
d. Mailing Address	10 PARK PLAZA				
e. City/Town	BOSTON	f. State	MA	g. Zip Code	02116

4. Property Owner

a. First Name		b. Last Name			
c. Organization	MASSACHUSETTS DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION				
d. Mailing Address	10 PARK PLAZA				
e. City/Town	BOSTON	f. State	MA	g. Zip Code	02116

5. Project Location

a.Street Address	CHAUNCY STREET * (END 42.03070 - 71.22737)		
b.City/Town	MANSFIELD	c. Zip Code	02048
d. Assessors Map/Plat#	N/A ROADWAY ROW	e. Parcel/Lot#	N/A ROADWAY ROW
f. Latitude	42.03152N	g. Longitude	71.23469W

6. Property recorded at the Registry of Deed for:

a. County	b. Certificate	c. Book	d. Page
SOUTHERN BRISTOL		N/A	N/A

7.Dates

a. Date NOI Filed : 3/4/2025 b. Date Public Hearing Closed: 4/28/2025 c. Date Of Issuance: 5/14/2025

8.Final Approved Plans and Other Documents

a. Plan Title:	b. Plan Prepared by:	c. Plan Signed/Stamped by:	d. Revised Final Date:	e. Scale:
MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION - IMPROVEMENTS OF ROUTE 106, ROUTE 140 TO COPELAND DRIVE	CHRIS ROY	BETA INC.	5/14/2025	AS NOTED

B. Findings

1.Findings pursuant to the Massachusetts Wetlands Protection Act

Following the review of the the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:211-1017
eDEP Transaction #:1895296
City/Town:MANSFIELD

significant to the following interests of the Wetlands Protection Act.

Check all that apply:

a. ☑ Public Water Supply	b. ☐ Land Containing Shellfish	c. ☑ Prevention of Pollution
d. ☑ Private Water Supply	e. ☐ Fisheries	f. ☑ Protection of Wildlife Habitat
g. ☑ Ground Water Supply	h. ☑ Storm Damage Prevention	i. ☑ Flood Control

2. Commission hereby finds the project, as proposed, is:

Approved subject to:

a. ☑ The following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

Denied because:

b. ☐ The proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**

c. ☐ The information submitted by the applicant is not sufficient to describe the site, the work or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the interests of the Act , and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

3. ☐ Buffer Zone Impacts:Shortest distance between limit of project disturbance and the wetland resource area specified in 310CMR10.02(1)(a). _____ a. linear feet

Inland Resource Area Impacts:(For Approvals Only):

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. ☑ Bank	295 a. linear feet	_____ b. linear feet	0 c. linear feet	_____ d. linear feet
5. ☐ Bordering Vegetated Wetland	_____ a. square feet	_____ b. square feet	_____ c. square feet	_____ d. square feet
6. ☑ Land under Waterbodies and Waterways	432 a. square feet	_____ b. square feet	0 c. square feet	_____ d. square feet
	0 e. c/y dredged	_____ f. c/y dredged		
7. ☐ Bordering Land Subject to Flooding	_____ a. square feet	_____ b. square feet	_____ c. square feet	_____ d. square feet

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:211-1017
eDEP Transaction #:1895296
City/Town:MANSFIELD

Cubic Feet Flood Storage	e. cubic feet	f. cubic feet	g. cubic feet	h. cubic feet
8.☐ Isolated Land Subject to Flooding	a. square feet	b. square feet		
Cubic Feet Flood Storage	c. cubic feet	d. cubic feet	e. cubic feet	f. cubic feet
9.☐ Riverfront Area	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	g. square feet	h. square feet	i. square feet	j. square feet

Coastal Resource Area Impacts:

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10.☐ Designated Port Areas	Indicate size under Land Under the Ocean, below			
11.☐ Land Under the Ocean	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
12.☐ Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13.☐ Coastal Beaches	a. square feet	b. square feet	c. c/y nourishment	d. c/y nourishment
14.☐ Coastal Dunes	a. square feet	b. square feet	c. c/y nourishment	d. c/y nourishment
15.☐ Coastal Banks	a. linear feet	b. linear feet		
16.☐ Rocky Intertidal Shores	a. square feet	b. square feet		
17.☐ Salt Marshes	a. square feet	b. square feet	c. square feet	d. square feet
18.☐ Land Under Salt Ponds	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
19.☐ Land Containing Shellfish	a. square feet	b. square feet	c. square feet	d. square feet
20.☐ Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:211-1017
eDEP Transaction #:1895296
City/Town:MANSFIELD

	c. c/y dredged	d. c/y dredged
21. ☐ Land Subject to Coastal Storm Flowage	a. square feet	b. square feet

22.

☐ Restoration/Enhancement (For Approvals Only)

If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c & d or B.17.c & d above, please entered the additional amount here.

a. square feet of BVW	b. square feet of Salt Marsh

23.

☑ Streams Crossing(s)

If the project involves Stream Crossings, please enter the number of new stream crossings/number of replacement stream crossings.

0	1
a. number of new stream crossings	b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
   a. the work is a maintenance dredging project as provided for in the Act; or
   b. the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order.
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not exceed the issuance date of the original Final Order of Conditions.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.
8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.
9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:211-1017
eDEP Transaction #:1895296
City/Town:MANSFIELD

the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work..

10. A sign shall be displayed at the site not less then two square feet or more than three square feet in size bearing the words,

" Massachusetts Department of Environmental Protection"
[or 'MassDEP"]
File Number :"211-1017"

11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before Mass DEP.
12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.
13. The work shall conform to the plans and special conditions referenced in this order.
14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.
15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.
17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.
18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

NOTICE OF STORMWATER CONTROL AND MAINTENANCE REQUIREMENTS

19. The work associated with this Order(the "Project") is (1) ☑ is not (2)☐ subject to the Massachusetts Stormwater Standards. If the work is subject to Stormwater Standards, then the project is subject to the following conditions;

a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Construction General Permit as required by Stormwater Standard 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.

b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:211-1017
eDEP Transaction #:1895296
City/Town:MANSFIELD

Registered Professional Engineer provides a Certification that: *i.* all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures; *ii.*. as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized; *iii.* any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10; *iv.* all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition; *v.* any vegetation associated with post-construction BMPs is suitably established to withstand erosion.

c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 19(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following: i.) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and ii.) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.

d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Multi-Sector General Permit.

e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 19(f) through 19(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 19(f) through 19(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.

f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.

g) The responsible party shall:

1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:211-1017
eDEP Transaction #:1895296
City/Town:MANSFIELD

the O&M Plan approved by the issuing authority.

h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.

i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.

j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.

k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.

l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions:

SEE ATTACHMENT CALLED: "OOC RT 106-RT 140 TO COPELAND DRIVE SE211-1017 SPECIAL CONDITIONS" SPECIAL CONDITIONS FOR ORDER OF CONDITIONS FOR ROADWAY AND PEDESTRIAN IMPROVEMENTS TO CHAUNCY ST. (RT. 106) FROM THE INTERSECTION OF COPELAND DR. TO THE RT. 140 INTERSECTION, MANSFIELD, MA (DEP SE 211-1017) UNDER THE MANSFIELD PROTECTION BYLAW CHAPTER 220

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:211-1017
eDEP Transaction #:1895296
City/Town:MANSFIELD

D. Findings Under Municipal Wetlands Bylaw or Ordinance

1.Is a municipal wetlands bylaw or ordinance applicable? ☑ Yes ☐ No

2.The Conservation Commission hereby(check one that applies):

a. ☐ DENIES the proposed work which cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw specifically:

1. Municipal Ordinance or Bylaw _____ 2. Citation _____

Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order or Conditions is issued. Which are necessary to comply with a municipal ordinance or bylaw:

b. ☑ APPROVES the proposed work, subject to the following additional conditions.

1. Municipal Ordinance or Bylaw MANSFIELD WETLANDS PROTECTION BYLAW 2. Citation CHAPTER 220

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

The special conditions relating to municipal ordinance or bylaw are as follows:
SEE ATTACHMENT CALLED: "OOC RT 106-RT 140 TO COPELAND DRIVE SE211-1017 SPECIAL CONDITIONS" SPECIAL CONDITIONS FOR ORDER OF CONDITIONS FOR ROADWAY AND PEDESTRIAN IMPROVEMENTS TO CHAUNCY ST. (RT. 106) FROM THE INTERSECTION OF COPELAND DR. TO THE RT. 140 INTERSECTION, MANSFIELD, MA (DEP SE 211-1017) UNDER THE MANSFIELD PROTECTION BYLAW CHAPTER 220

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:211-1017
eDEP Transaction #:1895296
City/Town:MANSFIELD

E. Signatures

This Order is valid for three years from the date of issuance, unless otherwise specified pursuant to General Condition #4. If this is an Amended Order of Conditions, the Amended Order expires on the same date as the original Order of Conditions.

5/14/2025
1. Date of Original Order

Please indicate the number of members who will sign this form. This Order must be signed by a majority of the Conservation Commission.

5
2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signatures:

Ryan O'Hara

Michael Healey

Laura Konick

Aaron Roth

Aaron Gallagher

☐ by hand delivery on

Date

☐ by certified mail, return receipt requested, on

Date

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

G. Recording Information

This Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:211-1017
eDEP Transaction #:1895296
City/Town:MANSFIELD

subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

MANSFIELD
Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

MANSFIELD
Conservation Commission

Please be advised that the Order of Conditions for the Project at:

CHAUNCY STREET * (END 42.03070 - 71.22737)	211-1017
Project Location	MassDEP File Number

Has been recorded at the Registry of Deeds of:

County	Book	Page

for:

Property Owner		

and has been noted in the chain of title of the affected property in:

Book	Page

In accordance with the Order of Conditions issued on:

Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

Rev. 4/1/2010

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 5 – Order of Conditions
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File # SE 211-1017

eDEP Transaction #

Mansfield
City/Town

E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

1. Date of Issuance

Please indicate the number of members who will sign this form. This Order must be signed by a majority of the Conservation Commission.

2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signature	Printed Name
Michael Healey	Michael Healey
	Aaron Roth
	Aaron Gallagher
	Ryan O'Hara
	Laura Konick
	Robert MacDonald

☐ by hand delivery on

Date

☐ by certified mail, return receipt requested, on

Date

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	1	28
PROJECT FILE NO.	613052		

TITLE SHEET & INDEX

PLAN AND PROFILE OF

IMPROVEMENTS OF CHAUNCY STREET (ROUTE 106)
ROUTE 140 TO COPELAND DRIVE (PHASE 1)

IN THE TOWN OF

MANSFIELD

BRISTOL COUNTY

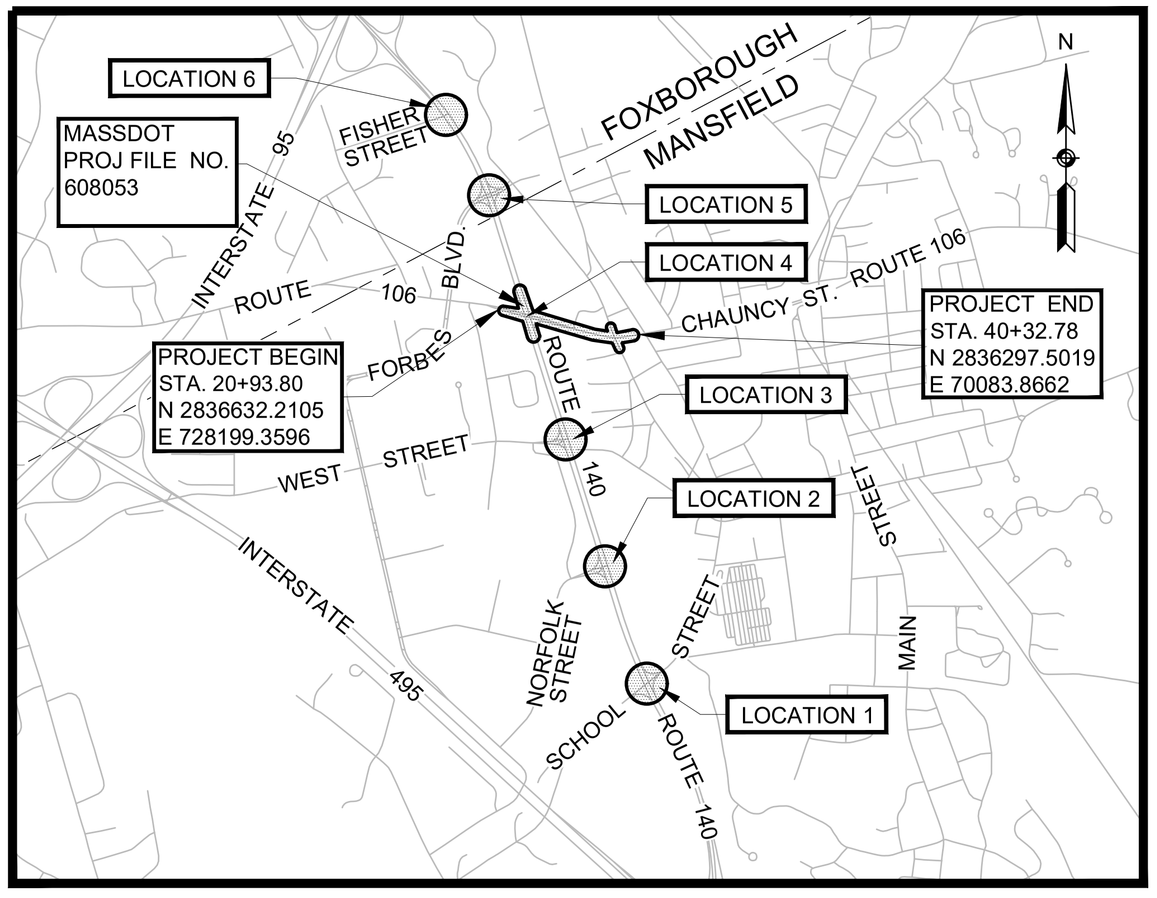
FEDERAL AID PROJECT NO.

100% SUBMITTAL

THE 2023 MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, THE 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, THE LATEST MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS WITH MASSACHUSETTS AMENDMENTS, THE 1990 STANDARD DRAWINGS FOR SIGNS AND SUPPORTS, THE 1968 STANDARD DRAWINGS FOR TRAFFIC SIGNALS AND HIGHWAY LIGHTING, AND THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, WILL GOVERN.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
2	LEGEND & ABBREVIATIONS
3	KEY PLAN
5-9	TYPICAL SECTIONS & PAVEMENT NOTES
4	GENERAL NOTES
10-17	CONSTRUCTION DETAILS
18-22	CONSTRUCTION PLAN
23-27	DRAINAGE & UTILITY PLAN
28	IMPACT PLAN



PROJECT LOCATION

0 1500 3000 4500 6000

SCALE: 1" = 1500'

LENGTH OF PROJECT (CHAUNCY STREET) = 1,240 FEET = 0.23 MILES

DESIGN DESIGNATION - CHAUNCY STREET (ROUTE 106)

DESIGN SPEED	40 MPH
ADT (2020)	13,900
ADT (2030)	20,655
K	6.0%
D	55% (WB)
T (PEAK HOUR)	10.1%
T (AVERAGE DAY)	6.0%
DHV	1,240
DDHV	685
FUNCTIONAL CLASSIFICATION	URBAN PRINCIPAL ARTERIAL

DESIGN DESIGNATION - COPELAND DRIVE

DESIGN SPEED	40 MPH
ADT (2020)	9,365
ADT (2030)	13,915
K	9.0%
D	64% (SB)
T (PEAK HOUR)	4.3%
T (AVERAGE DAY)	1.7%
DHV	1,255
DDHV	800
FUNCTIONAL CLASSIFICATION	URBAN MINOR ARTERIAL

NOTICE OF INTENT PERMIT SET

Plan Of Record

DATE	DESCRIPTION	REV #
05/14/2025	RESPONSE TO TOWN COMMENTS	REV 4
04/24/2025	RESPONSE TO TOWN COMMENTS	REV 3
02/10/2025	100% SUBMISSION	REV 2
01/26/2024	75% SUBMISSION	REV 1
03/18/2021	25% SUBMISSION	REV 0

PREPARED BY:

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. ROY
CIVIL ENGINEER
No. 41348
REGISTERED PROFESSIONAL ENGINEER
5/14/25

BETA
www.BETA-Inc.com

MassDOT
Massachusetts Department of Transportation
Highway Division

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER DATE

Proposal No. 613052-131228

608944_HD(6076 TITLE).DWG Plotted on 14-May-2025 8:12 AM

A00861 - 15

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
JB	JB	JERSEY BARRIER
CB	CB	CATCH BASIN
		CATCH BASIN CURB INLET
		GUTTER INLET
FP	FP	FLAG POLE
GP	GP	GAS PUMP
MB	MB	MAIL BOX
		POST SQUARE
		POST CIRCULAR
WELL	WELL	WELL
EHH	EHH	ELECTRIC HANDHOLE
		FENCE GATE POST
GG	GG	GAS GATE
BHL #	BHL #	BORING HOLE
MW #	MW #	MONITORING WELL
TP #	TP #	TEST PIT
		HYDRANT
		LIGHT POLE
CO.BD.		COUNTY BOUND
		GPS POINT
		CABLE MANHOLE
		DRAINAGE MANHOLE OR CB WITH FRAME AND COVER
		DRAINAGE MANHOLE (5' DIA)
		ELECTRIC MANHOLE
		GAS MANHOLE
		MISC MANHOLE
		SEWER MANHOLE
		TELEPHONE MANHOLE
		WATER MANHOLE
MHB	MHB	MASSACHUSETTS HIGHWAY BOUND
MON		MONUMENT
SB		STONE BOUND
TB		TOWN OR CITY BOUND
		TRAVERSE OR TRIANGULATION STATION
TPL or GUY	TPL or GUY	TROLLEY POLE OR GUY POLE
HTP		TRANSMISSION POLE
UFB	UFB	UTILITY POLE W/ FIREBOX
UPDL	UPDL	UTILITY POLE WITH DOUBLE LIGHT
ULT	ULT	UTILITY POLE W / 1 LIGHT
UPL	UPL	UTILITY POLE
		BUSH
SIZE & TYPE		TREE
		STUMP
		SWAMP / MARSH
WG	WG	WATER GATE
PM	PM	PARKING METER
		OVERHEAD CABLE/WIRE
		CURBING
99		CONTOURS (ON-THE-GROUND SURVEY DATA)
100 99		CONTOURS (PHOTOGRAMMETRIC DATA)
		UNDERGROUND DRAIN PIPE (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND ELECTRIC DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND GAS MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND SEWER MAIN (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND TELEPHONE DUCT (DOUBLE LINE 24 INCH AND OVER)
		UNDERGROUND WATER MAIN (DOUBLE LINE 24 INCH AND OVER)
		BALANCED STONE WALL
		GUARD RAIL - STEEL POSTS
		GUARD RAIL - WOOD POSTS
x	x	CHAIN LINK OR METAL FENCE
		WOOD FENCE
SCB	SCB	SEDIMENT CONTROL BARRIER
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		LIMIT OF EDGE OF PAVEMENT OR COLD PLANE AND OVERLAY
		BANK OF RIVER OR STREAM
		BORDER OF WETLAND
		100 FT WETLAND BUFFER
		200 FT RIVERFRONT BUFFER
		STATE HIGHWAY LAYOUT
		TOWN OR CITY LAYOUT
		COUNTY LAYOUT
		RAILROAD SIDELINE
		TOWN OR CITY BOUNDARY LINE
℄		PROPERTY LINE OR APPROXIMATE PROPERTY LINE
		EASEMENT

TRAFFIC SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
1	1	CONTROLLER PHASE ACTUATED
		TRAFFIC SIGNAL HEAD (SIZE AS NOTED)
		WIRE LOOP DETECTOR (6' x 6' TYP UNLESS OTHERWISE SPECIFIED)
		VIDEO DETECTION CAMERA
		MICROWAVE DETECTOR
		PEDESTRIAN PUSH BUTTON, SIGN (DIRECTIONAL ARROW AS SHOWN) AND SADDLE
		EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD
		VEHICULAR SIGNAL HEAD, OPTICALLY PROGRAMMED
		FLASHING BEACON
		PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
RRSG	RRSG	RAILROAD SIGNAL
OR		SIGNAL POST AND BASE (ALPHA-NUMERIC DESIGNATION NOTED)
	20'	MAST ARM, SHAFT AND BASE (ARM LENGTH AS NOTED)
		HIGH MAST POLE OR TOWER
		SIGN AND POST
		SIGN AND POST (2 POSTS)
	20'	MAST ARM WITH LUMINAIRE
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		CONTROL CABINET, POLE MOUNTED
		FLASHING BEACON CONTROL AND METER PEDESTAL
		LOAD CENTER ASSEMBLY
		PULL BOX 12"x12" (OR AS NOTED)
		ELECTRIC HANDHOLE 12"x24" (OR AS NOTED)
		TRAFFIC SIGNAL CONDUIT

PAVEMENT MARKINGS SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		PAVEMENT ARROW - WHITE
ONLY	ONLY	LEGEND "ONLY" - WHITE
	SL	STOP LINE - 12" WHITE LINE 4' BEHIND CW (TYP)
	CW	CROSSWALK, 2 - 12" WHITE LINES (WIDTH VARIES)
	SWL	SOLID WHITE LINE - 6"
	SWGL	SOLID WHITE GORE LINE - 12" @ 45° (SPACING NOTED)
	SWCHL	SOLID WHITE CHANNELIZING LINE - 12" (SPACING NOTED)
	SYL	SOLID YELLOW LINE - 6"
	SYGL	SOLID YELLOW GORE LINE - 12" @ 45° (SPACING NOTED)
	BWL	BROKEN WHITE LINE - 6" (10' LINE, 30' GAP)
	BYL	BROKEN YELLOW LINE - 6" (10' LINE, 30' GAP)
	DWLEx	DOTTED WHITE LINE EXTENSION - 6" LINE (2' LINE, 6' GAP)
	DBYL	DOUBLE YELLOW LINE - 2 - 6" LINES

ABBREVIATIONS

GENERAL

AADT	ANNUAL AVERAGE DAILY TRAFFIC
ABAN	ABANDON
ADJ	ADJUST
APPROX.	APPROXIMATE
A.C.	ASPHALT CONCRETE
ACCM PIPE	ASPHALT COATED CORRUGATED METAL PIPE
BIT.	BITUMINOUS
BC	BOTTOM OF CURB
BD.	BOUND
BL	BASELINE
BLDG	BUILDING
BM	BENCHMARK
BO	BY OTHERS
BOS	BOTTOM OF SLOPE
BR.	BRIDGE
CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CIP	CAST IRON PIPE
CLF	CHAIN LINK FENCE
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DHV	DESIGN HOURLY VOLUME
DI	DROP INLET
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DW	STEADY DON'T WALK - PORTLAND ORANGE
DWP	DETECTABLE WARNING PANEL
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EXIST (or EX)	EXISTING
EXC	EXCAVATION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FDN.	FOUNDATION
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GG	GAS GATE
GI	GUTTER INLET
GICI	GUTTER INLET WITH CURB INLET
GIP	GALVANIZED IRON PIPE
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HDW	HEADWALL
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HYD	HYDRANT
INV	INVERT
JCT	JUNCTION
L	LENGTH OF CURVE
LB	LEACH BASIN
LP	LIGHT POLE
LT	LEFT
MAX	MAXIMUM
MB	MAILBOX
MH	MANHOLE
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
NIC	NOT IN CONTRACT
NO.	NUMBER
O.C.	ON CENTER
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PCR	PEDESTRIAN CURB RAMP
P.G.L.	PROFILE GRADE LINE
PI	POINT OF INTERSECTION
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PT	POINT OF TANGENCY

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	2	28
PROJECT FILE NO.	613052		

LEGEND & ABBREVIATIONS

ABBREVIATIONS (cont.)

GENERAL

PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
PVMT	PAVEMENT
PWW	PAVED WATER WAY
R	RADIUS OF CURVATURE
R&D	REMOVE AND DISPOSE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY	ROADWAY
REM	REMOVE
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RT	RIGHT
SB	STONE BOUND
SGE	SLOPED GRANITE EDGING
SHLD	SHOULDER
SMH	SEWER MANHOLE
ST	STREET
STA	STATION
SSD	STOPPING SIGHT DISTANCE
SHLO	STATE HIGHWAY LAYOUT LINE
SW	SIDEWALK
T	TANGENT DISTANCE OF CURVE/TRUCK %
TAN	TANGENT
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
T.S.	TRAFFIC SIGNAL
TYP	TYPICAL
UP	UTILITY POLE
VAR	VARIES
VERT	VERTICAL
VC	VERTICAL CURVE
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN
X-SECT	CROSS SECTION

TRAFFIC SIGNAL ABBREVIATIONS

CAB	CABINET
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
DW	STEADY UPRAISED HAND
FDW	FLASHING UPRAISED HAND
FR	FLASHING CIRCULAR RED
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR YELLOW
FYL	FLASHING YELLOW LEFT ARROW
FYR	FLASHING YELLOW RIGHT ARROW
G	STEADY CIRCULAR GREEN
GL	STEADY GREEN LEFT ARROW
GR	STEADY GREEN RIGHT ARROW
GSL	STEADY GREEN SLASH LEFT ARROW
GSR	STEADY GREEN SLASH RIGHT ARROW
GV	STEADY GREEN VERTICAL ARROW
OL	OVERLAP
PED	PEDESTRIAN
PTZ	PAN, TILT, ZOOM
R	STEADY CIRCULAR RED
RL	STEADY RED LEFT ARROW
RR	STEADY RED RIGHT ARROW
TR SIG	TRAFFIC SIGNAL
TSC	TRAFFIC SIGNAL CONDUIT
W	STEADY WALKING PERSON
Y	STEADY CIRCULAR YELLOW
YL	STEADY YELLOW LEFT ARROW

Proposal No. 613052-131228

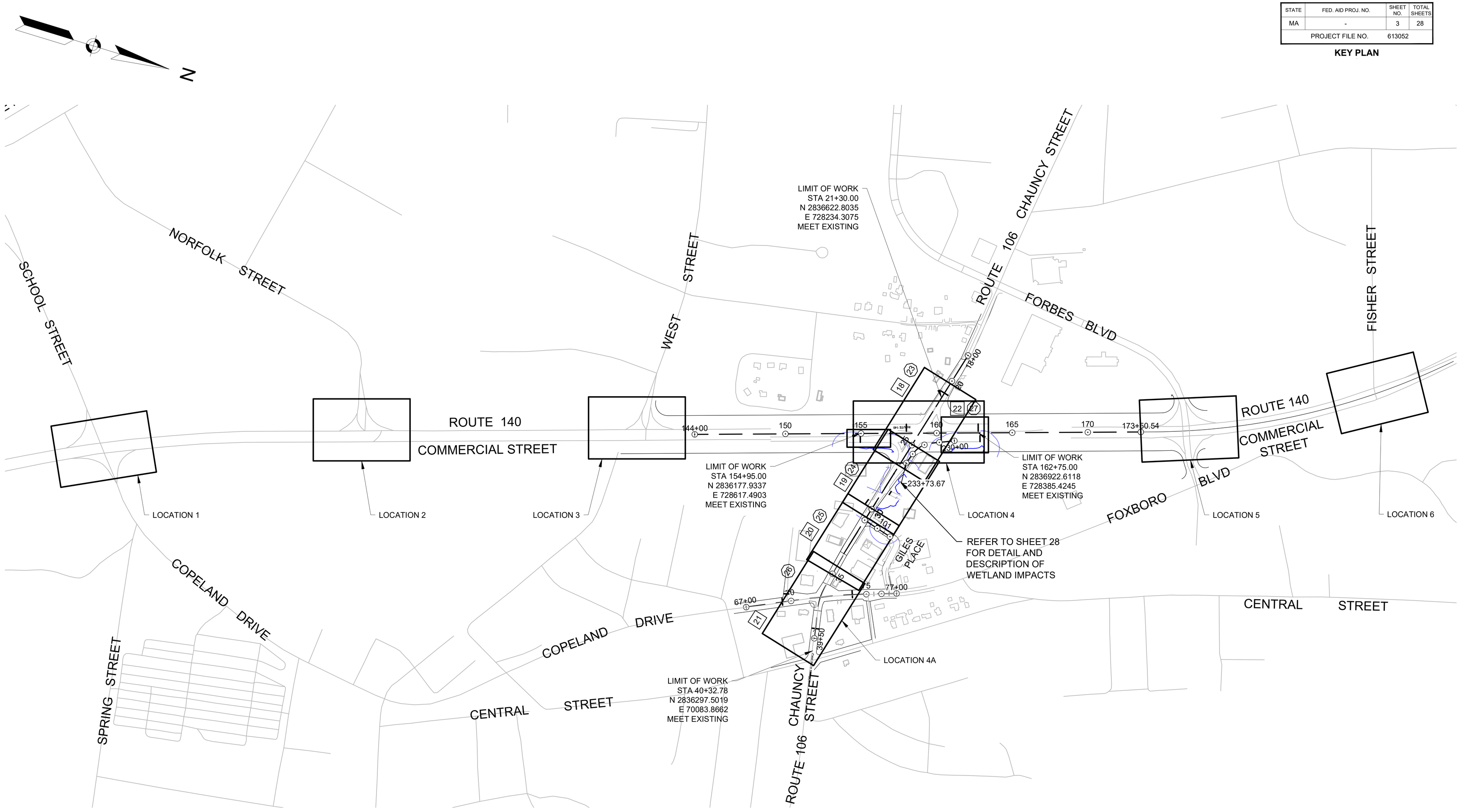
608944_HDI(6076_BORDER).DWG Plotted on 30-Dec-2024 9:41 AM

Proposal No. 613052-131228

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	3	28
PROJECT FILE NO.	613052		

KEY PLAN



SHEET NUMBER LEGEND

- XX — CONSTRUCTION PLAN
- XX — DRAINAGE & UTILITY PLAN

608944_HD(6076 KEY).DWG Plotted on 14-May-2025 8:12 AM

A00861 - 17

PAVEMENT NOTES

PAVEMENT MILLING AND OVERLAY

SURFACE COURSE: 1-3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER

PAVEMENT MILLING: 1-3/4" FINE MILLING

LEVELING COURSE: VARIABLE DEPTH SUPERPAVE LEVELING COURSE - 12.5 (SLC-12.5), COMPACTED 1-1/2" MAX LAYERS

FULL DEPTH PAVEMENT CONSTRUCTION

SURFACE COURSE: 1-3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER

INTERMEDIATE: 1-3/4" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER ASPHALT COURSE: EMULSION FOR TACK COAT OVER

BASE COURSE: 4 " SUPERPAVE BASE COURSE 25.0 (SBC-25.0) OVER

SUB-BASE: 4" DENSE GRADED CRUSHED STONE FOR SUB-BASE OVER 8" GRAVEL BORROW, TYPE b

FULL DEPTH PAVEMENT BOX WIDENING ≤4' WIDE

SURFACE COURSE: 1-3/4" SUPERPAVE SURFACE COURSE 12.5 (SSC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER

INTERMEDIATE 1-3/4" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER ASPHALT EMULSION FOR TACK COAT OVER

BASE COURSE: 6" HES CEMENT CONCRETE BASE COURSE OVER

SUB-BASE: 8" GRAVEL BORROW, TYPE b

PROPOSED CEMENT CONCRETE SIDEWALKS, SHARED-USE PATHS, ISLANDS & PEDESTRIAN CURB RAMPS

SURFACE: 4" CEMENT CONCRETE 4000 PSI, 3/4", 610 OVER

FOUNDATION: 8" GRAVEL BORROW, TYPE b

PROPOSED CEMENT CONCRETE DRIVEWAYS

SURFACE: 6" CEMENT CONCRETE 4000 PSI, 3/4", 610 OVER

FOUNDATION: 8" GRAVEL BORROW, TYPE b

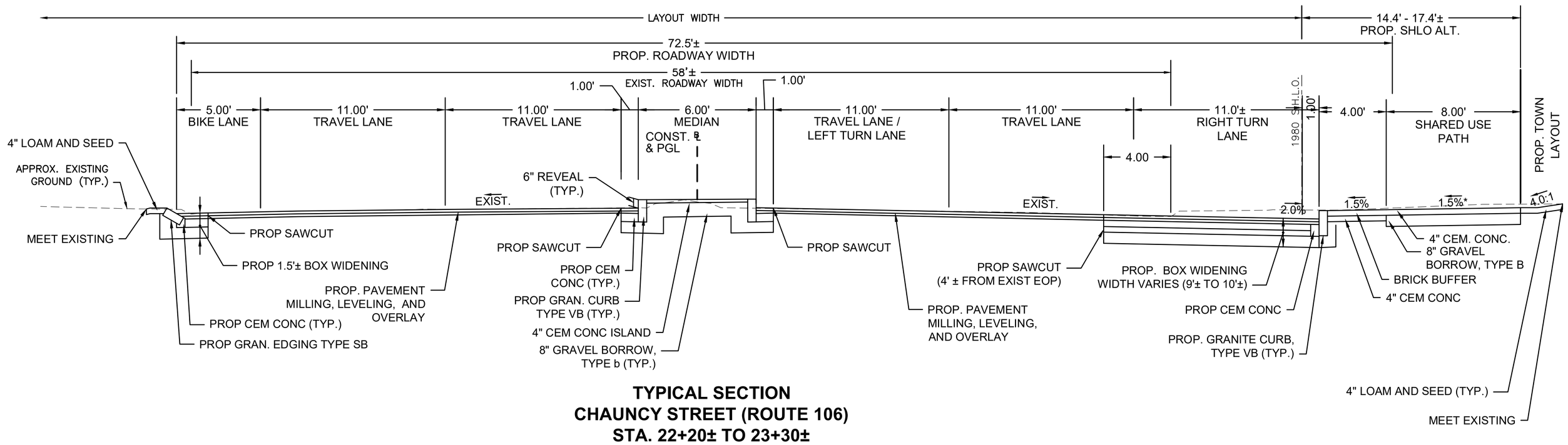
HMA DRIVEWAYS

SURFACE: 1-1/2" SUPERPAVE SURFACE COURSE 9.5 (SSC-9.5) OVER 2-1/2" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER

BASE COURSE: 8" GRAVEL BORROW, TYPE b

PROJECT TACK COAT NOTES

TACK COAT: ASPHALT EMULSION FOR TACK COAT, GRADE RS-1
SHALL BE PLACED AT A RATE OF:
0.07-0.09 GALLONS PER SQUARE YARD OVER MILLED SURFACES
0.06-0.08 GALLONS PER SQUARE YARD OVER SMOOTH TIGHT PAVEMENTS PRIOR TO PAVING AN OVERLAY



TYPICAL SECTION
CHAUNCY STREET (ROUTE 106)
STA. 22+20± TO 23+30±

NOT TO SCALE

* TOLERANCE FOR CONSTRUCTION ±0.5%

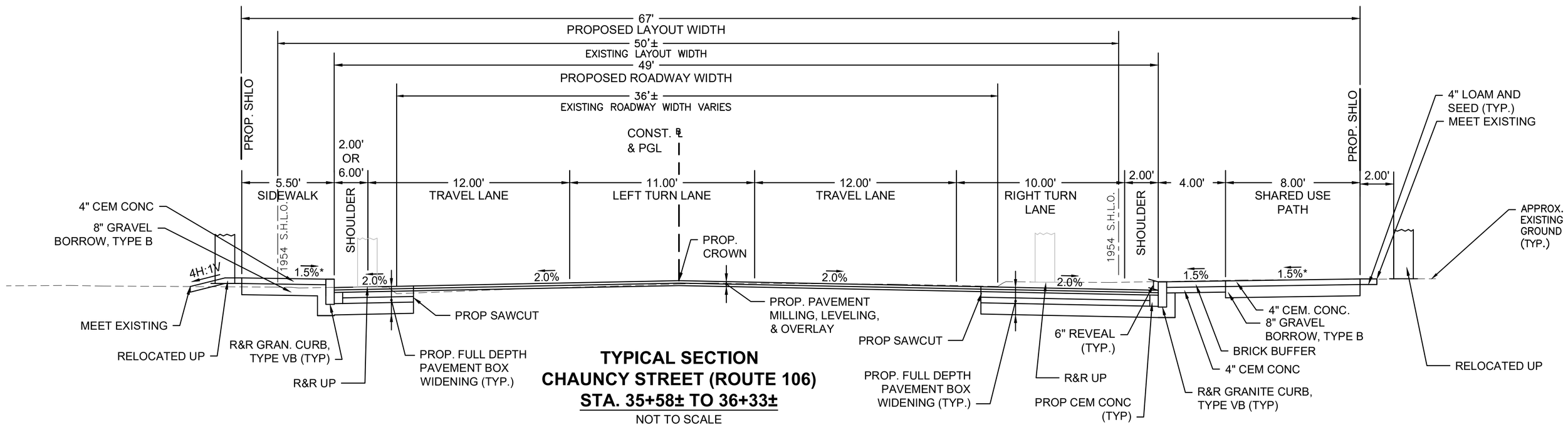
Proposal No. 613052-131228

TYPICAL SECTIONS.DWG Plotted on 14-May-2025 8:12 AM

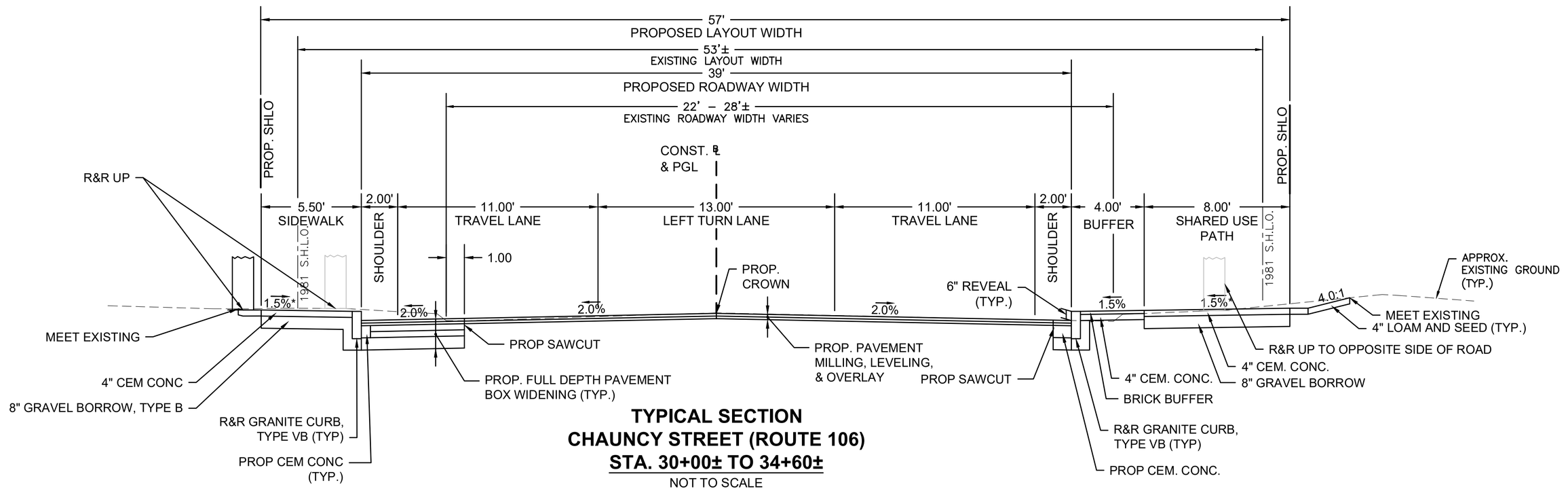
MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	6	28
PROJECT FILE NO.	613052		

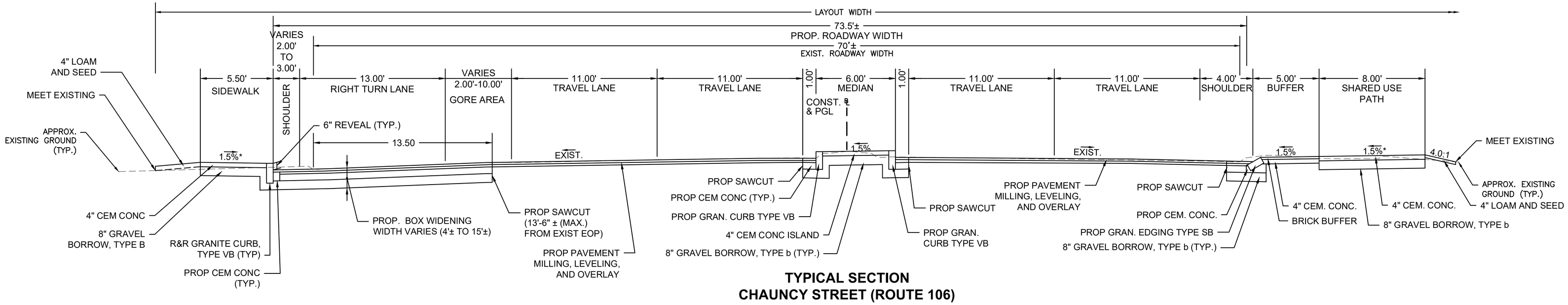
TYPICAL SECTIONS



TYPICAL SECTION
CHAUNCY STREET (ROUTE 106)
STA. 35+58± TO 36+33±
NOT TO SCALE



TYPICAL SECTION
CHAUNCY STREET (ROUTE 106)
STA. 30+00± TO 34+60±
NOT TO SCALE



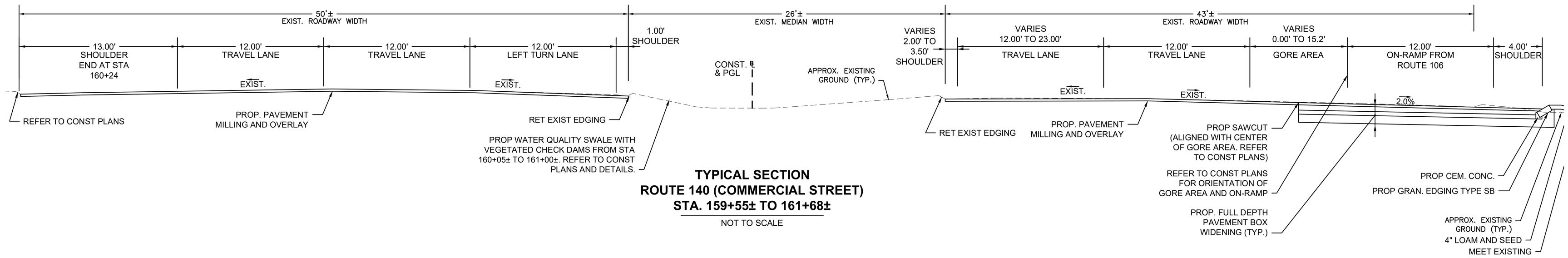
TYPICAL SECTION
CHAUNCY STREET (ROUTE 106)
STA. 25+00± TO 25+71±
NOT TO SCALE

* TOLERANCE FOR CONSTRUCTION ±0.5%

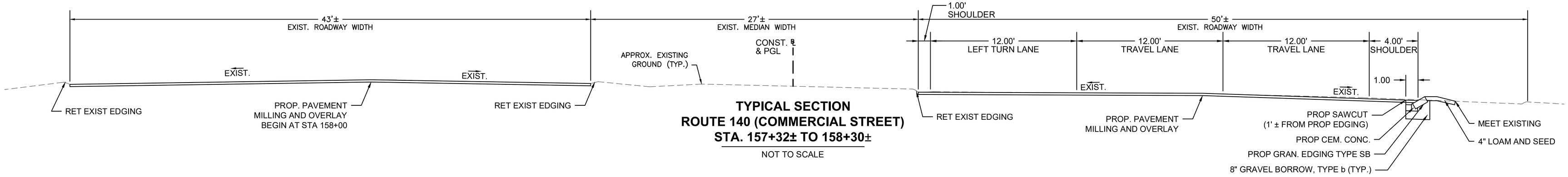
MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	7	28
PROJECT FILE NO.	613052		

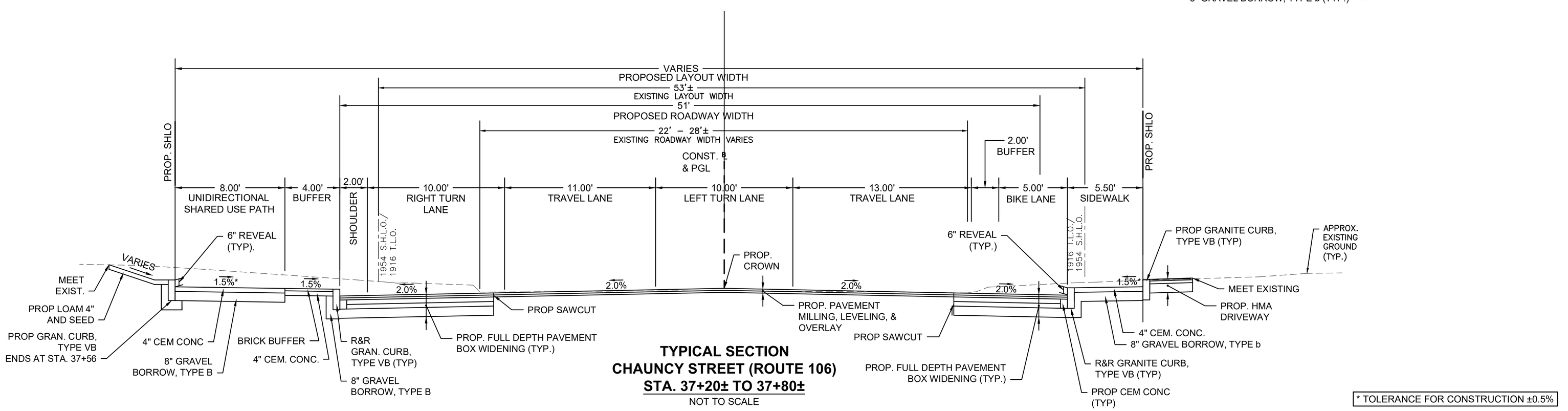
TYPICAL SECTIONS



TYPICAL SECTION
ROUTE 140 (COMMERCIAL STREET)
STA. 159+55± TO 161+68±
NOT TO SCALE



TYPICAL SECTION
ROUTE 140 (COMMERCIAL STREET)
STA. 157+32± TO 158+30±
NOT TO SCALE



TYPICAL SECTION
CHAUNCY STREET (ROUTE 106)
STA. 37+20± TO 37+80±
NOT TO SCALE

* TOLERANCE FOR CONSTRUCTION ±0.5%

Proposal No. 613052-131228

TYPICAL SECTIONS.DWG Plotted on 14-May-2025 8:12 AM

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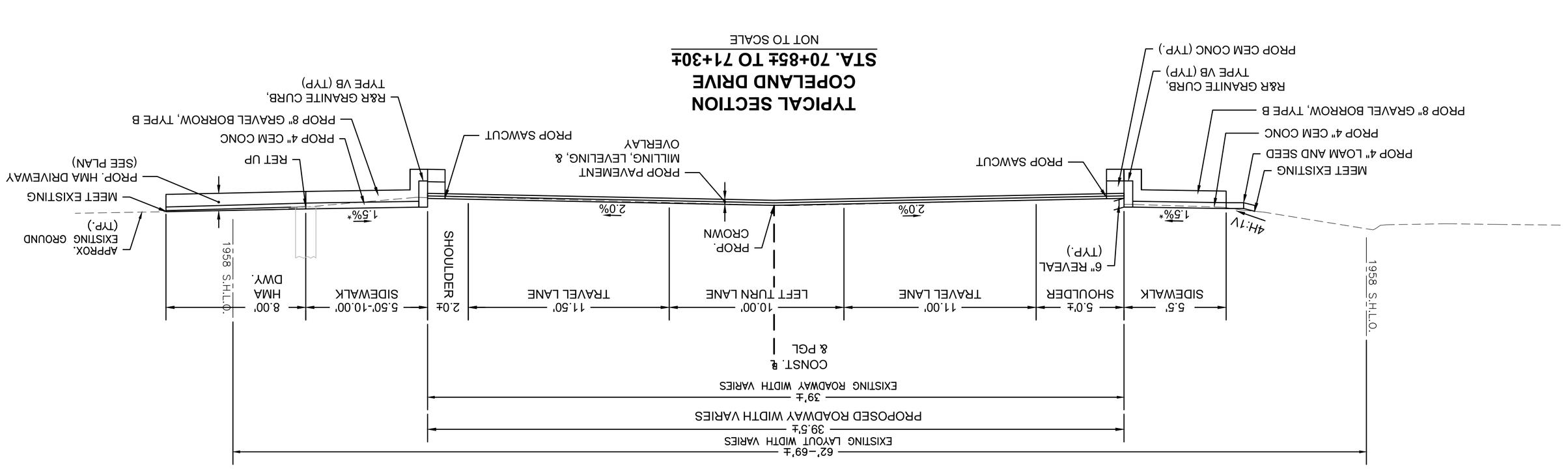
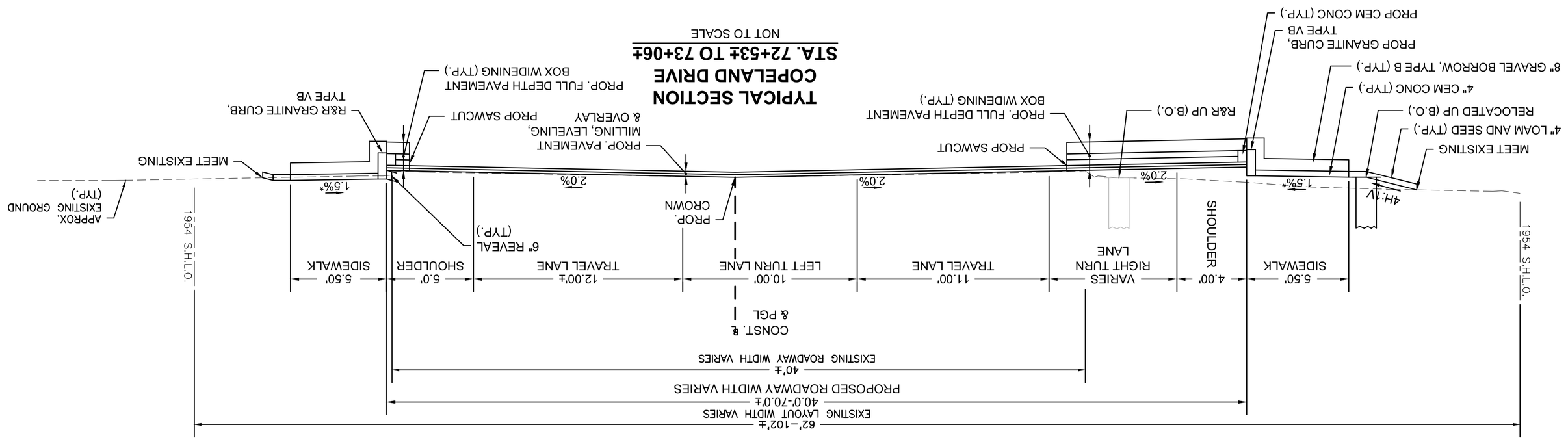


TYPICAL SECTION
COPELAND DRIVE
STA. 70+85± TO 71+30±
NOT TO SCALE



TYPICAL SECTION
COPELAND DRIVE
STA. 72+53± TO 73+06±
NOT TO SCALE

MANSFIELD
CHAUNCY STREET (ROUTE 106)

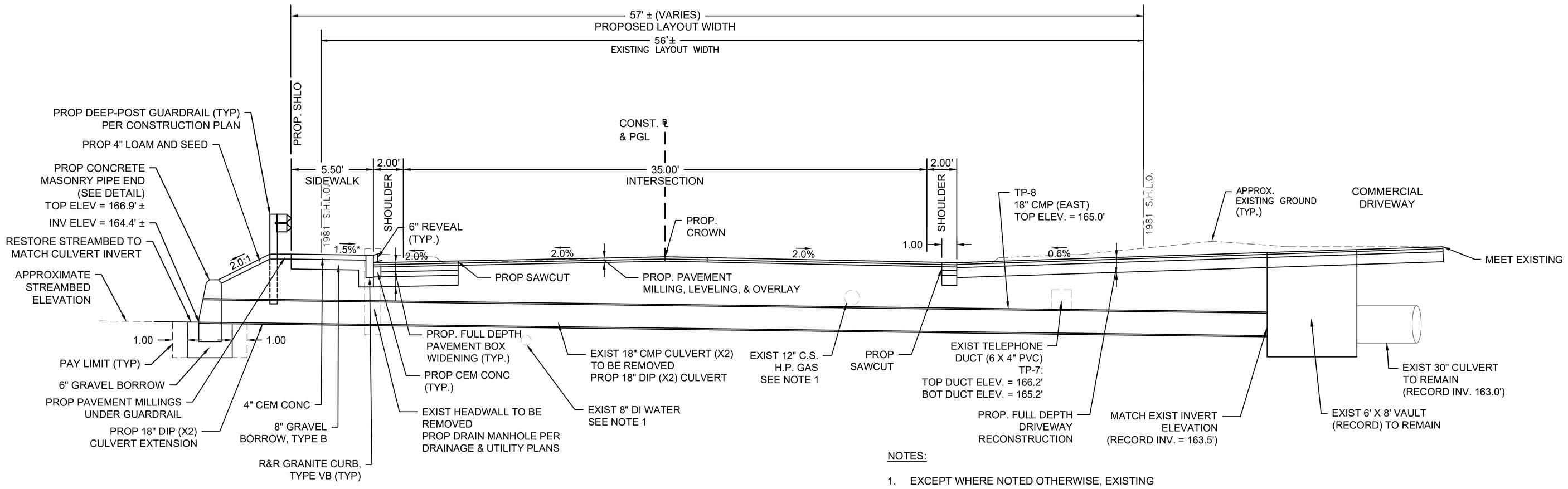
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	8	28
PROJECT FILE NO. 613052			

TYPICAL SECTIONS

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	9	28
PROJECT FILE NO.	613052		

TYPICAL SECTIONS



NOTES:

1. EXCEPT WHERE NOTED OTHERWISE, EXISTING UTILITIES ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. ACTUAL LOCATIONS AND ELEVATIONS TO BE FIELD VERIFIED BY CONTRACTOR.

TYPICAL SECTION
CULVERT REPLACEMENT
CHAUNCY STREET (ROUTE 106)
STA. 29+77±

NOT TO SCALE

Proposal No. 613052-131228

TYPICAL SECTIONS.DWG Plotted on 14-May-2025 8:12 AM

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	9	28
PROJECT FILE NO.	613052		

GENERAL NOTES

GENERAL NOTES

1. THE LOCATION OF SUBSURFACE UTILITIES SHOWN IS APPROXIMATE AND NOT GUARANTEED TO BE COMPLETE OR ACCURATE. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND ELEVATIONS OF EXISTING UTILITY LINES AND STRUCTURES PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR MUST NOTIFY DIG SAFE 72 HOURS PRIOR TO ANY EXCAVATION, DEMOLITION OR EXPLOSIVE WORK IN PUBLIC OR PRIVATE WAYS OR UTILITY COMPANY RIGHT-OF-WAY OR EASEMENT.
2. DRAINAGE ELEVATIONS ARE PROVIDED FOR DESIGN PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY BY TEST PIT, THE LOCATIONS OF EXISTING UTILITIES WHICH MAY CONFLICT WITH THE PROPOSED DRAINAGE DESIGN. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE AS APPROVED OR DIRECTED BY THE ENGINEER. ONLY AFTER THE CONTRACTOR VERIFIES ELEVATIONS FOR THE CONSTRUCTABILITY OF THE DRAINAGE SYSTEM SHALL ANY STRUCTURES BE ORDERED. ANY FIELD ADJUSTMENTS TO LINE & GRADE UP TO A DEPTH OF 5' SHALL BE INCLUDED IN THE COST OF THE PIPE. PIPE EXCAVATION GREATER THAN 5' WILL BE PAID UNDER CLASS B TRENCH EXCAVATION.
3. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR THE RESOLUTION OF THE CONFLICT.
4. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ABUTTING PROPERTIES AT ALL TIMES AND NOTIFY ALL ABUTTERS IN ADVANCE OF ANY INTERRUPTIONS TO ACCESS.
5. THE CONTRACTOR SHALL ALTER THE MASONRY OF THE TOP SECTION OF ALL EXISTING DRAINAGE AND SANITARY STRUCTURES AS NECESSARY FOR THE CHANGES IN GRADE, AND RESET ALL WATER AND DRAINAGE FRAMES, GRATES AND BOXES TO THE PROPOSED FINISH SURFACE GRADE. REQUIRED NEW MASONRY SHALL BE CLAY BRICK CONFORMING TO M4.05.2.
6. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, CABLE TV, FIRE ALARM AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES. ALL UTILITY CASTING SHALL BE ADJUSTED TO FINISH GRADE BY THEIR RESPECTIVE OWNERS.
7. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
8. THE TERM "PROPOSED" (PROP.) MEANS WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET" (R&R).
9. JOINTS BETWEEN NEW BITUMINOUS CONCRETE ROADWAY PAVEMENT AND SAWCUT EXISTING PAVEMENT SHALL BE SEALED WITH BITUMEN AND BACKSANDED.
10. DRAINAGE STRUCTURES SHALL BE RETAINED UNLESS NOTED OTHERWISE.
11. CATCH BASIN AND MANHOLE FRAMES AND GRATES/COVERS SHALL CLEARLY ALIGN WITH THE OPENINGS IN THE PRECAST STRUCTURES AND THE GRADE OF THE ROADWAY.
12. ALL EXISTING DRAINAGE PIPES THAT ARE NO LONGER BEING UTILIZED BY THE NEW DRAINAGE DESIGN WITHIN THE PROJECT LIMITS SHALL BE REMOVED OR ABANDONED AS NOTED.
13. WHERE DRAINAGE PIPES OR STRUCTURES ARE ABANDONED IN PLACE THE CONTRACTOR SHALL MAKE SURE THAT ALL CONNECTING PIPES, DOWN SPOUT FROM BUILDING, INLETS AND OUTLETS ARE PLUGGED. ALL LIVE CONNECTIONS SHALL BE CONNECTED TO THE NEW SYSTEM.
14. ALL CURB TIE DIMENSIONS ARE TO THE FACE OF THE CURB (GUTTER LINE) OR EDGE OF TRAVEL WAY.
15. CONSTRUCTION BASELINE TIES ARE SHOWN ON CURB TIE & GRADING PLANS.
16. PROPOSED SIDEWALKS AND PEDESTRIAN CURB RAMPS SHALL BE CONSTRUCTED TO THE NEAREST SCORE LINE OR EXPANSION JOINT IN THE EXISTING ADJACENT WALK SURFACE AS DIRECTED BY THE ENGINEER.
17. IN ALL LOCATIONS WHERE PROPOSED SIDEWALK TRANSITIONS DOWN TO MEET EXISTING GRADE, EXISTING SIDEWALK OR PAVED AREA, SLOPE SHALL NOT EXCEED 1:12.
18. THE LOCATION OF THE PROPOSED DRIVEWAY OPENINGS ARE SHOWN ON TIE AND GRADING PLANS. EXACT LOCATIONS MAY BE ADJUSTED IF NECESSARY OR AS REQUIRED BY THE ENGINEERS IN THE FIELD.
19. CONTRACTOR SHALL VERIFY LOCATION OF ALL OBJECTS (SIGNS, TREES, GRATE, POLES ETC.) TO BE SET WITHIN SIDEWALK PRIOR TO FINAL PLACEMENT TO PROVIDE A MINIMUM CLEAR PATH OF 36" EXCLUDING THE CURB. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY LOCATION WHICH CANNOT MEET THE CLEARANCE REQUIREMENTS.
20. SIGNS, POLES AND OTHER FEATURES LOCATED IN PROPOSED CEMENT CONCRETE SIDEWALK SHALL BE BOXED AND PROVIDED FLEXIBLE JOINT FILLER.
21. CONTRACTOR SHALL VERIFY EXISTING GRADES. IF ANY ADJUSTMENT IS REQUIRED DUE TO DIFFERENT EXISTING GRADES FOUND IN THE FIELD, THE CONTRACTOR SHALL NOTIFY AND SEEK THE APPROVAL OF THE ENGINEER PRIOR TO PERFORMING THE WORK.
22. IN AREAS OF NEW SIDEWALK, NEW EDGE OF PAVEMENT OR CURB WITHOUT SIDEWALK OR ANY WORK ADJACENT TO EXISTING GRASS AREAS, EVEN WHEN NO SLOPE-MATCHING OR GRADING IS NECESSARY AND THE EXISTING GRADE IS MET, LOAM BORROW AND SEED SHALL BE PROVIDED AS NECESSARY TO REPAIR AND COMPLETE ANY DAMAGE TO THE GRADE CAUSED BY THE CONSTRUCTION PROCESS.
23. IN FILL AREAS, TOP SOIL SHALL BE REMOVED FOR A DEPTH OF 12" (MIN.) OR AS DIRECTED BY THE ENGINEER. SUBGRADE AREAS WILL BE COMPACTED PRIOR TO THE PLACEMENT OF FILL MATERIAL.
24. ALL NEW GRANITE CURB SHALL BE MASSDOT TYPE VB, UNLESS OTHERWISE NOTED ON THE PLANS.
25. ALL PROPOSED PAVEMENT MARKINGS ON ROADWAYS SHALL BE REFLECTORIZED WHITE AND YELLOW THERMOPLASTIC.
26. SAFETY CONTROLS FOR CONSTRUCTION OPERATIONS SHALL BE IN ACCORDANCE WITH MASSDOT REQUIREMENTS AND THE LATEST VERSION OF THE MUTCD.
27. TREES TO BE RETAINED WHICH RESTRICT SIGHT DISTANCE OR RESTRICT HORIZONTAL OR VERTICAL CLEARANCES SHALL BE TRIMMED AS REQUIRED BY THE ENGINEER.
28. NO TREE SHALL BE REMOVED PRIOR TO APPROVAL BY THE TOWN OF MANSFIELD AND MASSDOT.
29. WHEN WORKING NEXT TO EXISTING WALLS, BERMS, AND OTHER STRUCTURES, CONTRACTOR SHALL EXERCISE EXTREME CAUTION NOT TO DISTURB THE EXISTING STRUCTURES. ANY DAMAGE TO THE EXISTING STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.
30. SURVEY FROM WESTERLY PROJECT LIMIT TO JUST WEST OF GILES PLACE WAS PERFORMED BY ALPHA SURVEY GROUP FROM FEBRUARY TO MAY, 2018 AND PRESENTED ON A PLAN CALLED "EXISTING CONDITIONS PLAN, COMMERCIAL ST. (ROUTE 140), CHAUNCY ST. (ROUTE 106), MANSFIELD, MA" DATED MAY 31, 2018. SURVEY FROM JUST WEST OF GILES PLACE TO THE EASTERLY PROJECT LIMIT WAS PERFORMED BY SITE DESIGN ENGINEERING, LLC, ON JUNE 26-27, 2018, MAY 13-14, 2019, AND MARCH 10-20, 2020 AND PRESENTED ON A PLAN CALLED "ROUTE SURVEY, CHAUNCY STREET, MANSFIELD, MASSACHUSETTS" DATED JULY 20, 2018 AND REVISED ON APRIL 2, 2020.
31. THE COORDINATES, IN FEET, ARE BASED UPON THE NORTH AMERICAN DATUM OF 1983 (NAD 83). THE VERTICAL DATUM IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
32. ALL PAVEMENT MARKINGS AND/OR SIGN NOTES ARE SHOWN ON THE SIGNS AND PAVEMENT MARKING PLANS.
33. THE EXPOSED EDGES OF ALL LONGITUDINAL AND TRANSVERSE SAW CUT JOINTS OF CONCRETE BASE SHALL BE TREATED WITH HOT POURED RUBBERIZED ASPHALT JOINT SEALANT MEETING MASSDOT SPECIFICATIONS.
34. DAMP PROOFING SHALL BE PROVIDED ON ALL CONCRETE MASONRY PIPE END SURFACES LOCATED BELOW GROUND.

PEDESTRIAN CURB RAMP NOTES

1. ALL PEDESTRIAN CURB RAMPS SHALL CONFORM TO THE REQUIREMENTS OF THE ARCHITECTURAL ACCESS BOARD (A.A.B.) AND THE AMERICANS WITH DISABILITIES ACT (A.D.A.). AND THE LATEST MASSDOT STANDARDS.
2. THE LOCATION OF PROPOSED PEDESTRIAN CURB RAMPS ARE SHOWN ON CONSTRUCTION PLANS AND THE PEDESTRIAN CURB RAMP DETAILS. EXACT LOCATIONS MAY BE ADJUSTED, IF NECESSARY, BY THE ENGINEER IN THE FIELD.
3. ALL PROPOSED PEDESTRIAN CURB RAMPS SHALL HAVE DETECTABLE WARNING PANELS INSTALLED IN ACCORDANCE WITH MASSDOT CONSTRUCTION STANDARD DRAWINGS. THE COLOR OF THE PANEL SHALL BE YELLOW UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
4. IN INSTANCES WHERE AN EXISTING MANHOLE, HANDHOLE OR OTHER "SURFACE" TYPE STRUCTURE THAT CANNOT BE REMOVED OR RESET, IS WITHIN THE ACTUAL PEDESTRIAN CURB RAMP PATH, THE STRUCTURE SHALL BE CAREFULLY ADJUSTED SUCH THAT THE TOPMOST SURFACES OF THE STRUCTURE COVER SHALL BE FLUSH WITH THE RAMP SURFACE AND SHALL MATCH THE SLOPE OF THE NEW PEDESTRIAN CURB RAMP AS DIRECTED BY THE ENGINEER.
5. THE TRANSITION SLOPE OF ANY CURB RAMP, EXCEPT MAXIMUM LENGTH HIGH SIDE TRANSITIONS, SHALL NOT EXCEED 7.5%, +/-0.5% FOR TOLERANCE OF CONSTRUCTION. PER AAB 521 CMR, FINISHED SLOPE MAY NOT EXCEED 8.33%. PROPOSED PEDESTRIAN CURB RAMP SLOPES, ESPECIALLY HIGH SIDE TRANSITIONS, SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO POURING OF CONCRETE AND ADJUSTED, IF NECESSARY, AT THE DIRECTION OF THE ENGINEER.

TEST PIT LOGS

1. TEST PITS WERE COMPLETED IN DECEMBER OF 2024 AND LOGGED BY GARY D. JAMES, P.E. OF BETA GROUP, INC. SE# 13765.
2. THE TEST PIT LOGS PROVIDED BELOW HAVE BEEN SIMPLIFIED FOR BREVITY

TP-1		
DEPTH (IN)	SOIL HORIZON / LAYER	SOIL TEXTURE (USDA)
0 - 18	A & FILL	LOAM
18 - 31	Bw	SANDY LOAM
31 - 120	C1	M-C SAND

GROUNDWATER: NOT ENCOUNTERED

TP-2		
DEPTH (IN)	SOIL HORIZON / LAYER	SOIL TEXTURE (USDA)
0 - 18	A & FILL	
18 - 40	Bw	LOAMY SAND
40 - 68	C1	MED SAND

GROUNDWATER: DEPTH = 52" ±

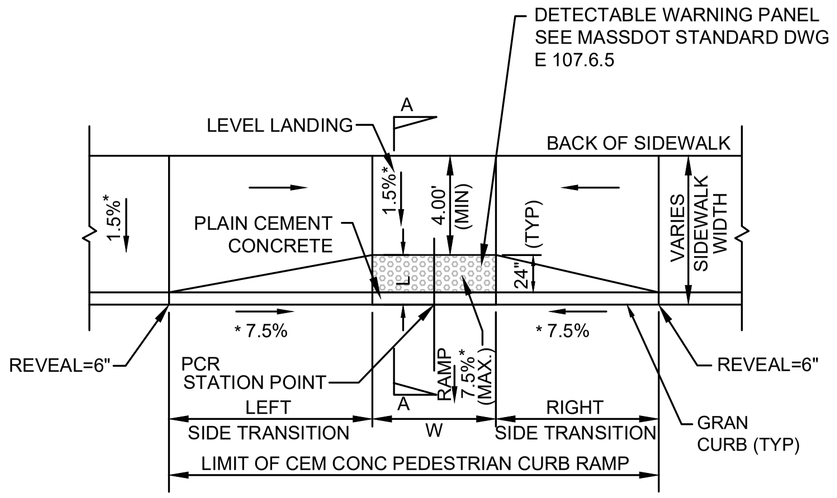
Proposal No. 613052-131228

608944_HD(6076_BORDER).DWG Plotted on 30-Dec-2024 9:41 AM

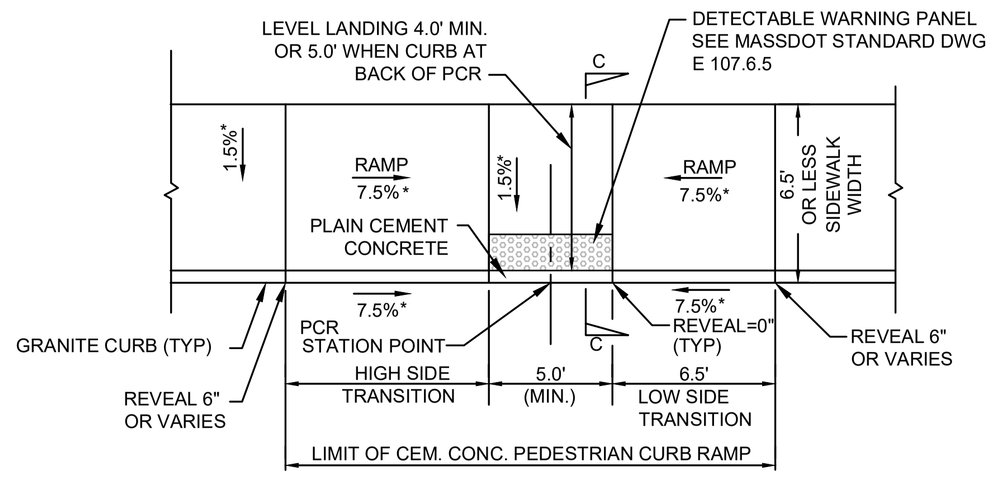
A00861 - 23

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	10	28
PROJECT FILE NO.	613052		

CONSTRUCTION DETAILS



PEDESTRIAN CURB RAMP DETAIL TYPE "A"
NOT TO SCALE



PEDESTRIAN CURB RAMP DETAIL TYPE "B"
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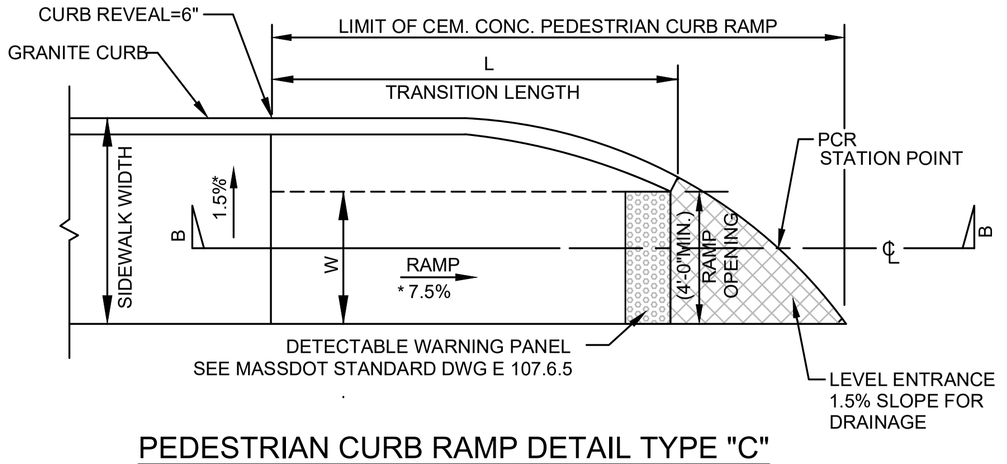

PEDESTRIAN CURB RAMP DETAIL TYPE "C"
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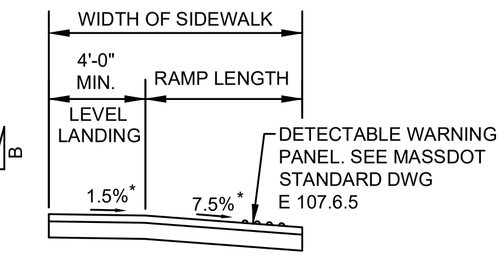
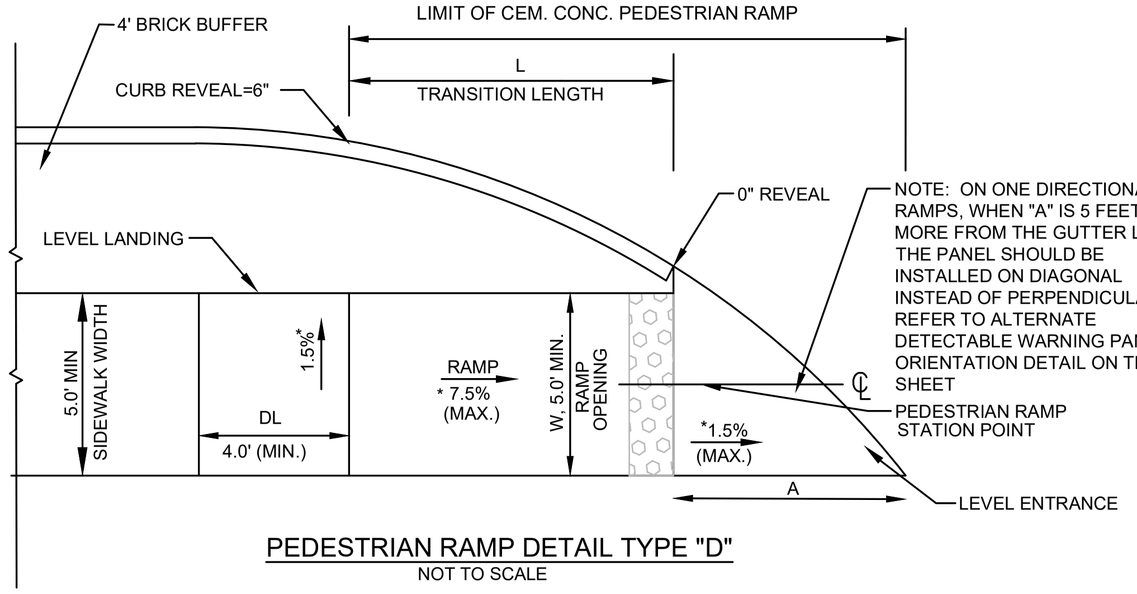


SECTION A-A
NOT TO SCALE



PEDESTRIAN RAMP DETAIL TYPE "D"
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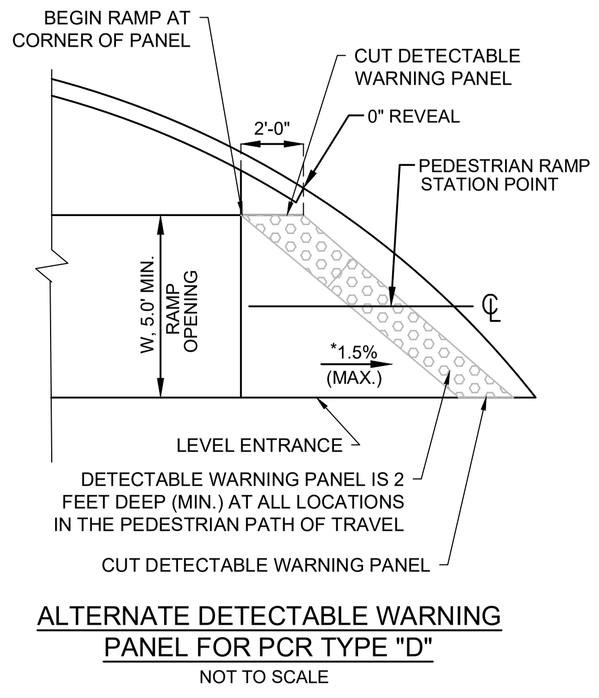
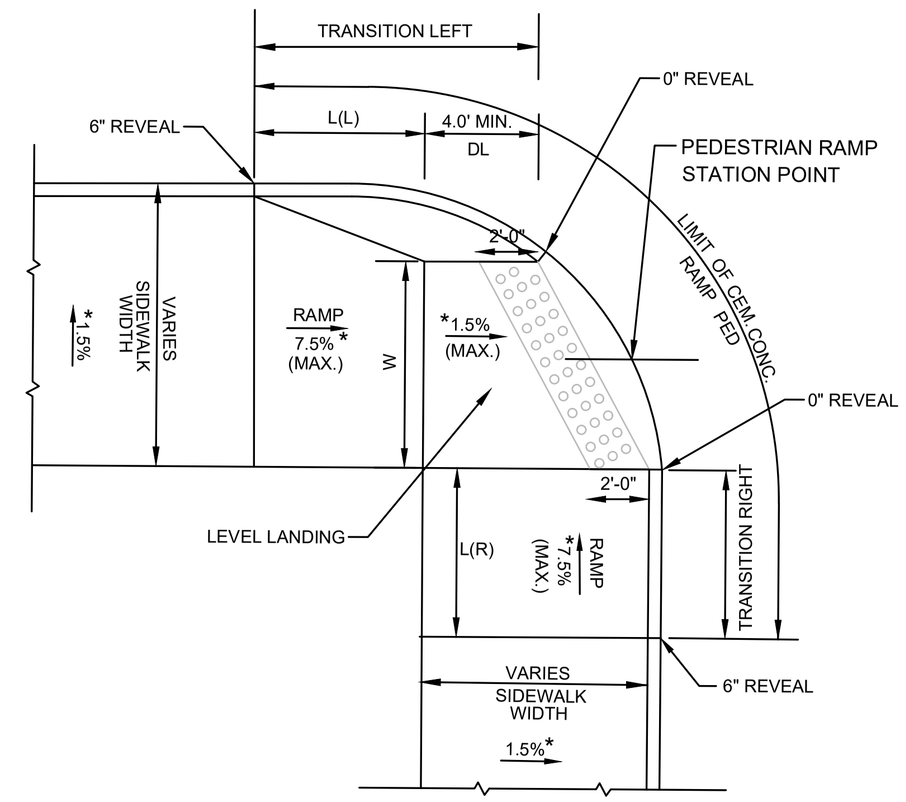
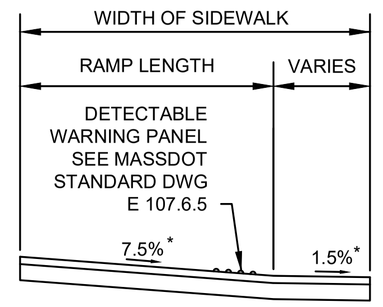


ALTERNATE DETECTABLE WARNING PANEL FOR PCR TYPE "D"
NOT TO SCALE

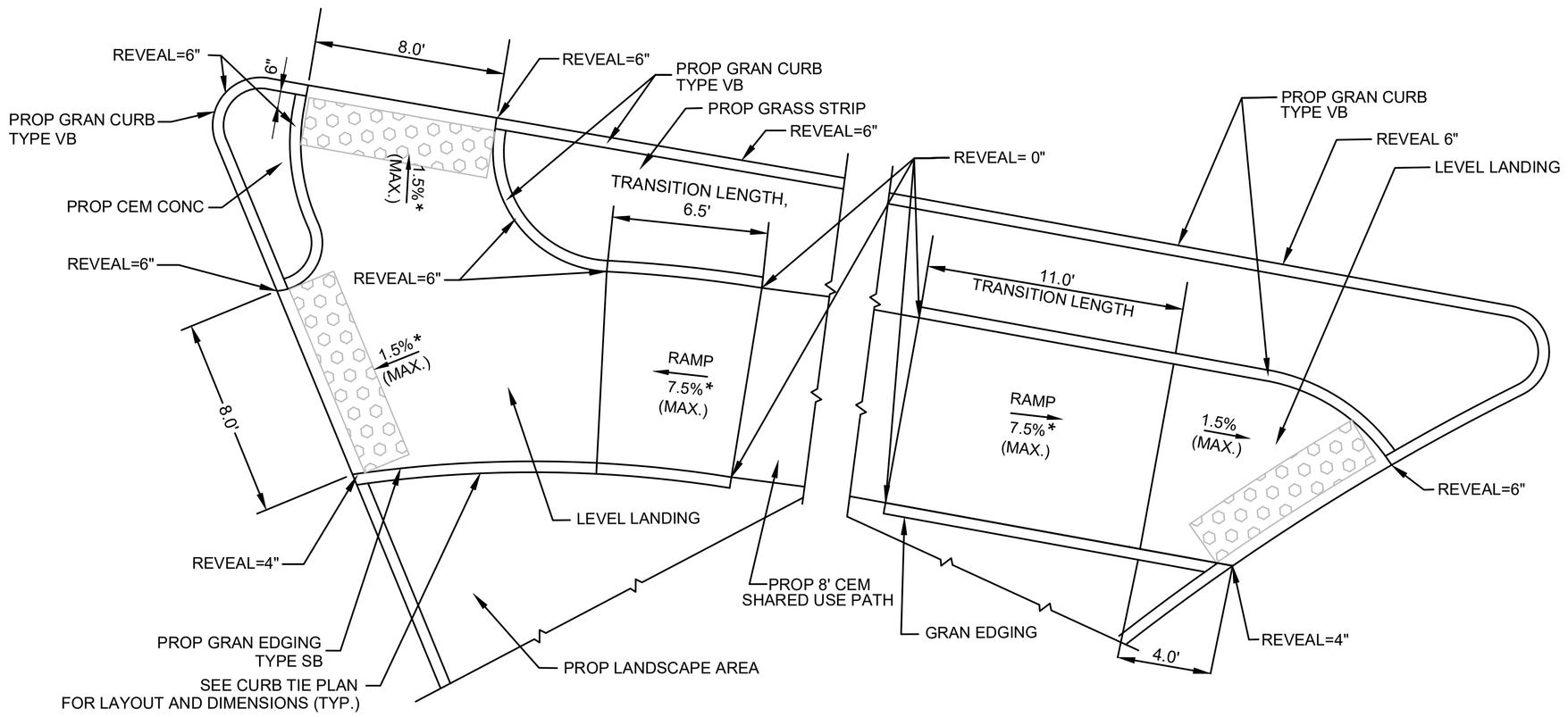


PEDESTRIAN RAMP DETAIL TYPE "E"
NOT TO SCALE

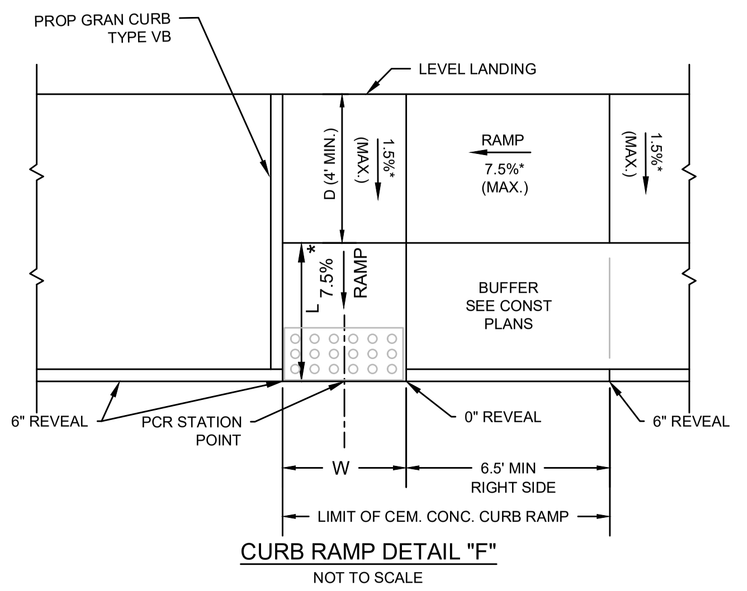


SECTION B-B
NOT TO SCALE

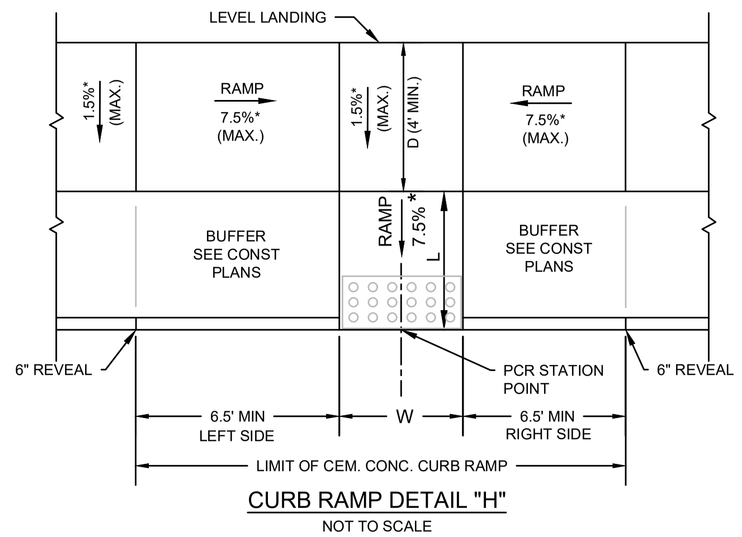
SECTION C-C
NOT TO SCALE



PEDESTRIAN RAMP SPECIAL DETAIL TYPE "S1"
NOT TO SCALE



CURB RAMP DETAIL "F"
NOT TO SCALE



CURB RAMP DETAIL "H"
NOT TO SCALE

* TOLERANCE FOR CONSTRUCTION ±0.5%

* TOLERANCE FOR CONSTRUCTION ±0.5%

Proposal No. 613052-131228
608944_HD(6076 DETAILS).DWG Plotted on 14-May-2025 8:12 AM
A00861 - 24

PEDESTRIAN RAMP DATA

PED RAMP NO.	LOCATION	STATION & OFFSET	GUTTER SLOPE G	LENGTH OF PRIMARY RAMP L	WIDTH OF PRIMARY RAMP W	DEPTH OF LEVEL LANDING (DL) (MIN. 4.0')	TRANSITION LENGTH		SIDEWALK WIDTH	PCR TYPE	EXIST RAMP ID
							LEFT	RIGHT			
1	COMMERCIAL STREET ROUTE 140	158+31.5 LT	-0.44%	4.0	8.0'	8.0'	-	6.5'	8.0'	F	PED-3108
2	COMMERCIAL STREET ROUTE 140	158+03.0 RT	SEE SPECIAL DETAIL							S1	PED-8809
2	CHAUNCY STREET ROUTE 106	24+95.2 RT								S1	PED-24277
3	CHAUNCY STREET ROUTE 106	25+63.9 RT								S1	PED-3619
4	CHAUNCY STREET ROUTE 106	25+80.4 RT	-2.50%	4.0'	8.0'	8.0'	6.5'	-	8.0'	F	N/A
5	CHAUNCY STREET ROUTE 106	25+02.9 LT	-2.09%	5.5'	5.0'	5.5'	-	6.5' **	5.5'	B	N/A
6	CHAUNCY STREET ROUTE 106	28+24.1 LT	-1.45%	9.0'	4.0'	5.0'	9.0'	-	5.5'	C	N/A
7	CHAUNCY STREET ROUTE 106	28+61.9 LT	-5.22%	5.5'	5.0'	5.5'	15.0' **	6.5' **	5.5'	B	N/A
8	CHAUNCY STREET ROUTE 106	29+49.4 RT	0.10%	7.7'	8.0'	5.0'	-	7.7'	8.0'	D	N/A
9	CHAUNCY STREET ROUTE 106	29+93.5 RT	-0.90%	7.7'	8.0'	5.0'	7.7'	-	8.0'	D	N/A
10	CHAUNCY STREET ROUTE 106	30+60.7 LT	-0.70%	5.5'	5.0'	5.5'	7.7' **	6.5' **	5.5'	B	N/A
11	CHAUNCY STREET ROUTE 106	31+19.2 LT	2.10%	5.5'	5.0'	5.5'	-	11.0' **	5.5'	B	N/A
12	CHAUNCY STREET ROUTE 106	35+95.1 LT	-5.30%	5.5'	5.0'	5.5'	15.0' **	6.5' **	5.5'	B	PED-21835
14	CHAUNCY STREET ROUTE 106	36+41.3 RT	2.24%	4.0'	6.0'	8.0'	6.5'	11.0'	8.0'	H	N/A
15	CHAUNCY STREET ROUTE 106	36+70.0 RT	1.50%	9.0'	8.0'	5.0'	6.5'	9.0'	8.0'	E	PED-19687
16	CHAUNCY STREET ROUTE 106	36+80.8 LT	-2.55%	5.5'	5.0'	5.5'	11.0' **	6.5' **	5.5'	B	PED-5152
17	CHAUNCY STREET ROUTE 106	37+22.3 LT	-1.59%	4.0'	8.0'	8.0'	9.0'	6.5'	8.0'	A	N/A
18	CHAUNCY STREET ROUTE 106	37+16.3 RT	0.20%	4.1' (LT) 4.1' (RT)	8.0' (LT) 8.0' (RT)	7.1' (LT) 7.4' (RT)	6.5'	7.7'	9.5' (LT) 9.9' (RT)	S2	PED-8907
19	CHAUNCY STREET ROUTE 106	37+27.1 RT	1.20%							S2	PED-23936
20	COPELAND DRIVE	69+95.1 LT	-2.08% (LT) 1.44% (RT)	5.5'	5.0'	5.5'	11.0' **	9.0' **	5.5'	B	PED-21736
21	COPELAND DRIVE	69+56 LT	1.78%	5.5'	5.0'	5.5'	6.5' **	9.0' **	5.5'	B	PED-5025
CT1	COPELAND DRIVE	24+33 RT (1) 24+53 RT (2)	N/A	N/A	8.0'	21.7'	N/A	N/A	N/A	CT-A	N/A
CT2	COPELAND DRIVE	24+95 RT (1) 24+95 LT (2)	N/A	N/A	8.0'	6.0'	N/A	N/A	N/A	CT-A	N/A
CT5	COPELAND DRIVE	24+95 LT (1) 24+96 LT (2)	N/A	N/A	8.0'	8.9' (LT) 6.2' (RT)	N/A	N/A	N/A	CT-A	N/A
CT12	COPELAND DRIVE	36+16 LT (1) 36+25 LT (2) 36+30 LT (3)		SEE SPECIAL DETAIL						CT-B	N/A

** TRANSITION LENGTH APPLIED AT BACK OF WALK

PEDESTRIAN RAMP NOTES

1. ALL PEDESTRIAN RAMPS SHALL CONFORM TO THE REQUIREMENTS OF THE ARCHITECTURAL ACCESS BOARD (A.A.B.), THE AMERICANS WITH DISABILITIES ACT (A,D,A,) AND MASSDOT HIGHWAY DIVISION.

2. ALL PROPOSED CURB FOR PEDESTRIAN RAMP TRANSITIONS SHALL BE CUT AND TRANSITIONED AS NECESSARY TO PROVIDE THE CORRECT TRANSITION LENGTHS FOR EACH PEDESTRIAN RAMP, AS SHOWN ON THE PEDESTRIAN RAMP DETAILS OR AS DIRECTED BY THE ENGINEER. ANY EXISTING CURB INLETS, IN AREAS OF NEW PEDESTRIAN RAMP TRANSITIONS, SHALL BE REMOVED AND REPLACED WITH APPROPRIATE TRANSITION CURB, AS DIRECTED BY THE ENGINEER.

3. IN NO CASE, EXCEPT MAXIMUM LENGTH HIGH SIDE TRANSITIONS, SHALL ANY TRANSITION SLOPE OF ANY PEDESTRIAN RAMP EXCEED 7.5%. PROPOSED PEDESTRIAN RAMP SLOPES, ESPECIALLY HIGH SIDE TRANSITIONS, SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE POURING OF CONCRETE, AND ADJUSTED, IF NECESSARY, AT THE DIRECTION OF THE ENGINEER.

4. IN INSTANCES WHERE AN EXISTING MANHOLE, HANDHOLE OR OTHER "SURFACE" TYPE STRUCTURE THAT CANNOT BE REMOVED OR RESET, IS WITHIN THE PEDESTRIAN RAMP PATH OF TRAVEL, THE STRUCTURE SHALL BE CAREFULLY ADJUSTED SUCH THAT THE TOPMOST SURFACES OF THE STRUCTURE COVER SHALL BE FLUSH WITH THE RAMP SURFACE AND SHALL MATCH THE SLOPE OF THE NEW PEDESTRIAN RAMP EXACTLY, AS DIRECTED BY THE ENGINEER.

5. ANY UTILITY STRUCTURES WITHIN THE TRANSITIONS OF THE PEDESTRIAN RAMP TRANSITIONS SHALL ALSO BE ADJUSTED TO THE PROPOSED GRADE AND THE SLOPE OF THE SURFACE OF THE PROPOSED TRANSITION PANEL OR PANELS.

6. THE LOCATION OF PROPOSED PEDESTRIAN RAMPS ARE SHOWN ON THE CONSTRUCTION PLANS AND THE PEDESTRIAN RAMP DATA SCHEDULE. EXACT LOCATIONS MAY BE ADJUSTED, IF NECESSARY, BY THE ENGINEER IN THE FIELD.

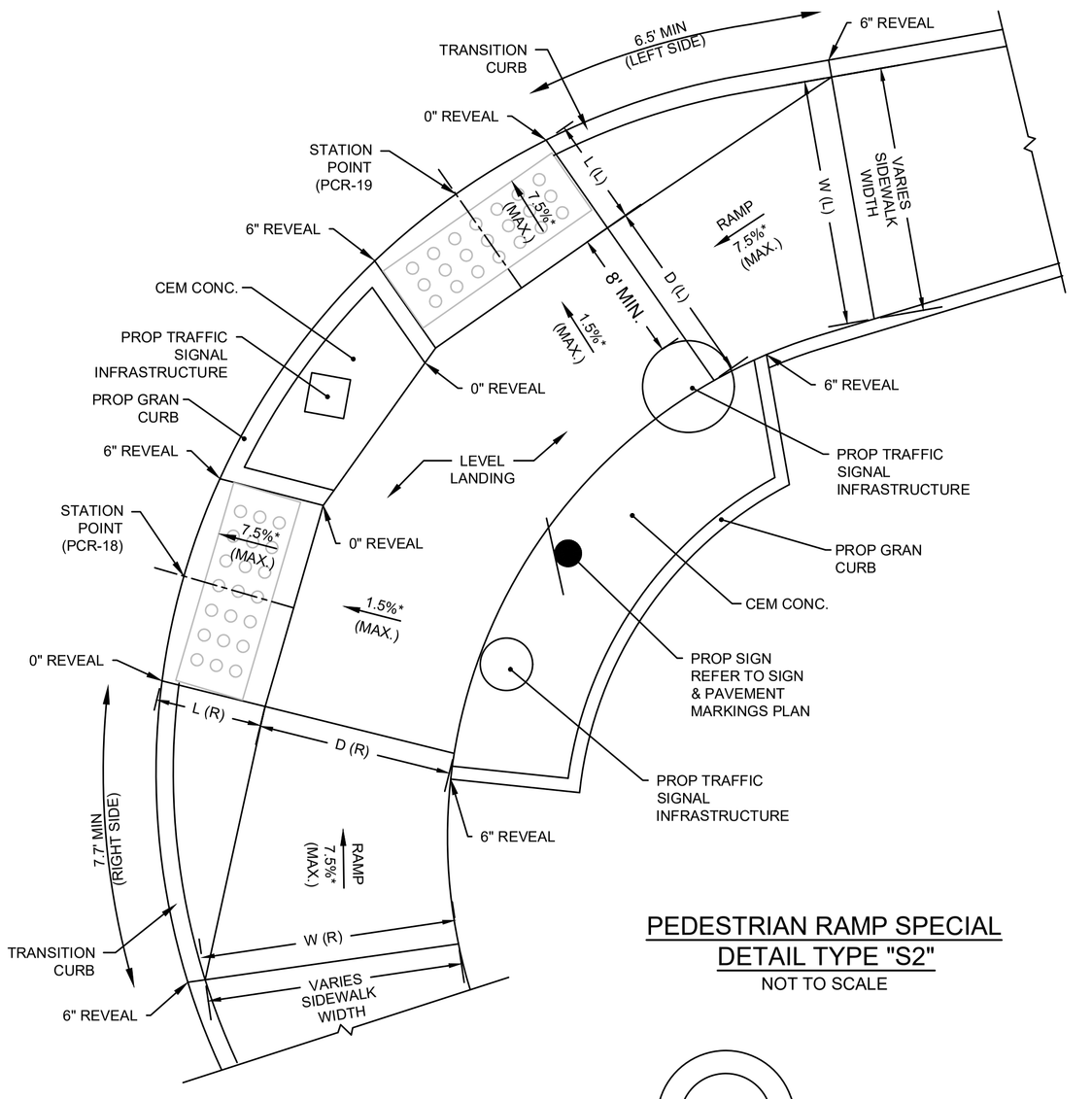
7. DETECTABLE WARNING PANELS SHALL BE INSTALLED ON ALL PEDESTRIAN RAMPS IN ACCORDANCE WITH CONSTRUCTION STANDARD E 107.6.5 (2017) AND WILL BE PAID FOR UNDER ITEM 701.2.

8. PROPOSED PEDESTRIAN RAMP SLOPES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO THE POURING OF CONCRETE, AND ADJUSTED, IF NECESSARY, TO CONFORM TO THE LATEST STANDARDS, AS DIRECTED BY THE ENGINEER.

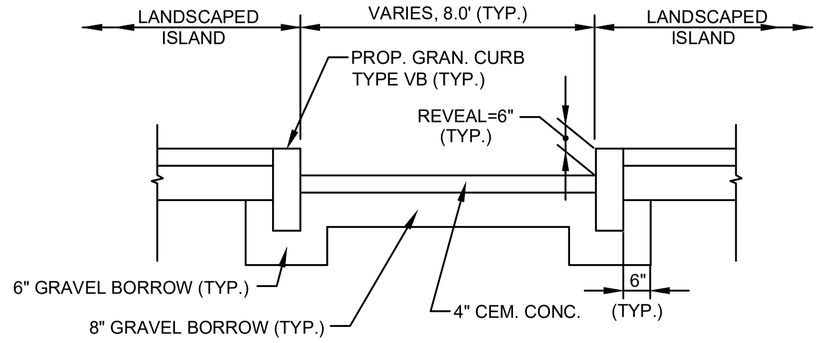
MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	11	28
PROJECT FILE NO.	613052		

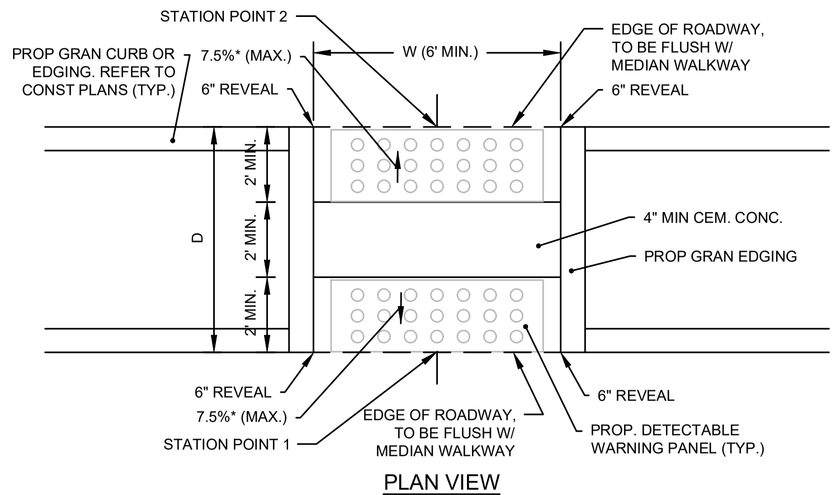
CONSTRUCTION DETAILS



PEDESTRIAN RAMP SPECIAL DETAIL TYPE "S2"
NOT TO SCALE

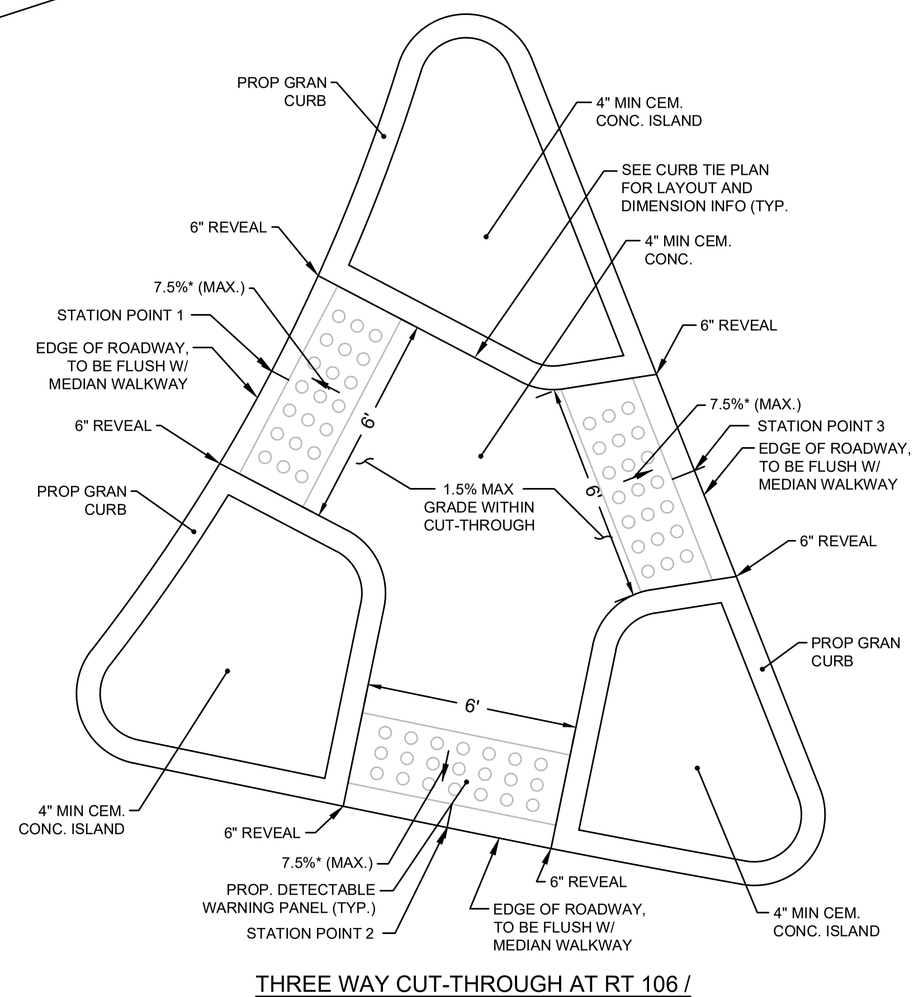


SECTION VIEW



PLAN VIEW

CUT-THROUGH AT MEDIAN (TYPE CT-A)
NOT TO SCALE



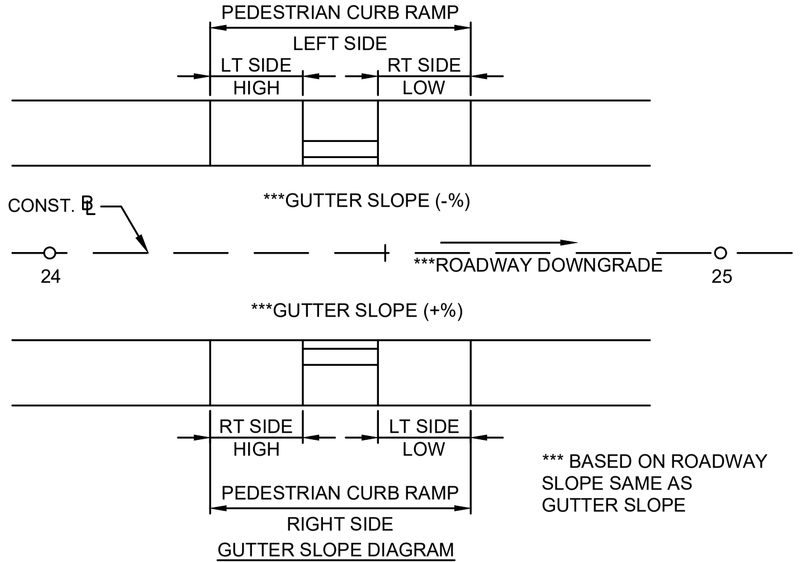
THREE WAY CUT-THROUGH AT RT 106 / COPELAND DRIVE INTERSECTION (TYPE CT-B)
NOT TO SCALE

PROFILE GRADE	HIGH SIDE TRANSITION LENGTH FOR 7.5% DESIGN SLOPE (FEET)
%	
0	6'-6"
>0-1	7'-8"
>1-2	9'-0"
>2-3	11'-0"
>3-4	14'-0"
>4	15'-0" MAX.

FIGURES ARE BASED ON A DESIGN SLOPE OF 7.5% AND A REVEAL OF 6".

PEDESTRIAN CURB RAMP HIGH SIDE TRANSITION LENGTHS

*TOLERANCE FOR CONSTRUCTION ±0.5%

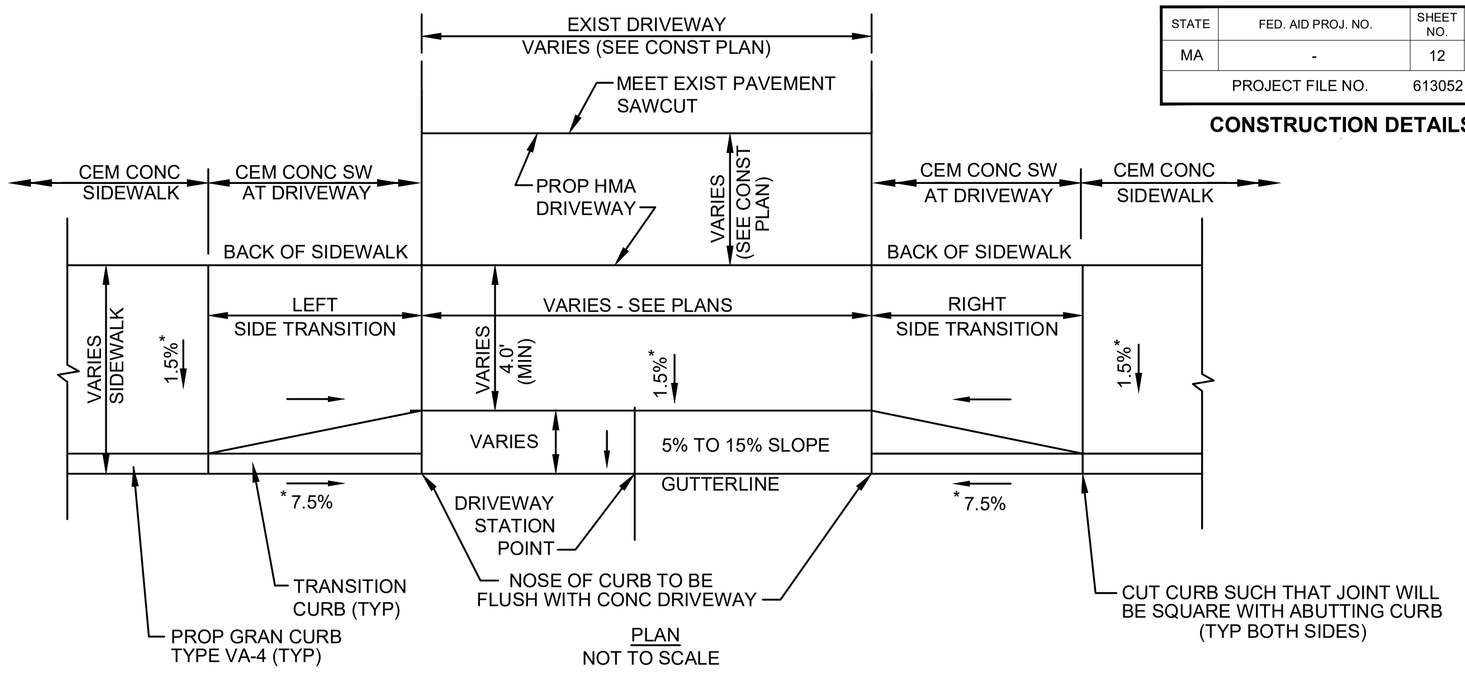


*** BASED ON ROADWAY SLOPE SAME AS GUTTER SLOPE

GUTTER SLOPE DIAGRAM
NOT TO SCALE

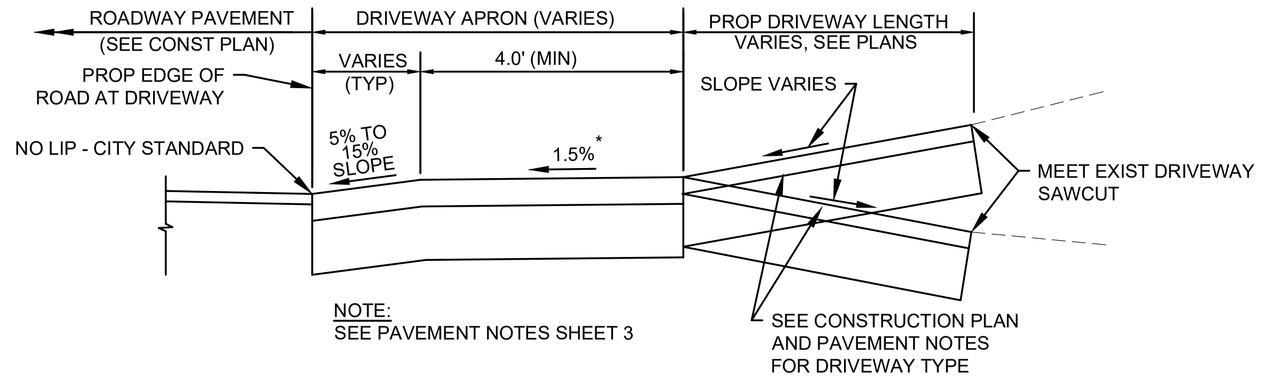
DRIVEWAY OPENING DATA

PED RAMP NO.	LOCATION	STATION & OFFSET	GUTTER SLOPE G	OPENING WIDTH W	APRON SLOPE	DEPTH FROM GUTTER TO BACK OF SIDEWALK	PATH OF TRAVEL WIDTH ACROSS DRIVEWAY	TRANSITION LENGTH		DWY TYPE
								LEFT	RIGHT	
1	CHAUNCY STREET ROUTE 106	32+19.2 RT	-1.49%	44.4'	1.5%	12.0'	12.0'	9.0'	6.5'	B
2	CHAUNCY STREET ROUTE 106	32+78.2 LT	1.51%	28.0'	12.5%	5.5'	4.0'	6.5'	6.0' REV=4"	A
3	CHAUNCY STREET ROUTE 106	33+26.9 LT	1.51%	35.0'	1.5%	5.5'	5.5'	6.0' REV=4"	9.0'	B
4	CHAUNCY STREET ROUTE 106	34+07.6 RT	-1.16%	53.2'	1.5%	12.0'	12.0'	9.0'	6.5'	B
5	CHAUNCY STREET ROUTE 106	38+34.1 RT	1.30%	36.7'	1.5%	5.5'	5.5'	-	9.0'	C
6	COPELAND DRIVE	73+76.0 LT	1.26%	32.0'	1.5%	5.5'	5.5'	6.5'	9.0'	B
7	COPELAND DRIVE	70.37.9 RT	-0.41%	30.2'	14.0%	8.0'	4.0'	7.7'	6.5'	A
8	CHAUNCY STREET ROUTE 106	38+68.1 RT	0.91%	20.0'	12.5%	5.0'	4.0'	6.5'	-	C
9	COPELAND DRIVE	73+75.2 RT	-1.25%	24.0'	1.5%	5.5'	5.5'	9.0'	6.5'	B
10	COPELAND DRIVE	73+17.1 RT	-1.30%	22.0'	2.5%	6.0'	4.0'	9.0'	6.5'	A



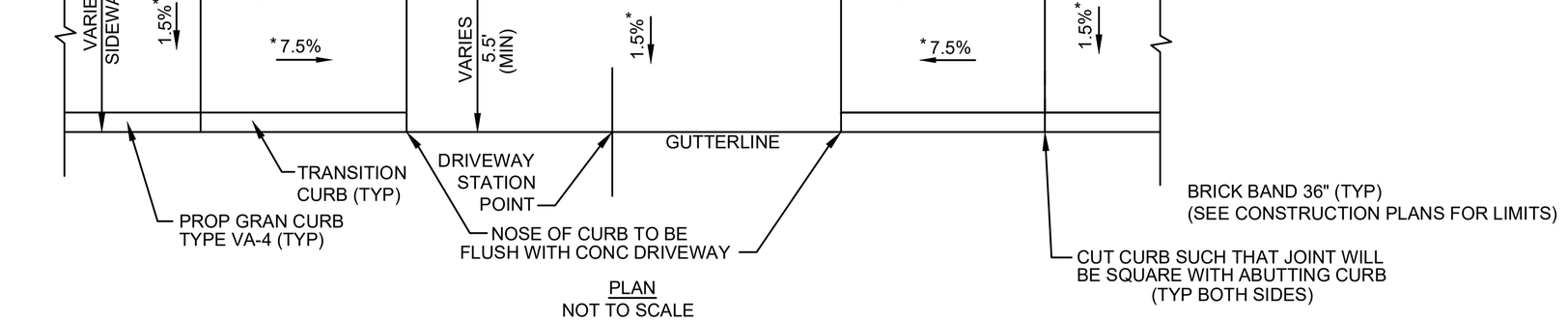
PLAN
NOT TO SCALE

DETAIL FOR TYPICAL DRIVEWAY WITH SIDEWALK - TYPE A



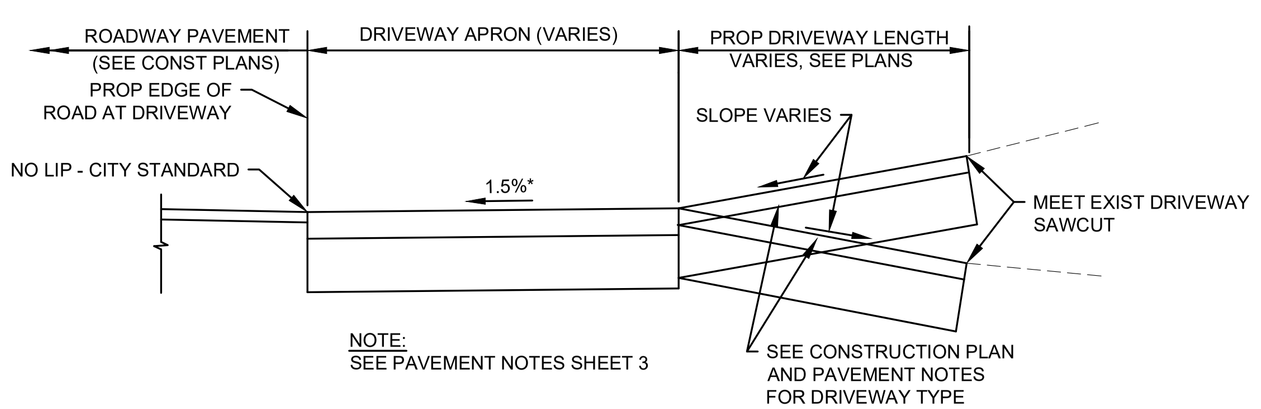
SECTION FOR TYPICAL DRIVEWAY WITH SIDEWALK - TYPE A

NOT TO SCALE



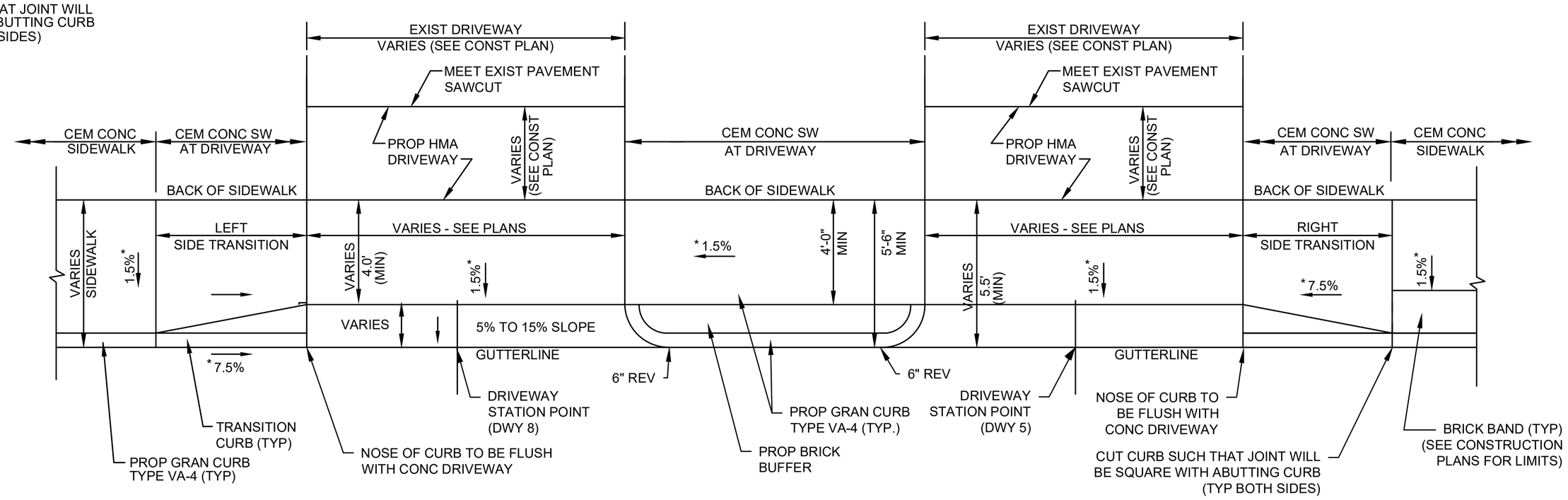
PLAN
NOT TO SCALE

DETAIL FOR DEPRESSED DRIVEWAY WITH SIDEWALK - TYPE B



SECTION FOR DEPRESSED DRIVEWAY WITH SIDEWALK - TYPE B

NOT TO SCALE



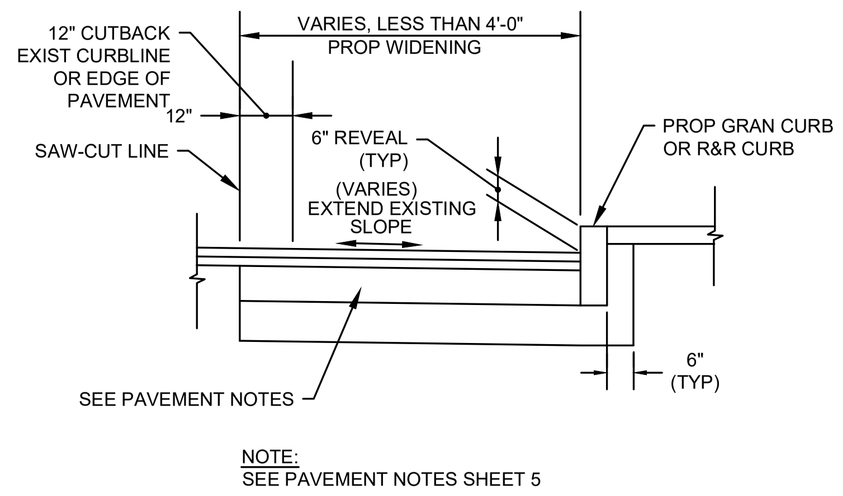
DETAIL FOR SPECIAL DRIVEWAYS DWY-5 AND DWY-8 - TYPE C

* TOLERANCE FOR CONSTRUCTION ±0.5%

Proposal No. 613052-131228
608944_HD(6076 DETAILS).DWG Plotted on 14-May-2025 8:12 AM
A00861 - 26

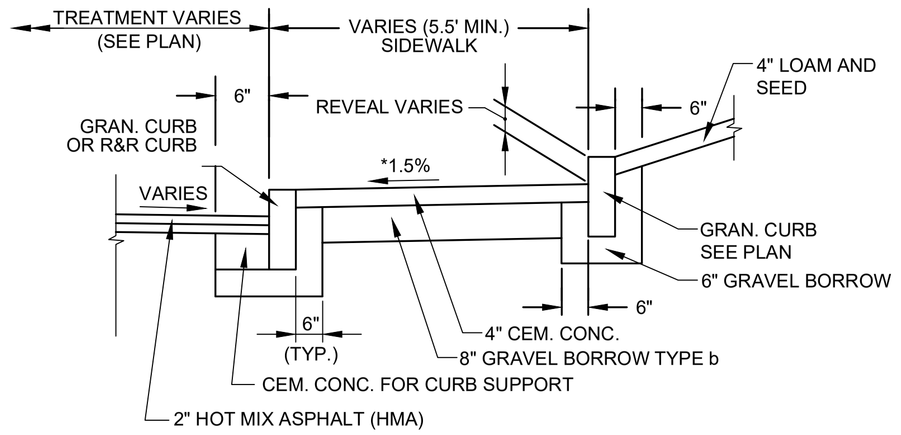
Proposal No. 613052-131228

608944_HD(6076 DETAILS).DWG Plotted on 14-May-2025 8:12 AM

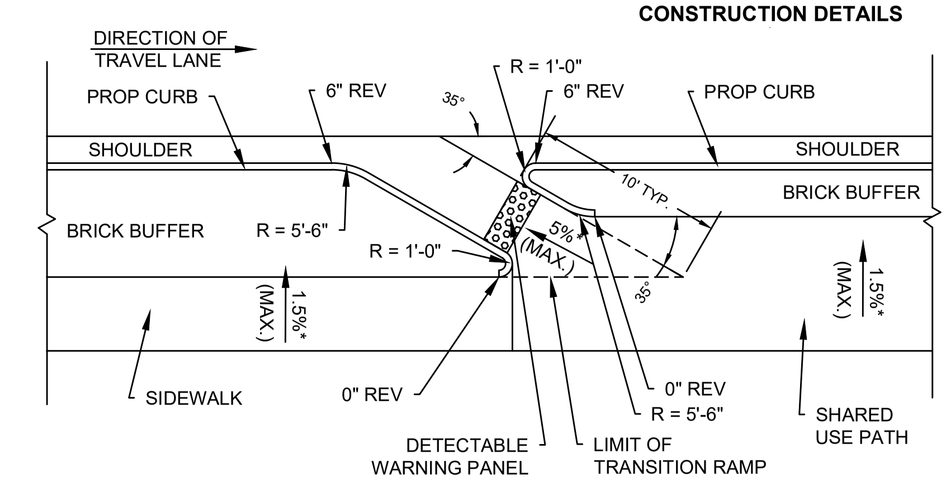


NOTE:
SEE PAVEMENT NOTES SHEET 5

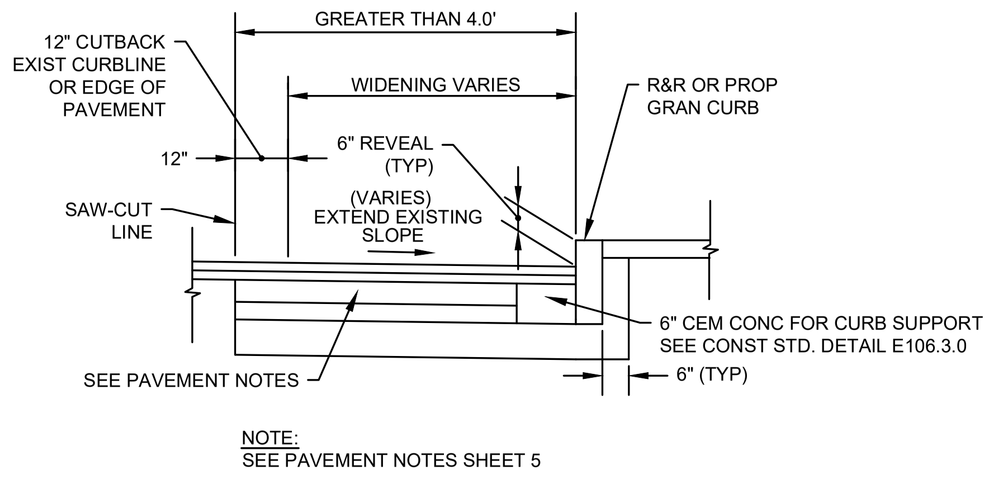
DETAIL FOR BOX WIDENING 4.0' OR LESS
NOT TO SCALE



DETAIL FOR GRANITE CURB AT BACK OF SIDEWALK
NOT TO SCALE

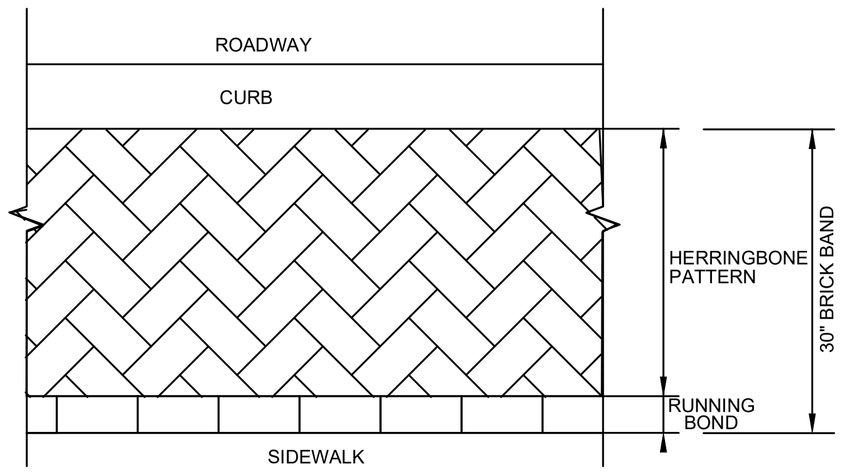


BIKE RAMP
NOT TO SCALE

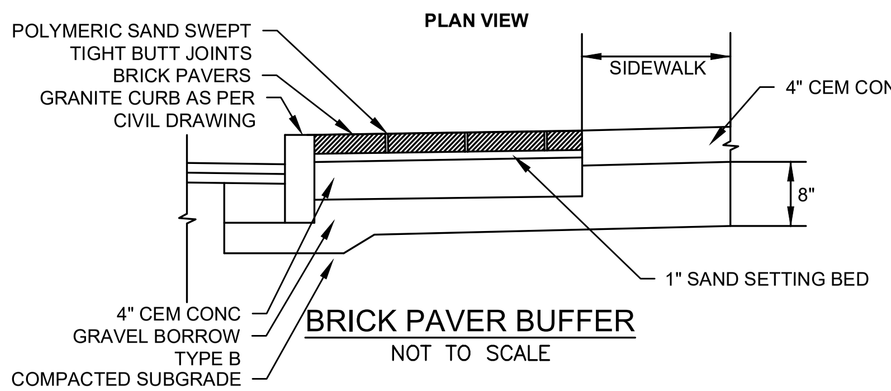


NOTE:
SEE PAVEMENT NOTES SHEET 5

DETAIL FOR BOX WIDENING GREATER THAN 4.0'
NOT TO SCALE

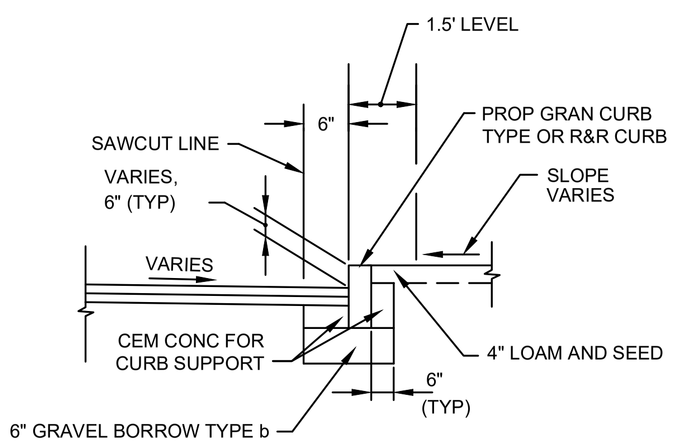


PLAN VIEW

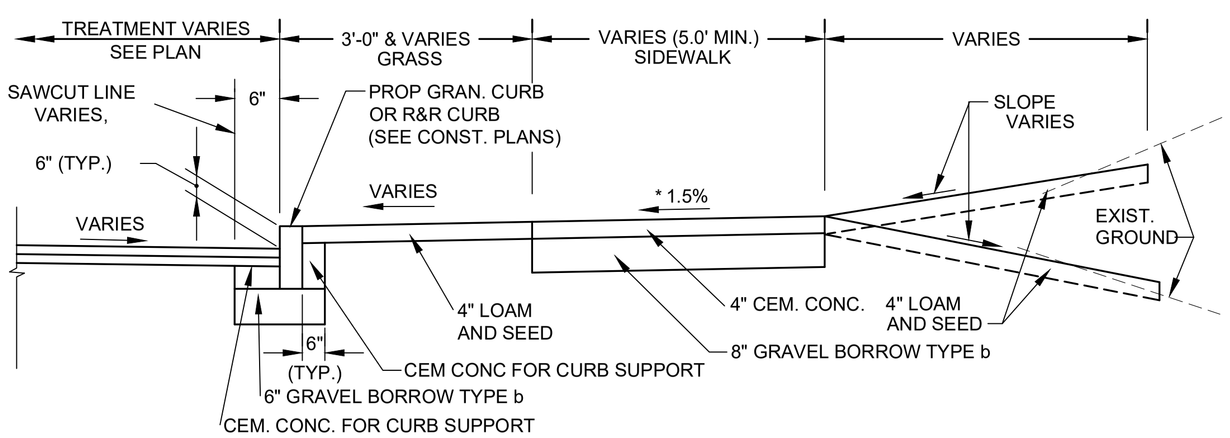


BRICK PAVER BUFFER
NOT TO SCALE

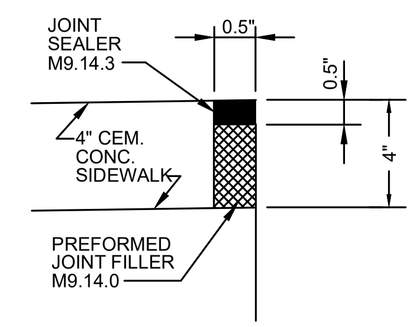
DETAIL FOR MULCH/LOAM AND SEED ISLAND AT BACK OF SIDEWALK
STA 31+24 TO 32+64 LT
NOT TO SCALE



DETAIL FOR GRANITE CURB WITHOUT SIDEWALK IN MILLING AREA
NOT TO SCALE



DETAIL FOR GRANITE CURB WITH SIDEWALK AND GRASS STRIP
NOT TO SCALE

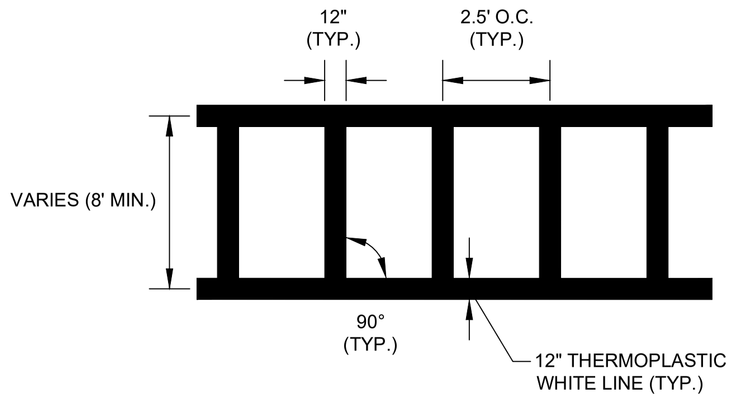


DETAIL FOR PREFORMED JOINT FILLER AND SEALER
NOT TO SCALE

NOTE
WHEN PROPOSED SIDEWALK ABUTS AN EXISTING WALL, USE PRE-FORMED JOINT FILLER AND SEALER AT BACK OF SIDEWALK AND WALL INTERFACE. (SEE JOINT DETAIL)

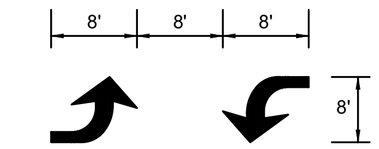
* TOLERANCE FOR CONSTRUCTION ±0.5%

Proposal No. 613052-131228
608944_HD(6076 DETAILS).DWG Plotted on 14-May-2025 8:12 AM
A00861 - 28



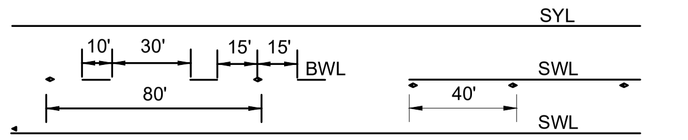
CROSSWALK STRIPING DETAIL

NOT TO SCALE



TWO-WAY LEFT-TURN
LANE MARKING DETAIL

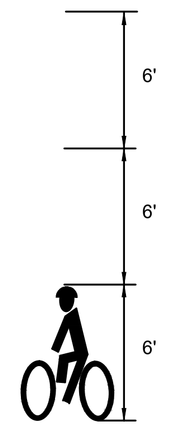
NOT TO SCALE



TWO-WAY WHITE/RED REFLECTORIZED SLOTTED PAVEMENT MARKER

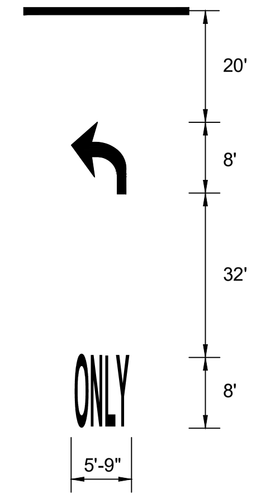
REFLECTORIZED SLOTTED
PAVEMENT MARKER DETAIL

NOT TO SCALE



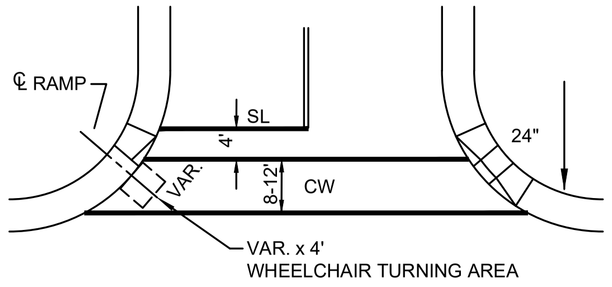
BICYCLE LANE MARKING DETAIL

NOT TO SCALE



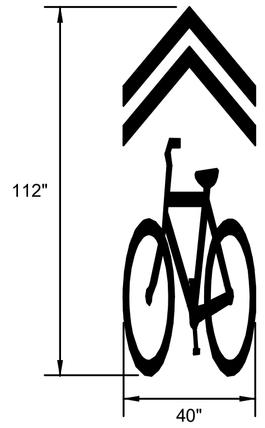
ARROW & "ONLY"
MARKING DETAIL

NOT TO SCALE



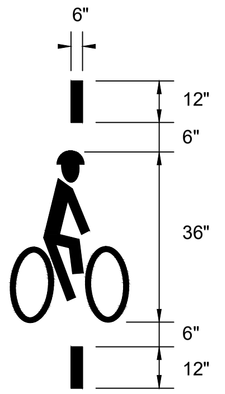
CROSSWALK LOCATION DETAIL

NOT TO SCALE



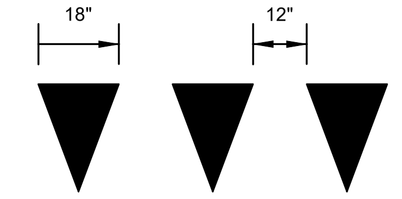
SHARED LANE MARKING DETAIL

NOT TO SCALE



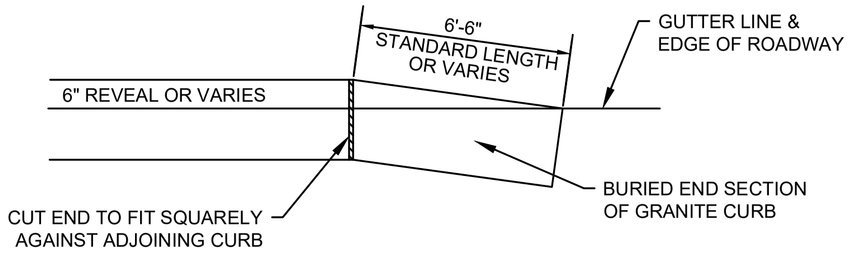
BICYCLE DETECTOR MARKING DETAIL

NOT TO SCALE



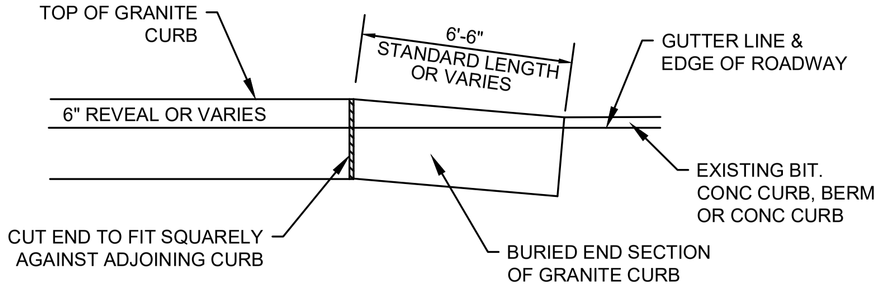
YIELD LINE MARKING DETAIL

NOT TO SCALE



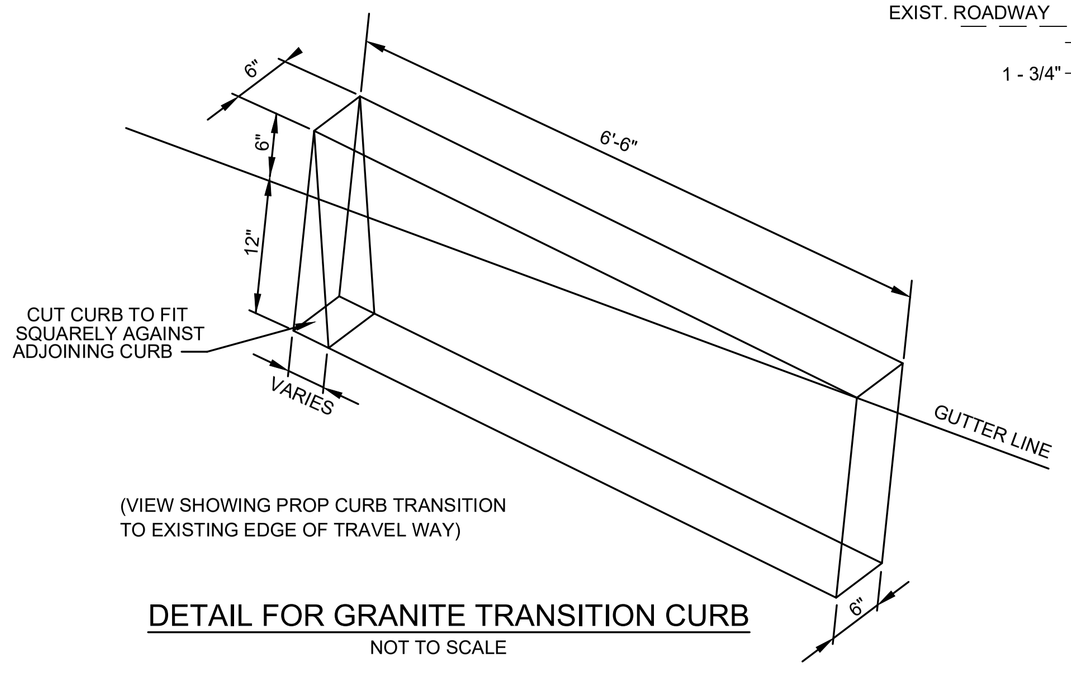
DETAIL FOR TRANSITION CURB
PROP CURB TO EXISTING EDGE OF TRAVEL WAY

NOT TO SCALE



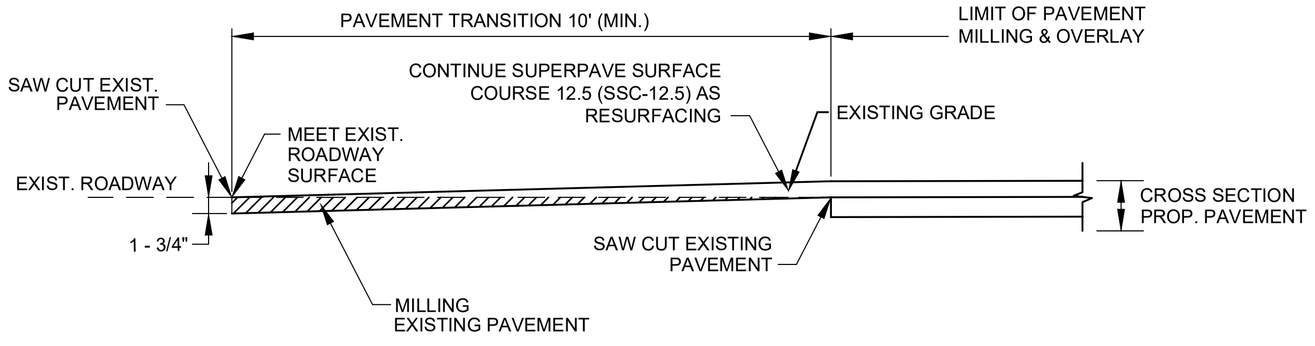
DETAIL FOR TRANSITION CURB
TRANSITION CURB - PROP CURB TO EXISTING CURB

NOT TO SCALE



DETAIL FOR GRANITE TRANSITION CURB

NOT TO SCALE



DETAIL FOR PAVEMENT TRANSITION AT LIMIT OF WORK

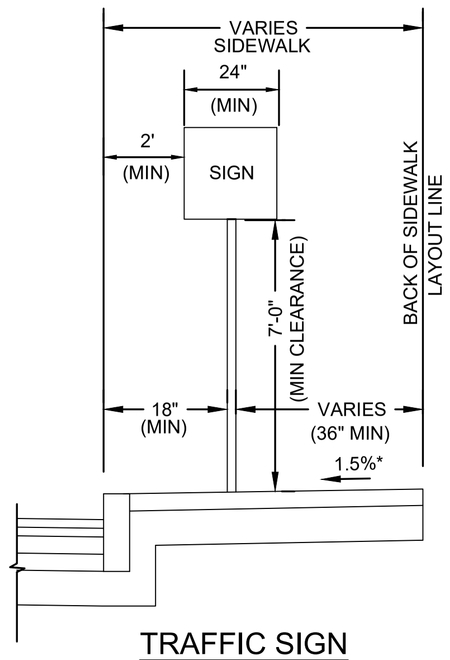
NOT TO SCALE

* TOLERANCE FOR CONSTRUCTION ±0.5%

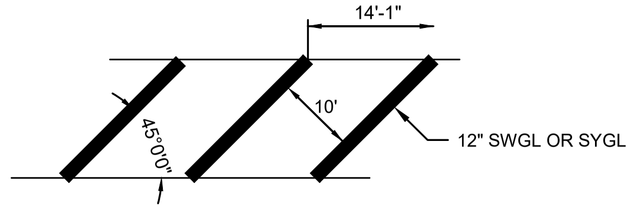
MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	15	28
PROJECT FILE NO.	613052		

CONSTRUCTION DETAILS

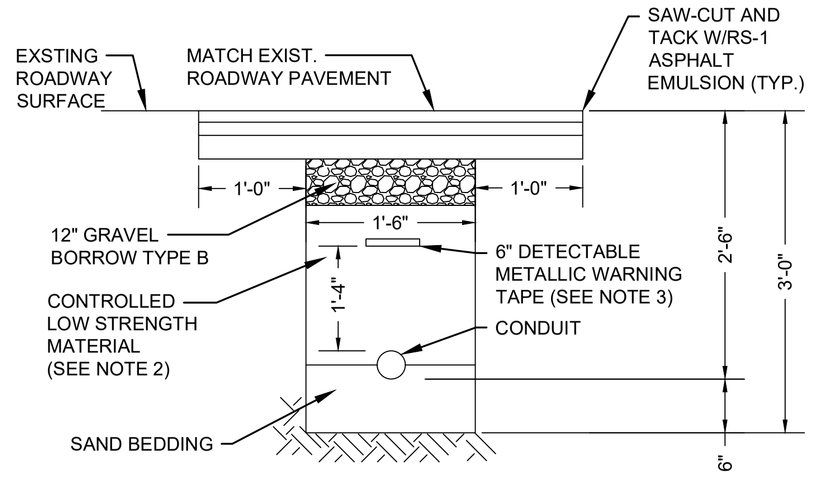


TRAFFIC SIGN
NOT TO SCALE

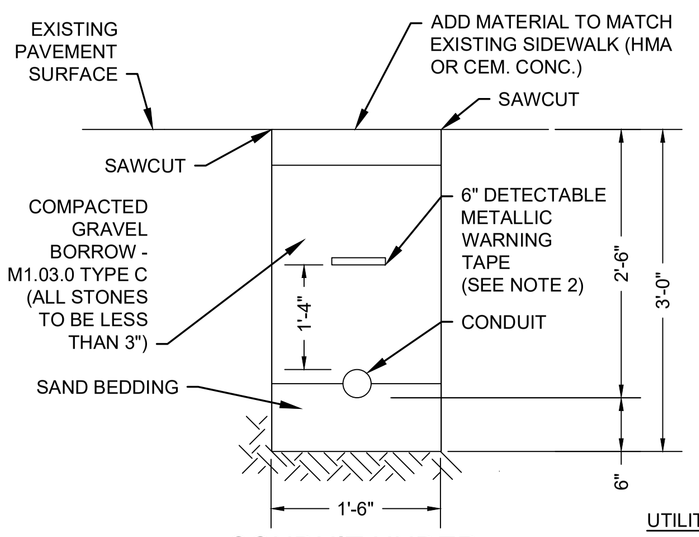


TYPICAL GORE LINE DETAIL
NOT TO SCALE

NOTES:
1. MINIMUM CLEAR PATH ON ALL SIDEWALKS SHALL BE 36 INCHES, EXCLUDING THE CURB.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL OBJECTS (SIGNS, POLES ETC.) TO BE SET WITHIN SIDEWALK PRIOR TO FINAL PLACEMENT TO PROVIDE A MINIMUM CLEAR PATH OF 36 INCHES NOT INCLUDING CURB. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY LOCATION WHICH CANNOT MEET THE CLEARANCE REQUIREMENTS.



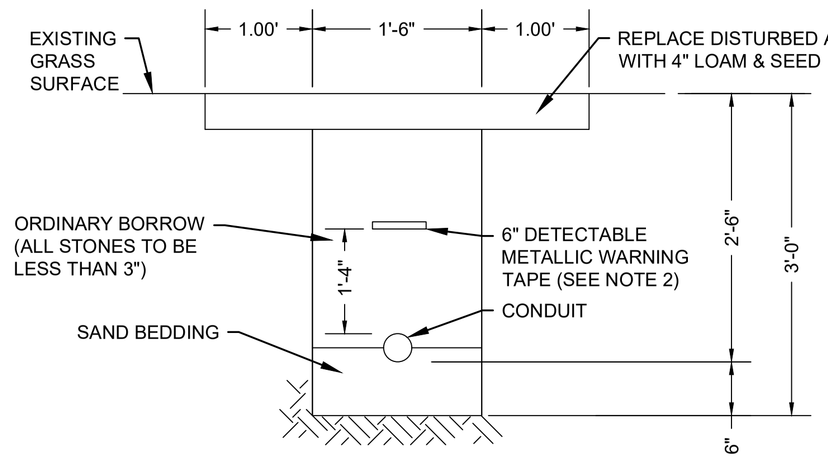
CONDUIT CROSSING
IN ROADWAY
NOT TO SCALE



CONDUIT UNDER
SIDEWALK AREAS
NOT TO SCALE

UTILITY TRENCH NOTES:

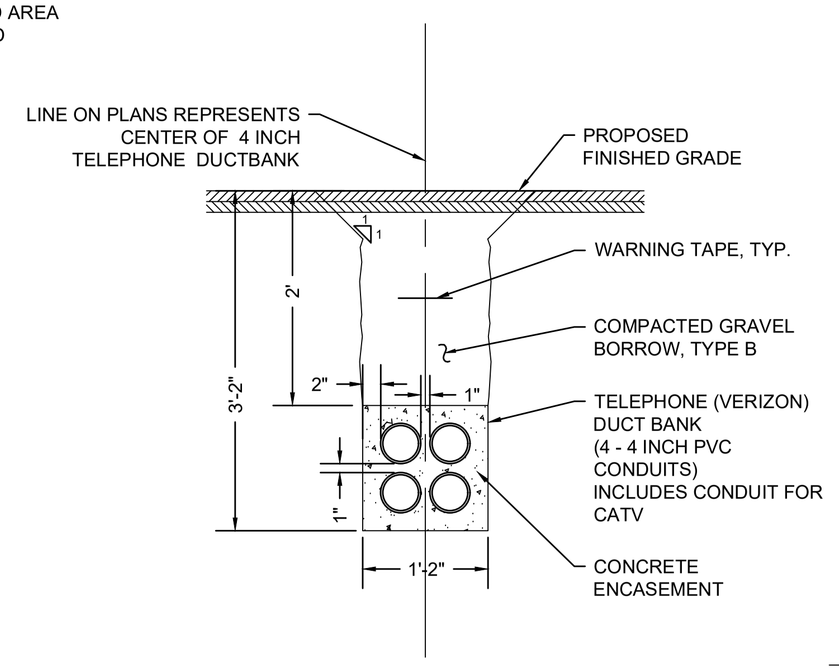
1. ALL CONSTRUCTION OF DUCT BANKS INCLUDING TRENCH, EXCAVATION, AND BACKFILL SHALL CONFORM TO UTILITY DETAILS AND SPECIFICATIONS.
2. FOR ALL DUCTS USE SCHEDULE 40 CONDUITS ENCASED IN 2,500 PSI, 3/8 INCH, 520 CEMENT CONCRETE CONCRETE. USE PLASTIC SPACERS TO MAINTAIN CONDUIT SPACING. SPACERS SHALL MEET UTILITY SPECIFICATIONS FOR DESIGN AND SPACING.
3. ALL TRENCH EXCAVATION ACTIVITIES SHALL COMPLY WITH ALL APPROPRIATE OSHA STANDARDS.
4. EACH DUCT BANK SHALL HAVE ASSOCIATED WARNING TAPE INSTALLED. TELEPHONE AND CATV DUCT BANKS WILL HAVE 6 INCH, COLOR ORANGE, DETECTABLE METALLIC WARNING TAPE PLACED 12 INCHES ABOVE EACH CONCRETE ENCASEMENT.
5. A UTILITY COMPANY REPRESENTATIVE FROM COMCAST SHALL BE PRESENT FOR ALL CATV CONDUIT INSTALLED.
6. A UTILITY COMPANY REPRESENTATIVE FROM VERIZON SHALL BE PRESENT FOR ALL TELEPHONE CONDUIT INSTALLED.
7. A MINIMUM OF 12 INCHES OF SEPARATION IS REQUIRED FOR CROSSINGS WITH GAS, WATER, SEWER AND DRAINAGE.
8. CONDUITS SHALL BE BLOWN CLEAN USING COMPRESSED AIR. RUN MANDREL THRU EACH CONDUIT TO CONFIRM VIABLE PATHWAY.
9. WOVEN POLYESTER MULE TAPE WITH MINIMUM STRENGTH OF 2500 LB TENSILE STRENGTH TO BE INSTALLED WITHIN EACH CONDUIT.



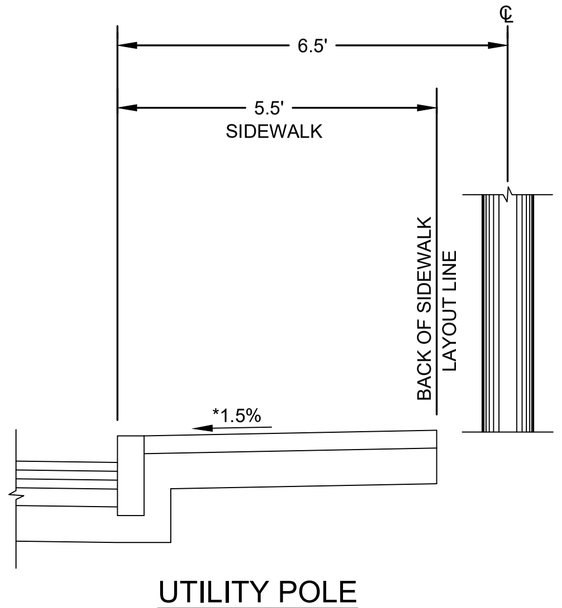
CONDUIT UNDER
GRASS AREAS
NOT TO SCALE

CONDUIT NOTES:

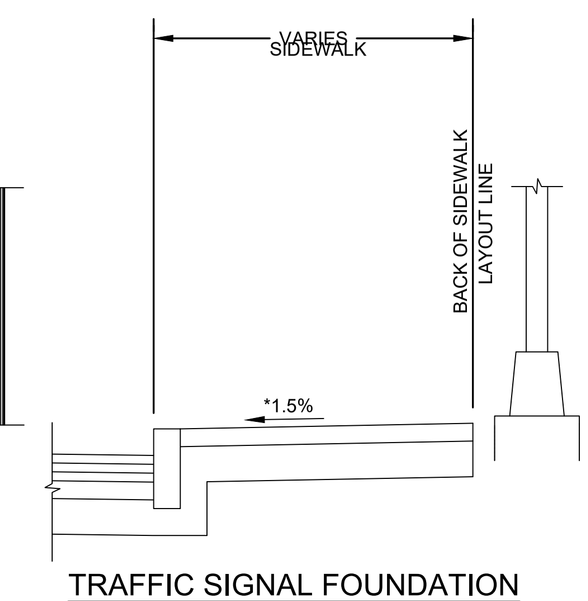
1. SCHEDULE 80 ELECTRICAL CONDUIT TYPE NM-PLASTIC (UL) WITH PULL ROPE UNLESS OTHERWISE APPROVED BY MASSDOT.
2. CONTROLLED LOW STRENGTH MATERIAL SHALL BE MECHANICAL EXCAVATABLE TYPE MEETING THE REQUIREMENTS OF SUBSECTION M4.08.0
3. WARNING TAPE SHALL BE PER CURRENT APWA STANDARDS.



TELEPHONE/ CATV TRENCH
NOT TO SCALE



TRAFFIC SIGN
NOT TO SCALE



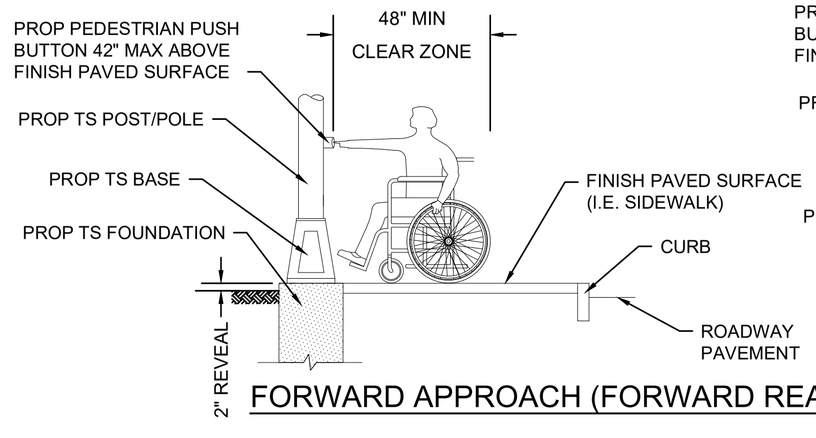
HYDRANT
NOT TO SCALE

UTILITY POLE
NOT TO SCALE

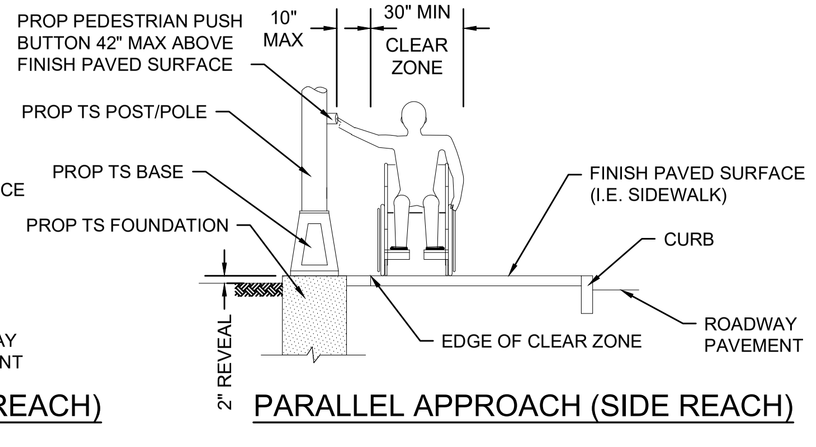
TRAFFIC SIGNAL FOUNDATION
NOT TO SCALE

* TOLERANCE FOR CONSTRUCTION ±0.5%

DETAILS SHOWING SIDEWALK CLEARANCES



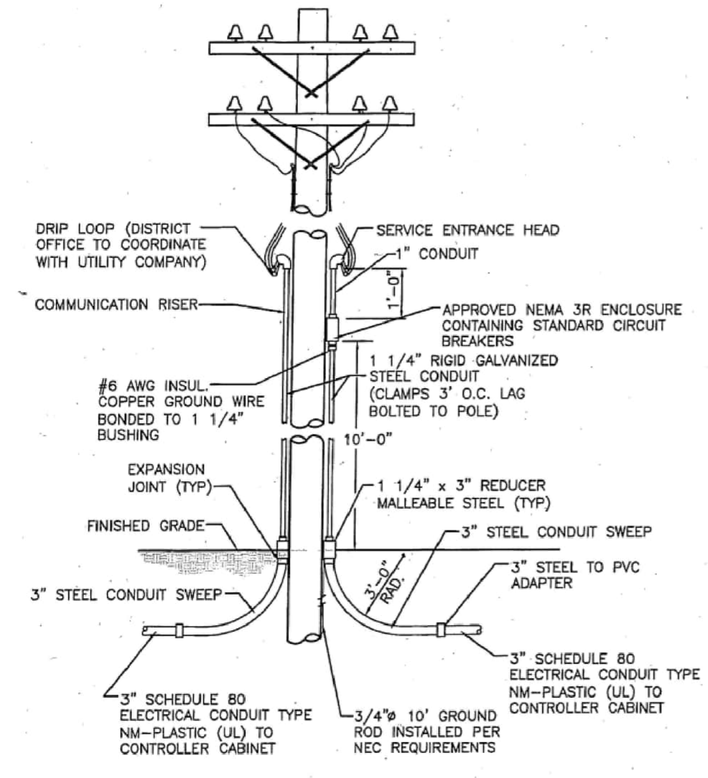
FORWARD APPROACH (FORWARD REACH)



PARALLEL APPROACH (SIDE REACH)

PEDESTRIAN PUSH BUTTON CLEAR ZONE
NOT TO SCALE

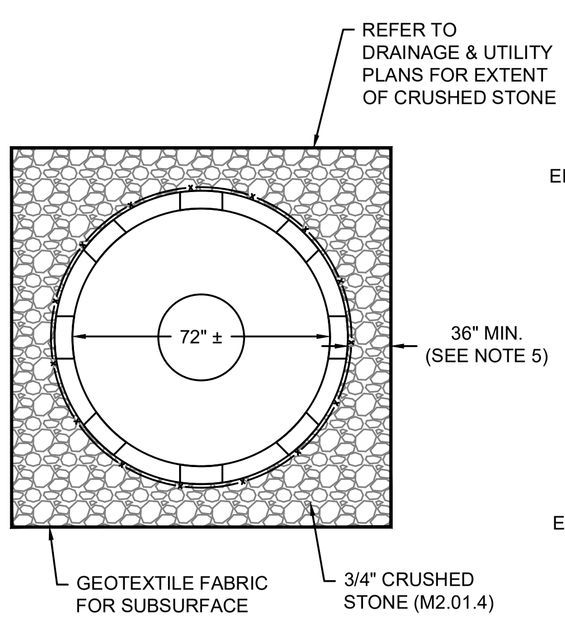
NOTE:
A CLEAR GROUND SPACE SHALL CONSIST OF A STABLE AND FIRM AREA, COMPLYING WITH 521 CMR 6.5 (FORWARD REACH) OR 521 CMR 6.6 (SIDE REACH) AND SHALL BE PROVIDED AT EACH OF THE PEDESTRIAN PUSH BUTTONS.
a) WHERE A FORWARD APPROACH IS PROVIDED, PEDESTRIAN PUSH BUTTONS SHALL ABUT AND BE CENTERED ON THE CLEAR GROUND SPACE.
b) WHERE A PARALLEL APPROACH IS PROVIDED, PEDESTRIAN PUSH BUTTONS SHALL BE WITHIN TEN INCHES (10") HORIZONTALLY OF AND CENTERED ON THE CLEAR GROUND SPACE.

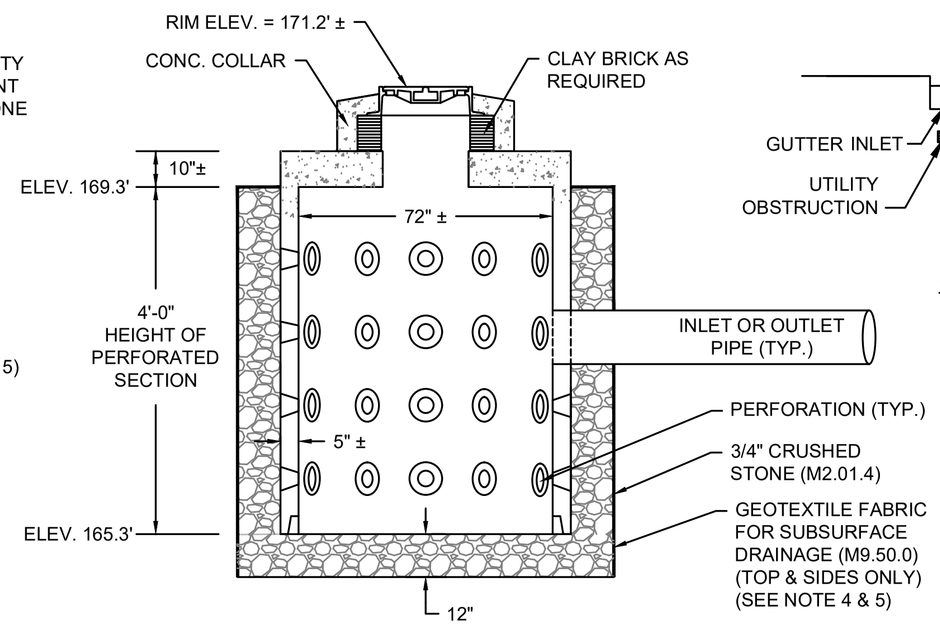


NOTE:
SPECIFIC ATTACHMENT AND CONNECTION REQUIREMENTS MAY VARY. COORDINATION WITH THE LOCAL UTILITY COMPANY IS REQUIRED BY THE CONTRACTOR.

TRAFFIC SIGNAL SERVICE
CONNECTION - OVERHEAD
NOT TO SCALE

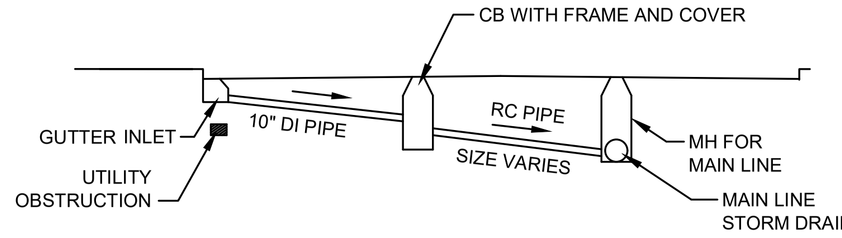
Proposal No. 613052-131228
608944_HD(6076 DETAILS).DWG Plotted on 14-May-2025 8:12 AM





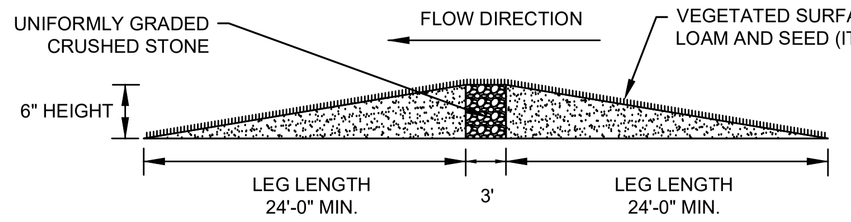
NOTES:
1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS
2. AASHTO H-20 LOADING
3. STEEL REINFORCEMENT PER ASTM A615 GRADE-60
4. FOR LEACHING BASINS INSTALLED IN SERIES, GEOTEXTILE SHALL ENVELOPE THE OUTER PERIMETER OF CRUSHED STONE ONLY. GEOTEXTILE SHALL NOT BE INSTALLED BETWEEN LEACHING BASINS.
5. PROVIDE A MINIMUM 12" OVERLAP BETWEEN GEOTEXTILE SHEETS.
6. A CONTINUOUS BED OF CRUSHED STONE SHALL BE PROVIDED BETWEEN LEACHING BASINS INSTALLED IN SERIES

LEACHING BASIN (LB)
NOT TO SCALE

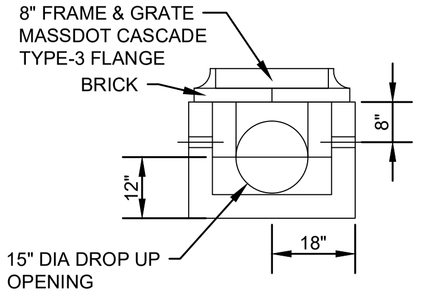


CONTINGENCY DETAIL FOR STORM DRAIN LATERAL LINES
(USE ONLY IF OBSTRUCTION IS ENCOUNTERED)
NOT TO SCALE

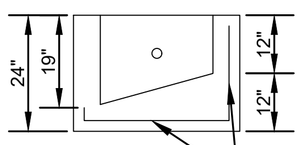
NOTE:
GUTTER INLET SHOULD NOT BE USED DIRECTLY OVER GAS MAINS, TELEPHONE OR ELECTRIC DUCTS.



VEGETATED CHECK DAM FOR WATER QUALITY SWALE
SCALE: NTS



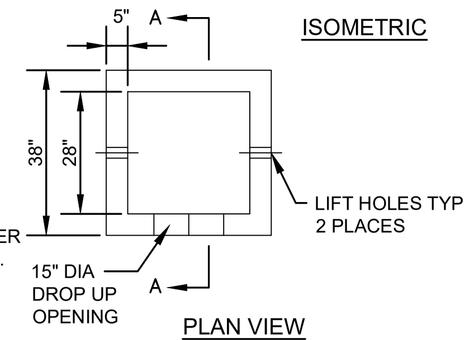
GUTTER INLET - SPECIAL
NOT TO SCALE
(ITEM 204.11)



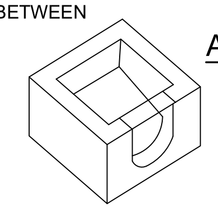
SECTION A-A

WWF WITH As = 0.15 SQ IN TYP IN CENTER IN WALLS AND BASE

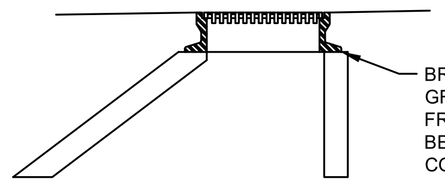
ELEVATION NOTES
NOTES:
1. DESIGNED FOR AASHTO HS25-44 LOADING
2. CONCRETE STRENGTH fc=4000 PSI
3. REINFORCING STEEL: ASTM A185 (wwf) fy=60,000 PSI
4. CURB INLETS ARE REQUIRED WHEN GUTTER INLETS ARE INSTALLED AGAINST CURBING.



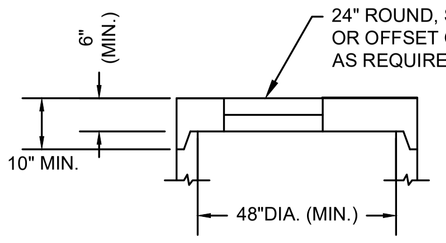
PLAN VIEW



ISOMETRIC

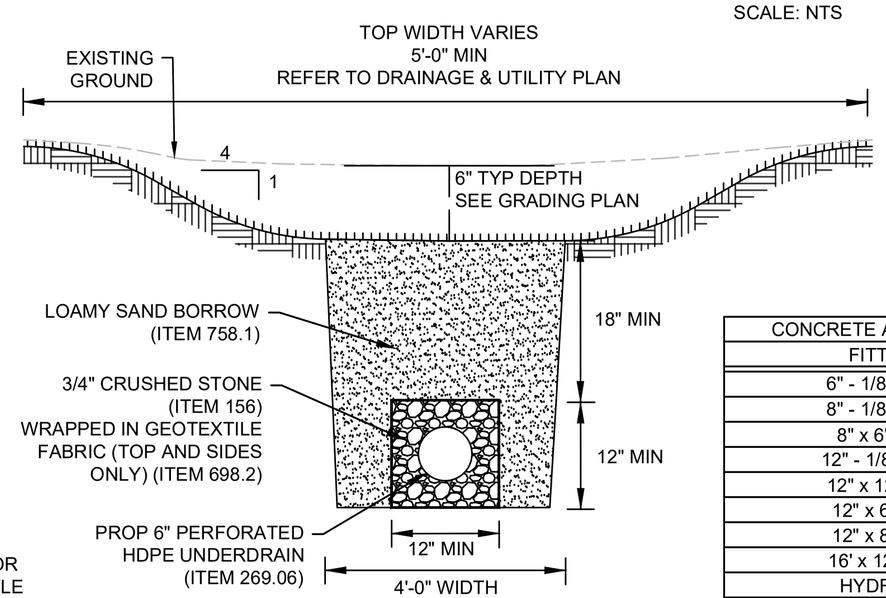


ALTERNATE ECCENTRIC CONE SECTION
NOT TO SCALE



ALTERNATE FLAT TOP SLAB
NOT TO SCALE

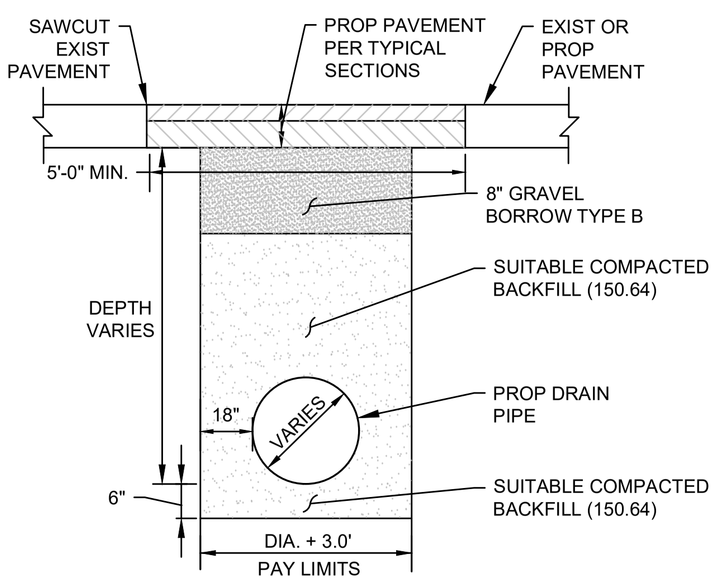
NOTES:
1. BASED ON ACTUAL FIELD CONDITIONS; THE CONTRACTOR SHALL DETERMINE WHICH STYLE OF TOP SECTION SHOULD BE USED.



WATER QUALITY SWALE
SCALE: NTS

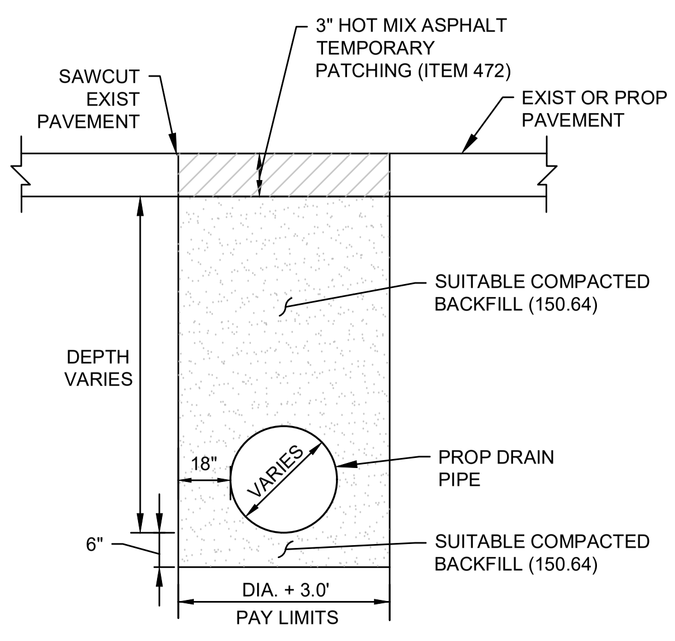
CONCRETE ANCHORAGE THRUST BLOCK REQUIREMENTS	
FITTING	MIN. BEARING AREA (H X B)
6" - 1/8 BEND	32" x 32"
8" - 1/8 BEND	24" x 24"
8" x 6" TEE	20" x 20"
12" - 1/8 BEND	32" x 32"
12" x 12" TEE	24" x 24"
12" x 6" TEE	24" x 24"
12" x 8" TEE	32" x 32"
16' x 12" TEE	24" x 24"
HYDRANT	24" x 24"
8" PLUG	32" x 32"
150 mm PLUG	24" x 24"
8" x 6" REDUCER	24" x 24"
8" - 1/16 BEND	20" x 20"
12' x 8" REDUCER	24" x 24"

NOTE:
ALL CONCRETE TO BE PLACED AGAINST UNDISTURBED EARTH



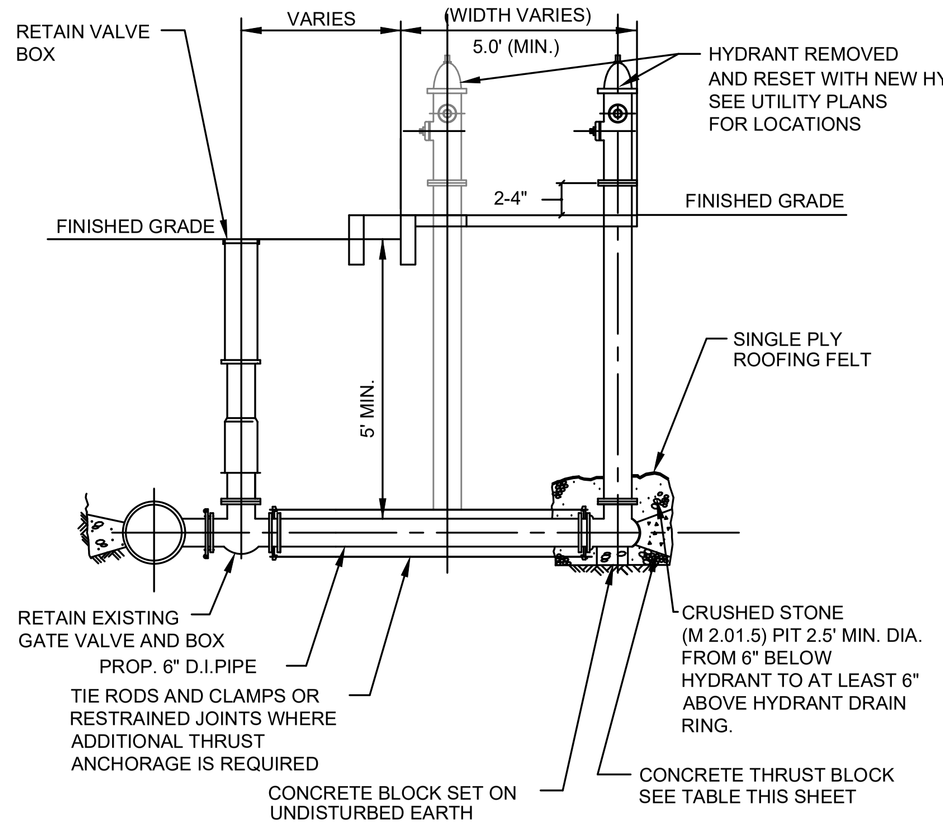
NOTES:
1. ANY EXCAVATED MATERIALS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILL SHALL BE REPLACED WITH GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES AND PAID FOR UNDER ITEM 151.2.

PERMANENT DRAINAGE TRENCH IN MILL AND OVERLAY AREAS
NOT TO SCALE

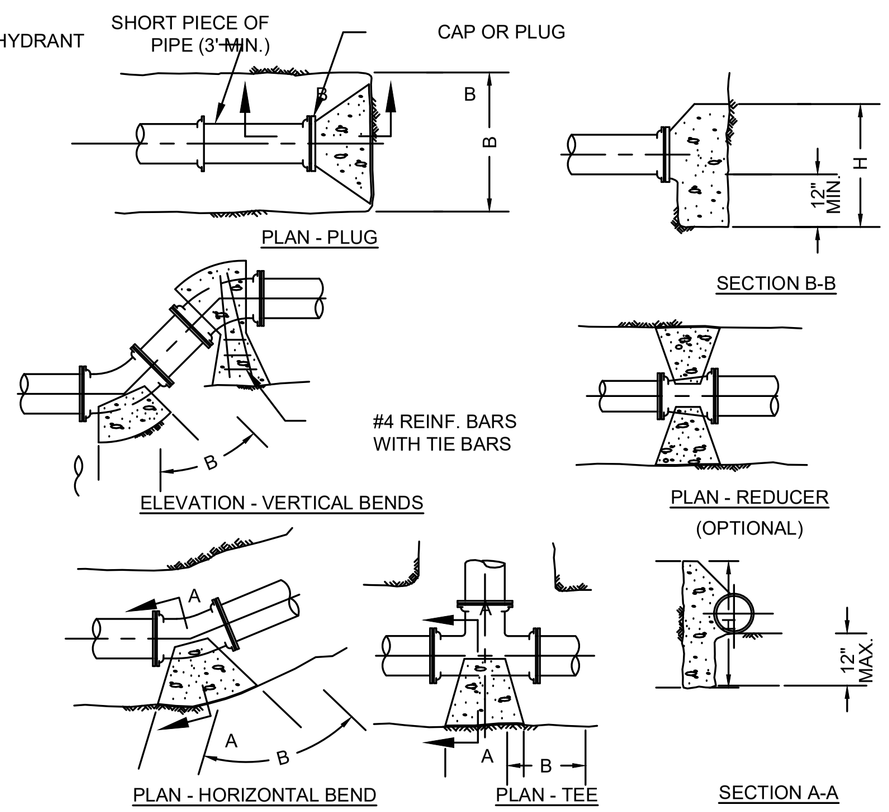


NOTES:
1. ANY EXCAVATED MATERIALS DETERMINED BY THE ENGINEER TO BE UNSUITABLE FOR BACKFILL SHALL BE REPLACED WITH GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES AND PAID FOR UNDER ITEM 151.2.

TEMPORARY DRAINAGE TRENCH IN FULL DEPTH AREAS
NOT TO SCALE

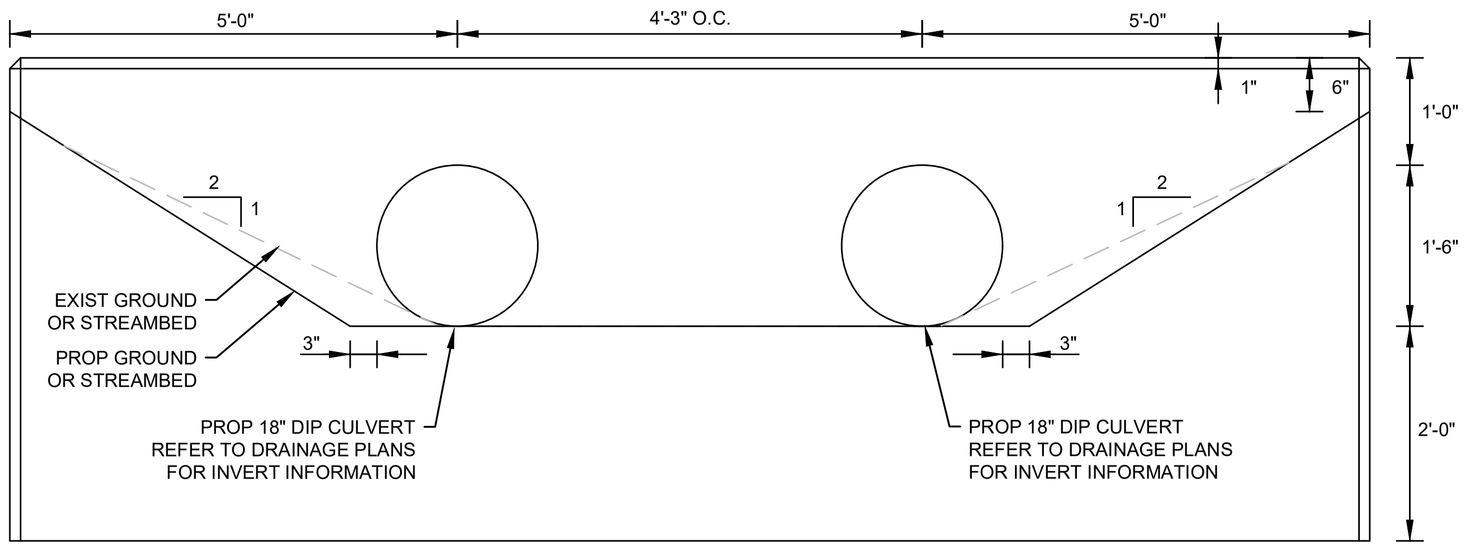


DETAIL FOR HYDRANT REMOVED & RESET
NOT TO SCALE



CONCRETE ANCHORAGE DETAILS
NOT TO SCALE

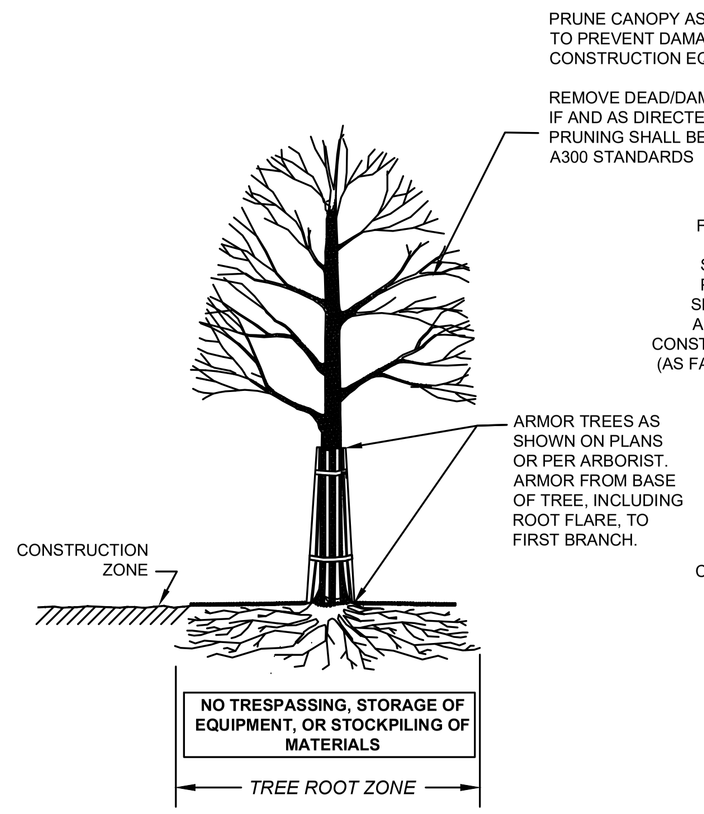
608944_HD(6076 DETAILS).DWG Plotted on 14-May-2025 8:12 AM



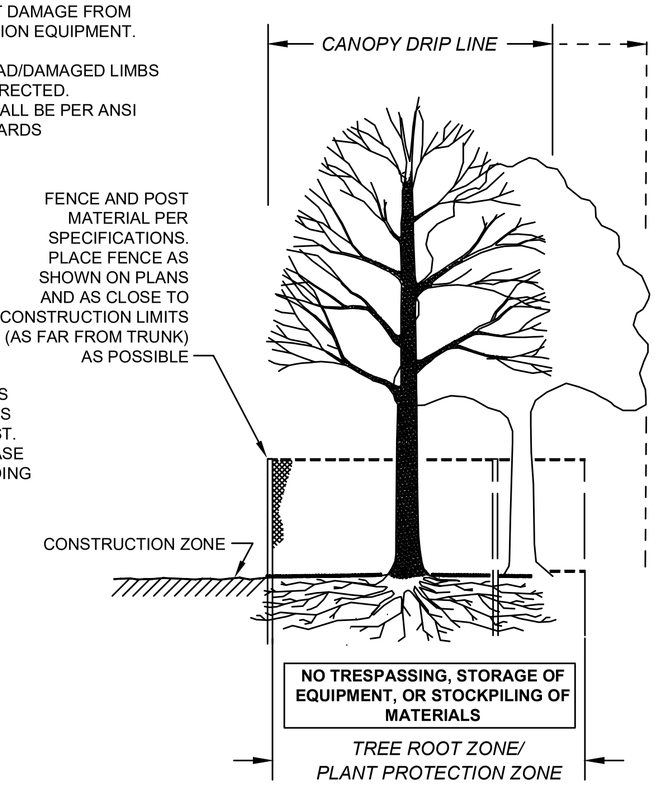
FRONT VIEW

NOTES:
1. CONCRETE MASONRY PIPE END SHALL BE CONSTRUCTED IN ACCORDANCE WITH MASSDOT STD DETAIL E 206.5.0, DESIGN NO. 12, EXCEPT FOR MODIFIED DIMENSIONS AS NOTED.
2. PROVIDE DAMP PROOFING (ITEM 970) ON ALL WALL SURFACES TO BE CONSTRUCTED BELOW GRADE

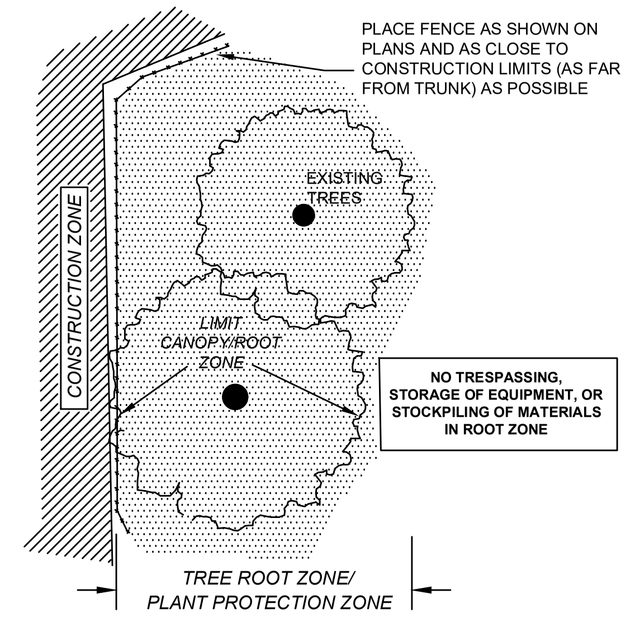
CONCRETE MASONRY PIPE END
NOT TO SCALE



SECTION - TRUNK ARMORING & PRUNING



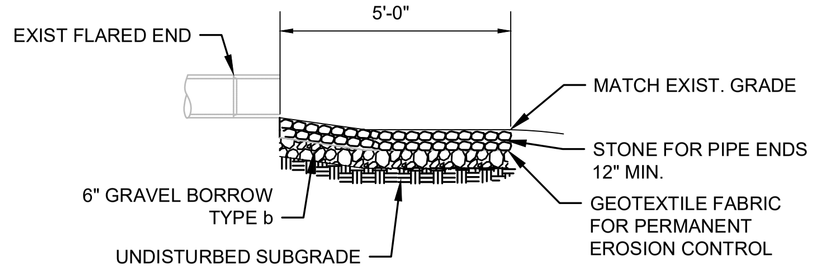
SECTION - FENCE PROTECTION OF ROOT ZONE



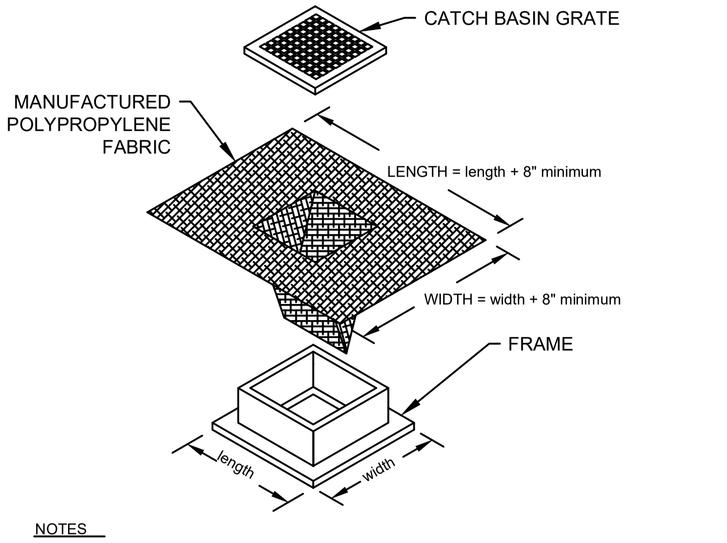
PLAN VIEW - FENCE PROTECTION OF ROOT ZONE

TREE PROTECTION DETAILS
NOT TO SCALE

CAPTURE SEDIMENT AND PREVENT FLOW OFF SITE

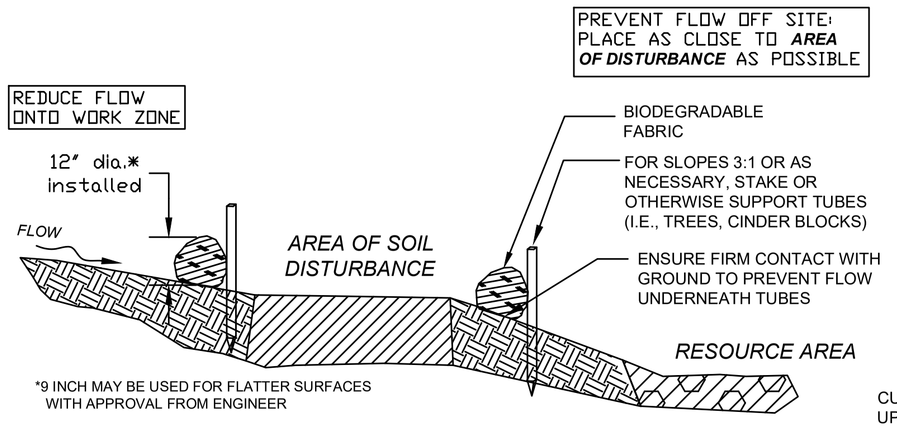


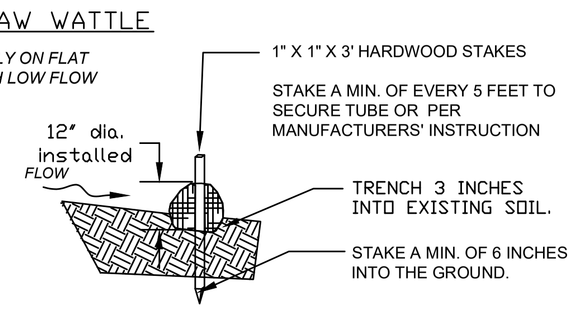
STONE FOR PIPE ENDS DETAIL
NOT TO SCALE



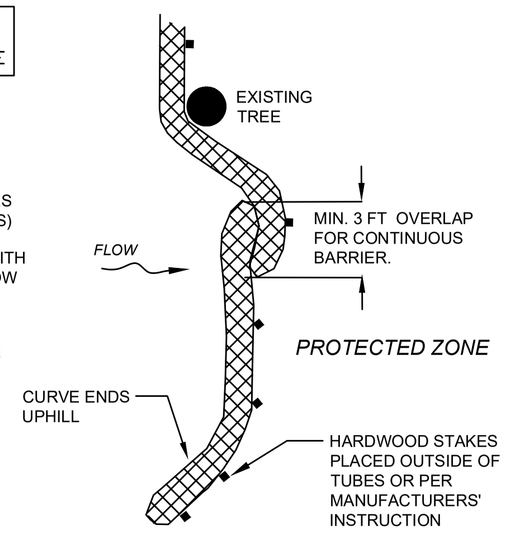
NOTES
1. LENGTH AND WIDTH OF POLYPROPYLENE FABRIC MUST EXCEED EXISTING CATCH BASIN FRAME DIMENSIONS BY A MINIMUM OF 8".
2. REMOVE CATCH BASIN GRATE AND INSTALL POLYPROPYLENE FABRIC OVER CATCH BASIN FRAME. REPLACE CATCH BASIN GRATE TO SECURE POLYPROPYLENE FABRIC IN PLACE.

CATCH BASIN EROSION CONTROL PROTECTION (TYP)
NOT TO SCALE





SECTION



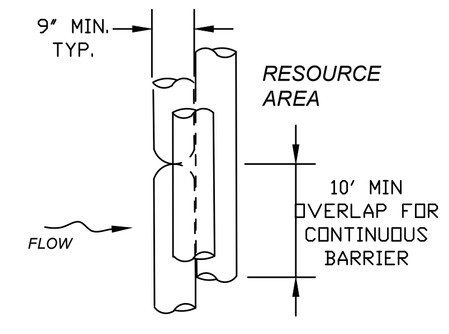
PLACE TUBE ALONG CONTOURS AND PERPENDICULAR TO FLOW.

ADJUST LOCATION AS REQUIRED FOR OPTIMUM EFFECTIVENESS. DO NOT INSTALL IN WATERWAYS.

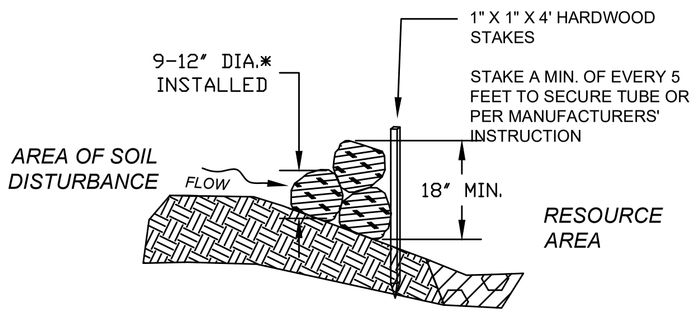
PLACE STAKES AS NEEDED TO SECURE TUBES IN PLACE.

PLAN VIEW

SEDIMENT BARRIERS - COMPOST FILTER TUBES & STRAW WATTLES
NOT TO SCALE

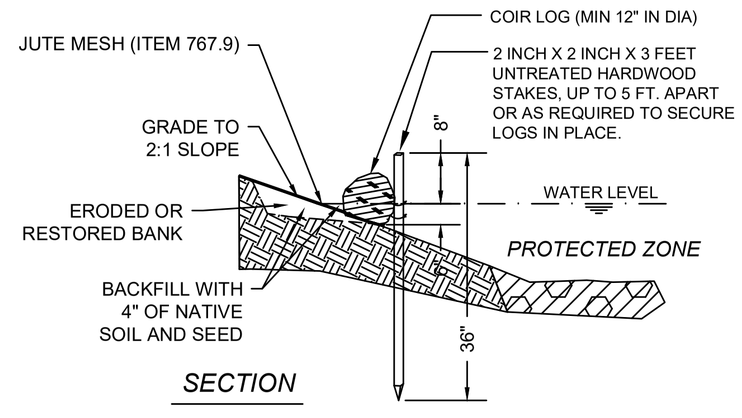


PLAN VIEW



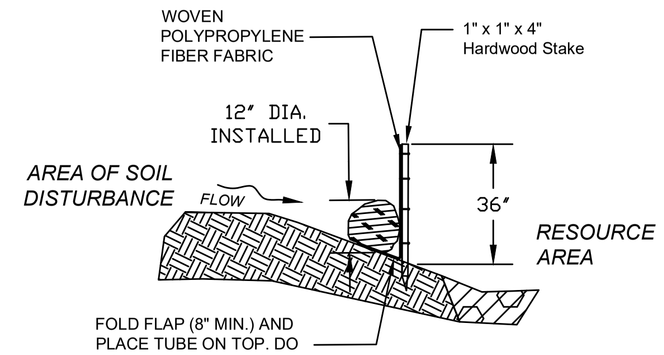
SECTION

COMPOST FILTER TUBE BERM (SLOPES 2:1 OR STEEPER)
NOT TO SCALE



SECTION

COIR LOG DETAIL
NOT TO SCALE



SECTION

COMPOST FILTER TUBE & SILT FENCE
NOT TO SCALE

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	18	28
PROJECT FILE NO.	613052		

CONSTRUCTION PLAN

CONTINUED ON SHEET NO. 22

BEGINING OF PROJECT
STA. 20+93.80
N 2836632.2105
E 728199.3596
MEET EXISTING

CHAUNCY STREET (ROUTE 106)

COMMERCIAL STREET (ROUTE 140)

N/F
BBK MANSFIELD LLC
377 CHAUNCY ST
ASSESS. MAP 17 – PARCEL ID: 17–23
DEED BK 26384 / PAGE 38

ROSEWOOD REALTY TRUST
287 CHAUNCY ST
ASSESS. MAP 17 – PARCEL ID: 17–4
DEED BK 13234 / PAGE 164

JAMES LESTER EPSTEIN
360 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–149
DEED BK 19124 / PAGE 31

ESTATE OF LESTER S. EPSTEIN – 1/2 INTEREST
ESTATE OF JAMES M. EPSTEIN – 1/2 INTEREST
CHAUNCY ST REAR
ASSESS. MAP 20 – PARCEL ID: 20–151
DEED BK 12215 / PAGE 15

JAMES LESTER EPSTEIN
360 CHAUNCY ST
ASSESS. MAP 20 –

1980 SHLO NO. 6345

BEGIN GRAN EDGING +94
LIMIT OF PVMT MILLING & OVERLAY MEET EXIST
END GRAN EDGING +12
PROP GRAN EDGING, TYPE SB
PROP LOAM & SEED (TYP)
PROP GRAN EDGING, TYPE SB
PVMT MILLING AND OVERLAY
SAWCUT (TYP)
PROP GRAN EDGING, TYPE SB
SAWCUT (TYP)
NO LEFT TURN (SYMBOL)
RET EDGING
PVMT MILLING AND OVERLAY
PROP VEGETAGED CHECK DAM
RET EDGING
PROP GRAN EDGING, TYPE SB
PROP LANDSCAPE ISLAND
PROP GRAN EDGING, TYPE SB
SAWCUT (TYP.)
MAST ARM (TYP)
PROP 6' CEM CONC ISLAND
PROP GRAN EDGING, TYPE SB
PROP FULL DEPTH CONSTRUCTION
PROP LANDSCAPE ISLAND
PROP LOAM & SEED
PROP PROP GRAN EDGING TYPE SB
PROP 10' CUT-THROUGH (PCR #CT5)
PROP FULL DEPTH CONSTRUCTION
PROP GRAN EDGING, TYPE SB
RET FENCE FROM STA 25+10 TO 25+30
PROP LOAM & SEED (TYP)
RET GUARDRAIL
R&R FENCE FROM STA 25+30 TO 27+50
RET WALL
REM GUY WIRES
TEMP CONST EASEMENT LINE (TYP)
PROP 5.5' CC SW
PROP GRAN CURB TYPE VB
RET BOUND
PROP PCR #5
RET BOUND
PROP 6' CEM CONC ISLAND
PROP FULL DEPTH CONSTRUCTION
PVMT MILLING AND OVERLAY
SAWCUT (TYP.)
PROP BOUND (TYP.)
RET EXIST CURB
BEGIN SW MEET EXIST +09
BEGIN PROP CURB R&D EXIST CURB
SAWCUT (TYP.)
PROP BRICK BUFFER
PROP BOX WIDENING >4'
REM TRAFFIC SIGNAL CABINET
R&R ELEC HANDHOLE
PVMT MILLING AND OVERLAY
END PROP SHLO ALT NO. 9004 (SECTION 1)
SAWCUT (TYP)
PROP 4' BRICK BUFFER
PROP 8' CC CUT-THRU (PCR #CT1)
PROP PCR #1
PROP GRAN CURB TYPE VB
RET LIGHT & EHH
END SW +85
END GRAN CURB +00
PROP LOAM & SEED
LIMIT OF PVMT MILLING & OVERLAY MEET EXIST
END GRAN EDGING +00
PROP 8' CUT-THROUGH (PCR #CT2)
PROP GRAN EDGING, TYPE SB
PROP BRICK STRIP
PROP PCR #2
SAWCUT (TYP.)
PROP 5' BRICK BUFFER
PROP 8' CEM CONC SW
PROP PCR #3
PROP LANDSCAPE ISLAND
PROP GRAN EDGING,TYPE SB
PROP PVMT MILLING AND OVERLAY
PROP GRAN CURB, TYPE VB
SAWCUT (TYP.)
PROP 4' BRICK BUFFER
PROP 8' CC SHARED USE PATH
PROP SEDIMENT CONTROL BARRIER
PROP LOAM & SEED (TYP)
PROP PCR #4
BEGIN SW +78
BEGIN CURB +71
PI +50.00
+20.30
283+73.67
PT +11.70
PCC +61.90
PCC +34.84
BEGIN PROP SHLO ALT NO. 9004 (SECTION 1)
PROP BIKE RAMP REFER TO DETAIL
R&R CLF
PROP TREE TRIMMING
PROP 8' CC SHARED USE PATH
RELOCATE LIGHTING CABINET (BO)
PROP GRAN CURB TYPE VB
PROP LOAM & SEED (TYP)
24+06.44 ROUTE 106 (CHAUNCY STREET)=
158+85.71 ROUTE 140 (COMMERCIAL ST)
PROP PROP GRAN EDGING TYPE SB
PROP GRAN EDGING, TYPE SB
PROP 8' CUT-THROUGH (PCR #CT2)
PROP 8' CC CUT-THRU (PCR #CT1)
LIMIT OF PVMT MILLING & OVERLAY MEET EXIST
PROP GRAN EDGING,TYPE SB
PROP 8' CC SHARED USE PATH
PROP SEDIMENT CONTROL BARRIER
PROP LOAM & SEED (TYP)
PROP PCR #4
BEGIN SW +78
BEGIN CURB +71
RET BOUND
RET MB
RET WALL
BEGIN GRAN EDGING +94
BEGIN PROP SHLO ALT NO. 9004 (SECTION 1)
BEGIN PROP CURB R&D EXIST CURB
BEGIN SW MEET EXIST +09
PROP BOUND (TYP.) RET EXIST CURB
CONST B
RECORD B
MA 1-1
MA 1-2
MA 1-3
MA 1-4
MA 1-5
BOS
EOP
SCB
BIT WALK
GRANITE CURB
SLOPED GRANITE EDGING
BIT PAVED ISLAND
BIT PAVED PARKING
BLOCK RET WALL
WOOD GUARD RAIL
CHAIN LINK FENCE
TREE LINE
WOODED
GRASS
RIPRAP
1980 SHLO NO. 6345
S15°03'56"W
31.49'
22.0'
46.1'
40.9'
40.5'
56.1'
CONTINUED ABOVE
CONTINUED ON SHEET NO. 19
SEE INSET BELOW
CONTINUED ON SHEET NO. 22

0 20 50 100
SCALE: 1" = 20'

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	19	28
PROJECT FILE NO.	613052		

CONSTRUCTION PLAN

Proposal No. 613052-131228

608944_HDI(6076 CONST).DWG Plotted on 14-May-2025 8:13 AM

A00861 - 33

IMPACTS LEGEND
- BANK (TEMPORARY)
- BANK (PERMANENT)
- LAND UNDER WATER (TEMPORARY)
- LAND UNDER WATER (PERMANENT)

N

ROSEWOOD REALTY TRUST
287 CHAUNCY ST
ASSESS. MAP 17 – PARCEL ID: 17–4
DEED BK 13234 / PAGE 164

N/F
UNITED STATES
POSTAL SERVICE
12 GILES PL
ASSESS. MAP 17
PARCEL ID: 17–7
DEED BK 3528 /
PAGE 126

GEM REALTY TRUST
273 CHAUNCY ST
ASSESS. MAP 17 – PARCEL ID: 17–6
DEED BK 21367 / PAGE 196

MANISHA REALTY, LLC
292 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–183
DEED BK 79 / PAGE 80
LC. CERT. #14689
LC. CASE #26023

MANISHA REALTY, LLC
282 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–183
DEED BK 79 / PAGE 79
LC. CERT. #14688
LC. CASE #26023

BROOKSIDE OFFICE CONDO PAR
272 CHAUNCY ST
ASSESS. MAP 20
PARCEL ID: 20–186
LC. DEED BK C6 / PAGE 1
LD. CERT. #C6
LC. CASE #28116

RET FENCE FROM STA 25+10 TO 25+30
RET GUARDRAIL
R&R FENCE FROM STA 25+30 TO 27+50
RET WALL
REM GUY WIRES
TEMP CONST EASEMENT LINE (TYP)
PROP 5.5' CC SW
PROP GRAN CURB TYPE VB
RET BOUND
PROP PCR #5
PCC +61.90
RT +11.70
233
283+73.67
PVMT MILLING AND OVERLAY
PROP 6' CEM CONC ISLAND
PROP FULL DEPTH CONSTRUCTION
SAWCUT (TYP.)
PI +50.00
CONST ℄ RECORD ℄
PROP PVMT MILLING AND OVERLAY
+20.30
SAWCUT (TYP)
RET FENCE STA 26+55 TO STA 27+00
PROP 4' BRICK BUFFER
PROP 5' BRICK BUFFER
PROP 8' CEM CONC SW
PROP GRAN CURB, TYPE VB
SAWCUT (TYP.)
PROP PCR #3
PROP LANDSCAPE ISLAND
PROP GRAN EDGING,TYPE SB
PROP 8' CC SHARED USE PATH
PROP SEDIMENT CONTROL BARRIER
PROP LOAM & SEED (TYP)
PROP PCR #4
BEGIN SW +78
BEGIN CURB +71
1980 SHLO NO. 6345
PROP LOAM & SEED (TYP)
PROP 5.5' CC SW
PROP TREE TRIMMING
RET BOUND
PROP GRAN CURB TYPE VB
PROP BOX WIDENING > 4'
SAWCUT (TYP)
PVMT MILLING AND OVERLAY
RET BOUND
RET LP
END PROP SHLO ALT NO. 9004 (SECTION 2)
RET TRANSFORMER AND CONC PAD
RET BUSHES
PROP LOAM & SEED (TYP)
RET TREE
PERM UTILITY EASEMENT LINE (TYP)
RET BUSHES
R&R UTILITY CABINET (BO)
PROP TREE TRIMMING
BEGIN PROP SHLO ALT NO. 9004 (SECTION 2)
R&S FENCE STA 27+00 TO 27+10
R&R GRAN CURB
RET BOUNDS (8)
BEGIN PROP SHLO ALT NO. 9004 (SECTION 3)
SAWCUT MEET EXIST
PROP GRAN CURB TYPE VB REM BERM
PROP BOUND (TYP.)
RET SIGNS
PROP PCR #6
PROP GRAN CURB TYPE VB
PROP BOX WIDENING > 4'
PROP PCR #7
PI +50.00
REFER TO SHEET 28 FOR QUANTIFICATION OF IMPACTS
PROP CONTROL OF WATER
PROP GUARDRAIL TYPE TL-2
PROP SEDIMENT CONTROL BARRIER (TYP)
PROP SHLO ALT LINE (TYP)
TEMP CONST EASEMENT LINE (TYP)
R&R GRAN CURB
PROP TREE TRIMMING
END S.H.L.O. NO. 6345 1980
BEGIN S.H.L.O. NO. 6467 1981
PROP 5.5' CC SW
REM TREE
PROP COIR LOGS AT BANK OF STREAM
PROP MULCH
20' WIDE SEWER EASEMENT L.C. DOC #79241 L.C. CERT
RET SIGN
PROP CC WALK
PROP 8' CC SHARED USE PATH
RET BUSH
PROP PCR #8
RET PLANTINGS
RET LIGHT
PROP HMA DWY
SAWCUT MEET EXIST
REGRADE TEMPORARY IMPACTED BANK TO MATCH EXISTING. RESTORE WITH WETLAND SEED - RIPARIAN MIX (ITEM 765.553) STABILIZE SLOPE WITH COIR LOG (ITEM 767.122) AND JUTE MESH (ITEM 767.9)
RET BIT CONC WALK
REM BOUNDS
PERM EASEMENT LINE (TYP)
PROP BOUND (TYP.)
RET LANDSCAPING & TREE
PROP MAST ARM FOR SIGN
RET PLANTER
REM LANDSCAPING
R&R SIGN (BO)
REM HEDGES
REM HEAD WALL
PROP PCR #9
R&R GRAN CURB
PROP PCR #10
PROP BOX WIDENING > 4'
R&R GRAN CURB
RET CONC VAULT
RET LANDSCAPING
DRAINAGE EASEMENT WIDTH VARIES BOOK 2010 PAGE 288
R&R SIGN & FLOOD LIGHTS (BO)
TO WIDE SEWER EASEMENT L.C. DOC #79241, 8056 801 & 802 L.C. CERT. #7924
20' WIDE SEWER ACCESS & UTILITY EASEMENT L.C. DOC #79241, L.C. CERT. #9882
25' RIGHT OF WAY EASEMENT L.C. DOC #27784, L.C. CERT. #7924
CHAUNCY STREET (ROUTE 106)
1981 SHLO NO. 6467
1980 SHLO NO. 6345
WETLAND BUFFER
100-FT WETLAND BUFFER
CONTINUED ON SHEET NO. 18
CONTINUED ON SHEET NO. 20

0 20 50 100
SCALE: 1" = 20'

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	20	28
PROJECT FILE NO.	613052		

CONSTRUCTION PLAN

Proposal No. 613052-131228

608944_HDI(6076 CONST).DWG Plotted on 14-May-2025 8:13 AM

A00861 - 34

N

N/F UNITED STATES POSTAL SERVICE 12 GILES PL ASSESS. MAP 17 PARCEL ID: 17-7 DEED BK 3528 / PAGE 126

GEM REALTY TRUST 273 CHAUNCY ST ASSESS. MAP 17 – PARCEL ID: 17-6 DEED BK 21367 / PAGE 196

GILES PLACE

1991 TOWN LAYOUT

30+86.18 ROUTE 106 (CHAUNCY STREET)= 100+00.00 GILES PLACE

102+00

101

B4-400

B4-401

B4-402

5' WIDE SEWER AND SIDEWALK EASEMENT

DRAINAGE EASEMENT PLAN BOOK 281 PAGE 28

5' WIDE SEWER AND SIDEWALK EASEMENT PLAN BOOK 281 PAGE 28

10' WIDE SEWER EASEMENT

EXISTING BUILDING "CVS PHARMACY" 261 CHAUNCY STREET

WEC 99J-40 LLC 261 CHAUNCY ST ASSESS. MAP 20 – PARCEL ID: 20-200 DEED BK 8616 / PAGE 254

EXISTING BUILDING "WALGREENS" 243 CHAUNCY STREET

A&E BROTHERS, LLC 243 CHAUNCY ST ASSESS. MAP 20 – PARCEL ID: 20-199 DEED BK 18852 / PAGE 49

A&E BROTHERS LLC 243 CHAUNCY ST ASSESS. MAP 20 – PARCEL ID: 20-199 DEED BK 18852 / PAGE 49

EXISTING BUILDING MONARCH REALTY GROUP 273 CHAUNCY STREET #273

RET LANDSCAPING

PERM EASEMENT LINE (TYP)

PROP BOUND (TYP.)

RET LANDSCAPING & TREE

PROP MAST ARM FOR SIGN

RET PLANTER

REM LANDSCAPING

R&R SIGN (BO)

REM HEDGES

RET STONE SWALE

LIMIT OF WORK MEET EXIST

RET LANDSCAPING

RET LANDSCAPING

BEGIN CURB

RET CB

PROP MULCH

REM TREE

R&R SIGN (BO)

REM TREE & SHRUBS

TEMP CONST EASEMENT LINE (TYP)

RET LIGHT

R&R GRAN CURB

PROP 5.5' CC SW

PROP SHLO ALT LINE (TYP)

END CURB

REM TREE & LANDSCAPING

PROP LOAM & SEED (TYP)

PROP GRAN CURB TYPE VA2 AT BSW

R&R GRAN CURB

SAWCUT MEET EXIST

PROP HMA DWY

RET SHRUBS

PROP MULCH

RET TREE

PROP TREE PROTECTION (TYP)

PROP GRAN CURB TYPE VB

RET SHRUB

R&R SIGN

SAWCUT MEET EXIST

PROP HMA DWY

RET SIGN & SHRUBS

RET CURB

PROP HMA WALK

RET LIGHT POLE

RET WALL

RET TREES

R&R HYDRANT

PROP 5.5' CC SW

RET WALL

RET TREE

RET LIGHT POLE

R&R GRAN CURB

RET TREE

RET BUSH

RET HEDGE

RET TREE

REM HEDGE

PROP BOUND (TYP.)

RET SIGN

RET BUSHES

RET TREE

END S.H.L.O. NO. 6467 1981

1981 SHLO NO. 6467

1980 SHLO NO. 6345

END S.H.L.O. NO. 6345 1980

BEGIN S.H.L.O. NO. 6467 1981

BOS

TOS

PROP PCR #11

PROP PCR #10

PROP BOX WIDENING > 4'

R&R GRAN CURB

RET SHRUBS

BEGIN PROP SHLO ALT NO. 9004 (SECTION 5)

CONST B

100+00

RECORD B

PROP PVMT MILLING & OVERLAY

PC +41.81

PT +62.63

PROP SAWCUT (TYP)

REM LANDSCAPING

PROP BOX WIDENING > 4'

RET BUSHES

PROP BOX WIDENING > 4'

28.00'

DWY - 2

35.00'

DWY - 3

44.38'

DWY - 1

53.20'

DWY - 4

19.50'

8.00'

5.40'

CONTINUED ON SHEET NO. 19

CONTINUED ON SHEET NO. 21

CHAUNCY STREET (ROUTE 106)

RET CB

RETAIN BERM

PROP MULCH

PROP GRAN CURB TYPE VB AT BSW

PROP HMA CURB TYPE 2

PROP 8' CC SHARED USE PATH

PROP LOAM AND SEED

PROP 4' BRICK BUFFER

R&D CURB

RET LIGHT

RET SHRUBS

RET TRANSFORMER

TEMP. EASEMENT LINE

PROP HMA DWY APRON

PROP CC DWY

PROP HMA DWY

SAWCUT MEET EXIST

PROP MULCH

PROP BOUND (TYP.)

PERM UTILITY EASEMENT LINE (TYP)

PROP SHLO ALT LINE (TYP)

BEGIN CURB

R&S CONC BLOCK WALL AND TREES/ PLANTERS ON WALL

RET FENCE & LANDSCAPING

RET TRANSFORMER

PROP SAWCUT

R&R GRAN CURB

PROP 4' BRICK BUFFER

PROP 8' CC SHARED USE PATH

PROP HMA CURB TYPE 2

RET SIGN

PROP GRAN CURB TYPE VB AT BSW

REM SHRUBS (STA 33+10 RT TO STA 33+85 RT)

PROP HMA DWY APRON

PROP CC DWY

PROP HMA DWY

SAWCUT MEET EXIST

END CURB

RET SHRUBS

PERM EASEMENT LINE (TYP)

PROP HMA DWY APRON

PROP MULCH

REM PVMT & BERM

PROP HMA CURB TYPE 2

PROP MULCH

TEMP CONST EASEMENT LINE (TYP)

RET BOULDER AND SHRUBS

PROP MAST ARM FOR HIGHWAY SIGN

REM BOULDER

PROP BOUND (TYP.)

1946 TOWN LAYOUT

RET LANDSCAPING

R&R SIGN & FLOOD LIGHTS (BO)

DRAINAGE EASEMENT WIDTH VARIES BOOK 2010 PAGE 288

BROOKSIDE OFFICE CONDO PARK 272 CHAUNCY ST ASSESS. MAP 20 PARCEL ID: 20-186 LC. DEED BK C6 / PAGE 1 LD. CERT. #C6 LC. CASE #28116

L.C. DOC #27784, L.C. CERT #7924 25' RIGHT OF WAY EASEMENT

#272 EXISTING BUILDING "BROOKSIDE OFFICE CONDOS" 272 CHAUNCY STREET

#260 EXISTING PLAZA BUILDING 260 CHAUNCY STREET

DANGELO, INC. 260 CHAUNCY ST ASSESS. MAP 20 PARCEL ID: 20-154 DEED BK 37 / PAGE 152 LC. CERT. #7909 LC. CASE #25856

EXISTING RESTURANT BUILDING "CIBO MATTO CAFFE" 254 CHAUNCY STREET

254 CHAUNCY STREET, LLC 254 CHAUNCY ST ASSESS. MAP 20 – PARCEL ID: 20-156 DEED BK 22278 / PAGE 179

LARMONT REALTY TRUST 242 CHAUNCY ST ASSESS. MAP 20 – PARCEL ID: 20-136 DEED BK 2338 / PAGE 347

0 20 50 100

SCALE: 1" = 20'

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	21	28
PROJECT FILE NO.	613052		

CONSTRUCTION PLAN

608944_HDI(6076 CONST).DWG Plotted on 14-May-2025 8:13 AM

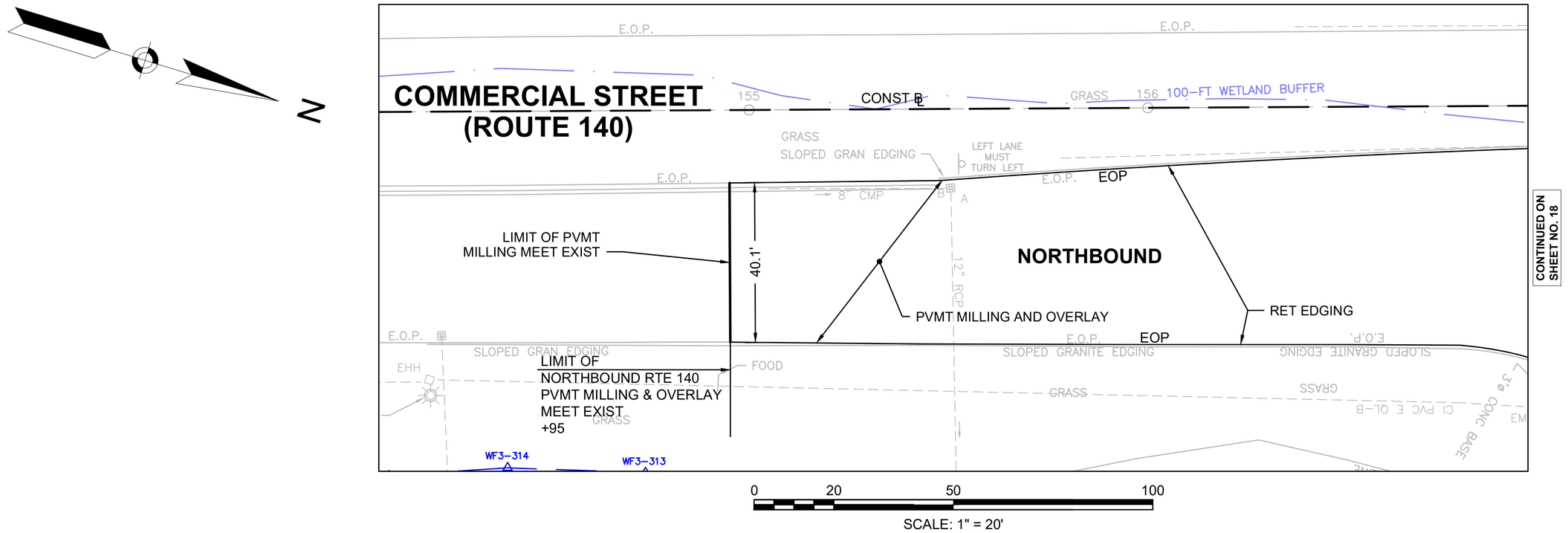
CONTINUED ON SHEET NO. 20

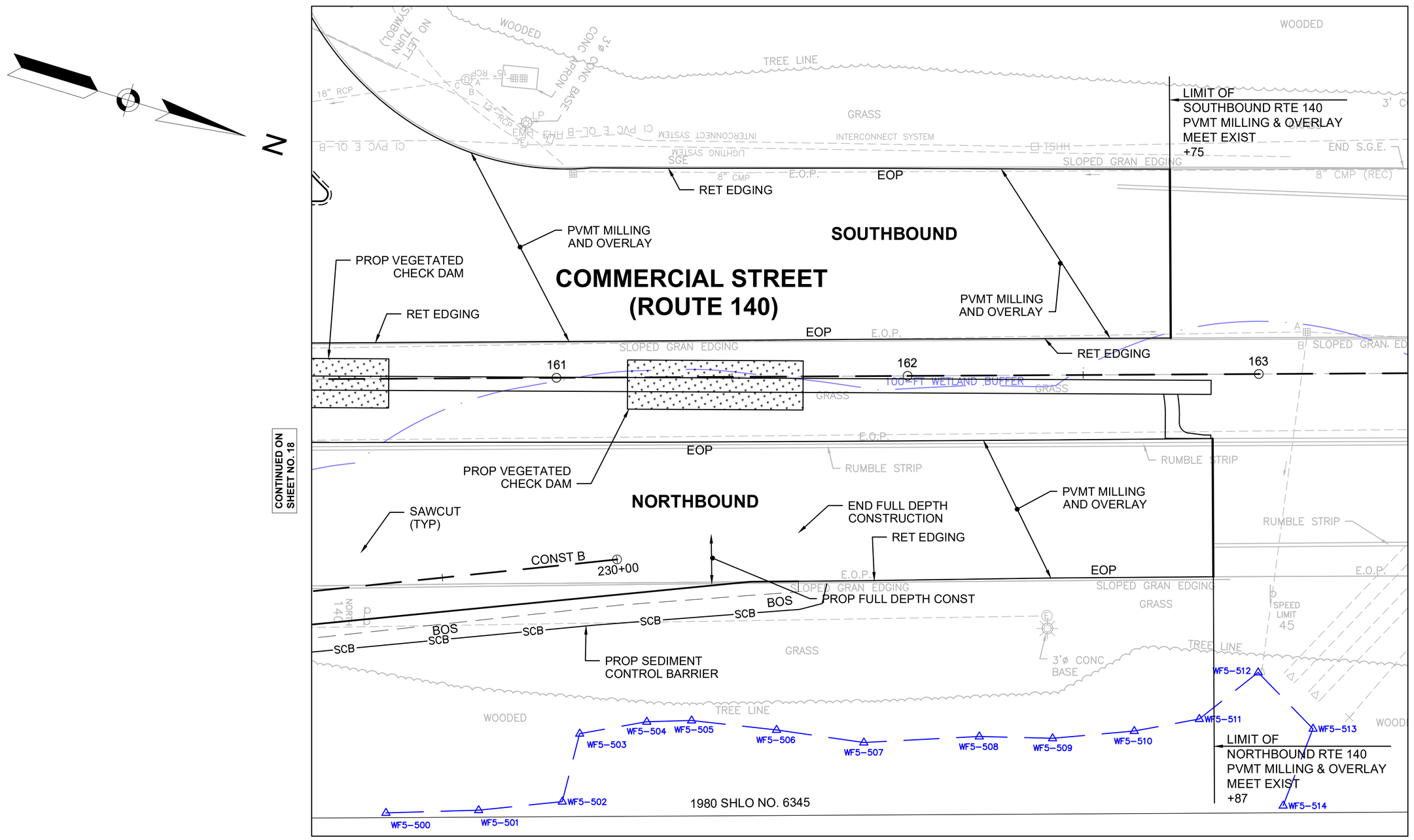
RET HEDGE
LIMIT OF MILL & OVERLAY
MEET EXIST +07
RET TREE
LIMIT OF SW MEET EXIST
REM SHRUB
PROP CC SW
REM SHRUB
RET LIGHT
1964 SHLO NO. 4230
ASSESS. MAP 20 – PARCEL ID: 20–181
DEED BK 16322 / PAGE 3
LIMIT OF SW MEET EXIST
PROP CC SW
PROP CC DWY
PROP HMA DWY
PROP CC SW
R&R GRAN CURB
RET CONC. CURB
PROP CC DWY
RET CONC. CURB
COBBLE HILL DEVELOPMENT, LLC,
LOGAN ATWOOD, LLC, AND MANSFIELD III, LLC
205–215 CHAUNCY ST, 234 CENTRAL ST
ASSESS. MAP 20 – PARCEL ID: 20–177
DEED BK 27897 / PAGE 106
END S.H.L.D. NO. 4230 1954
END 1946 TOWN LAYOUT
RET SIGN
RET LIGHT (SEE NOTE 1)
RET TREE
R&R GRAN CURB
RET LIGHT (SEE NOTE 1)
PROP PVMT MILLING & OVERLAY
PROP CC SW
R&R GRAN CURB
BEGIN PROP SHLO ALT NO. 9004 (SECTION 6)
PROP BOUND (TYP.)
RET "CHASE" SIGN & LANDSCAPING
REM TREE
PROP LOAM AND SEED
PERM EASEMENT LINE
PROP SHLO ALT LINE
TEMPORARY EASEMENT LINE (TYP)
PROP BOUND (TYP.)
R&R GRAN CURB
PROP 4' BRICK BUFFER
LIMIT OF SW MEET EXIST
RET SHRUB
RET CURB
RET BIT CURB
RECORD ℄
CHAUNCY STREET (ROUTE 106)
RET TREE
END OF PROJECT
STA. 40+32.78
N 2836297.5019
E 730083.8662
MEET EXISTING
&E BROTHERS LLC
243 CHAUNCY ST
SS. MAP 20 – PARCEL
ID: 20–199
BK 18852 / PAGE 49
JT BUILDING & DEVELOPMENT, LLC
235 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–165
DEED BK 12238 / PAGE 334
RET LANDSCAPING
PROP CC SW
PROP CC WALK
PROP FULL DEPTH CONSTRUCTION
PROP CC CUT THROUGH (PCR #CT12)
PROP PCR #12
PROP BOUND (TYP.)
R&R MEMORIAL & SIGN
RET LIGHT POST
PROP 3'-9" CC WALK
PROP CC SW
PROP TREE PROTECTION (TYP)
END PROP SHLO ALT NO. 9004 (SECTION 3)
PROP BOX WIDENING > 4'
PROP BOUND (TYP.)
BOULDER
PROP BOX WIDENING > 4'
R&R GRAN CURB
PROP PCR #14
PROP PCR #15
PROP BOUND (TYP.)
END PROP SHLO ALT NO. 9004 (SECTION 5)
R&R CURB
PROP MULCH
REM PVMT & BERM
PROP HMA CURB TYPE 2
PROP MULCH
TEMP CONST EASEMENT LINE (TYP)
TRIM TREES AS REQUIRED FOR PROP OHW
BEGIN R&R CURB AT BSW
PROP 4' BRICK BUFFER
REM PLANTER & SHRUBS
PROP LOAM & SEED
PROP SHLO ALT LINE (TYP)
END MULCH BEGIN LOAM & SEED
PROP 8' CC SHARED USE PATH
PROP LOAM & SEED
REM LANDSCAPE WITHIN GRADING LIMITS
RET LIGHT
PROP PEDESTRIAN SIGNAL (TYP)
PROP LOAM & SEED
REM EXIST PAVEMENT
PROP CC WALKWAY
RET CB
36+74.21 ROUTE 106 (CHAUNCY STREET)=
71+95.54 COPELAND DRIVE
PROP BOUND (TYP.)
PROP SAWCUT
PROP GRAN EDGING TYPE SB
END R&R CURB AT BSW
PROP SHLO ALT NO. 9004 (SECTION 6)
PROP HMA DWY AT BACK OF SW
PROP CC SW
SAWCUT MEET EXIST
PROP HMA DWY
PROP CC DWY
RET SHRUB
RET SIGN
LIMIT OF SW MEET EXIST
END GRAN CURB
R&D SHRUBS
PROP CC SW
PROP 8' CC SW
PROP PVMT MILLING & OVERLAY
END OF MILL & OVERLAY
LIMIT OF SW MEET EXIST
RET TREE
PROP CC DWY
PROP HMA DWY
PROP OH SERVICE CONNECTION
PROP BOUND (TYP.)
PROP CC DWY
PROP HMA DWY
SAWCUT MEET EXIST
END GRAN CURB TYPE VB AT BSW
PROP GRAN CURB TYPE VB
PROP HMA DWY AT BACK OF SIDEWALK
PROP 4' BRICK BUFFER
PROP GRAN CURB TYPE VB
PROP BOX WIDEN < 4'
PROP BOX WIDEN > 4'
PROP PCR #16
PROP CC ISLAND
PROP MA (TYP)
PROP PCR #17
PROP PCR #19
PROP PCR #18
PROP CC SIDEWALK
REM BOLLARDS
REM CONC PAD
BEGIN GRAN CURB TYPE VB
END PROP SHLO ALT NO. 9004 (SECTION 6)
PROP TEMP TREE PROTECTION FENCE
END GRAN CURB
PROP PCR #20
END GRAN CURB, CC SW, MEET EXISTING
PROP PCR #21
LIMIT OF MILL & OVERLAY. MEET EXIST +58
PROP GRAN CURB TYPE VB
PROP HMA DWY AT BACK OF SIDEWALK
PROP 4' BRICK BUFFER
PROP HMA DWY AT BACK OF SW
PROP CC SW
SAWCUT MEET EXIST
PROP HMA DWY
PROP CC DWY
RET SHRUB
RET SIGN
LIMIT OF SW MEET EXIST
END GRAN CURB
PROP CC SW
R&D SHRUBS
END R&R CURB TYPE VB
PROP SHLO ALT NO. 9004 (SECTION 5)
PROP R&R CURB
PROP CC SW
R&R GRAN CURB TYPE VB
PROP BOX WIDENING > 4'
PROP PCR #17
PROP PCR #18
PROP PCR #19
PROP PCR #15
PROP PCR #14
PROP PCR #16
PROP PCR #20
PROP PCR #21
PROP GRAN CURB TYPE VB
PROP HMA DWY AT BACK OF SIDEWALK
PROP 4' BRICK BUFFER
PROP HMA DWY AT BACK OF SW
PROP CC SW
SAWCUT MEET EXIST
PROP HMA DWY
PROP CC DWY
RET SHRUB
RET SIGN
LIMIT OF SW MEET EXIST
END GRAN CURB
R&D SHRUBS
PROP CC SW
PROP 8' CC SW
PROP PVMT MILLING & OVERLAY
END OF MILL & OVERLAY
LIMIT OF SW MEET EXIST
RET TREE
PROP CC DWY
PROP HMA DWY
PROP OH SERVICE CONNECTION
PROP BOUND (TYP.)
PROP CC DWY
PROP HMA DWY
SAWCUT MEET EXIST
END GRAN CURB TYPE VB AT BSW

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	22	28
PROJECT FILE NO.	613052		

CONSTRUCTION PLAN





Proposal No. 613052-131228
608944_HDI(6076 CONST).DWG Plotted on 14-May-2025 8:13 AM
A00861 - 36

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	23	28
PROJECT FILE NO.	613052		

DRAINAGE & UTILITY PLAN

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
CB-157	157+61 50.2' RT	176.13		I=172.10' (CIT-157)	BAR STYLE GRATE
CB-159	159+77.8 74.7' RT	177.37		I=173.40' (CIT-159)	BAR STYLE GRATE
CIT-157	157+46.7 58.4' RT	176.14	I=172.00' (CB-157) I = 171.4' ± (EXIST)	I = 171.5' ± (EXIST)	CHANGE-IN-TYPE
CIT-159	159+62.1 58.5' RT	177.53	I=173.30' (CB-159)	I = 172.9' ± (EXIST)	CHANGE-IN-TYPE SECURED COVER

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
CB-22	22+52.4 -30.0' LT	177.31		I=173.80' (EX-DMH-22-1)	OFFSET COVER LOW POINT
CBCI-21	21+49.6 27.2' RT	177.72		I=173.50' (CIT-21)	
CBCI-23	22+16.7 37.5' RT	177.18		I=172.40' (CIT-23)	OFFSET COVER
CBCI-24	22+29.2 37.7' RT	177.17		I=172.40' (CIT-23)	LOW POINT OFFSET COVER
CIT-21	21+75.4 27.5' RT	177.54	I=173.20' (CBCI-21)	I = 172.9' ± (EXIST)	CHANGE-IN-TYPE
CIT-23	22+26.8 28.0' RT	177.36	I=172.30' (CBCI-24) I=172.30' (CBCI-23)	I = 172.2' ± (EXIST)	CHANGE-IN-TYPE
EX-CB-22-2	22+75.5 -43.2' LT	177.43		I=174.10' (DMH-23-2)	
EX-DMH-21	21+80.3 -7.2' LT	177.97	I = 172.5' ± (EXIST) I = 172.6' ± (EXIST) I = 172.6' ± (EXIST)	I=172.40' (EX-DMH-22)	
EX-DMH-22	22+32.3 -7.5' LT	177.77	I = 172.0' ± (EXIST) I=171.90' (EX-DMH-21) I = 172.0' ± (EXIST) I = 172.0' ± (EXIST)	I=171.80' (DMH-23)	
EX-DMH-22-1	22+42.7 -25.2' LT	177.39	I=173.70' (CB-22)	I = 172.4' ± (EXIST)	

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
CB-23-2	23+06.6 -64.3' LT	179.01		I=175.00' (DMH-23-2)	
CBCI-25	24+55.7 -30.0' LT	176.80		I=172.70' (DMH-25)	
DMH-23	23+15.9 -16.8' LT	178.49	I=171.20' (EX-DMH-22) I = 171.8' ± (EXIST)	I=171.10' (DMH-24)	6' DIA
DMH-23-2	22+88.6 -49.0' LT	178.22	I = 172.1' ± (EXIST) I=174.20' (CB-23-2) I=173.90' (EX-CB-22-2)	I = 172.0' ± (EXIST)	BUILD ON EXIST
DMH-24	23+88.1 -17.9' LT	178.47	I=170.60' (DMH-23) I=172.70' (EX-CB-24)	I=170.50' (EX-DMH-24)	SECURED COVER
DMH-25	24+66.2 -35.7' LT	176.54	I = 170.6' ± (EXIST) I=172.50' (CBCI-25)	I = 170.5' ± (EXIST)	BUILD ON EXIST
EX-CB-24	23+84 -35.3' LT	178.21	I = 174.2' ± (EXIST) I = 173.8' ± (EXIST)	I=173.40' (DMH-24)	
EX-DMH-24	24+80.1 -19.3' LT	176.46	I = 169.9' ± (EXIST) I=169.80' (DMH-24)	I=169.70' (EX-DMH-25)	
EX-DMH-25	24+89 6.6' RT	176.63	I=169.60' (EX-DMH-24)	I = 169.5' ± (EXIST)	

SCALE: 1" = 20'

Proposal No. 613052-131228
608944_HD(6076 DRAIN UTILITY).DWG Plotted on 14-May-2025 8:22 AM
A00861 - 37

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	24	28
PROJECT FILE NO.	613052		

DRAINAGE & UTILITY PLAN

608944_HD(6076 DRAIN UTILITY).DWG Plotted on 14-May-2025 8:22 AM

NOTES:
1. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY OWNER TO PROVIDE TEMPORARY UTILITY SUPPORT, AS NEEDED. COSTS ASSOCIATED WITH TEMPORARY UTILITY SUPPORT SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS CONTRACT ITEMS.

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
CB-28-B	29+49.9 18.5' RT	168.43		I=164.05' (EX-DMH-28)	LOW POINT
CBCI-26	26+68.6 -37.8' LT	171.91		I=166.75' (EX-DMH-27)	
CBCI-27	26+97.7 26.3' RT	171.50		I=168.30' (EX-DMH-27)	FLAT TOP 1 COURSE BRICK
CBCI-28-A	29+17.3 18.5' RT	168.48		I=164.00' (DMH-28)	FLAT TOP
CBCI-29-A	29+49.6 -19.1' LT	168.42		I=164.90' (DMH-29)	LOW POINT FLAT TOP
CBCI-29-B	29+68.2 -18.5' LT	168.45		I=164.90' (DMH-29)	
DMH-28	29+21.9 0.7' RT	168.83	I = 163.8' ± (EXIST) I=163.90' (CBCI-28-A)	I=163.80' (EX-DMH-28)	BUILD ON EXIST
DMH-29	29+59.9 -17.1' LT	168.46	I=164.80' (CBCI-29-A) I=164.80' (CBCI-29-B)	I=164.70' (EX-DMH-28)	FLAT TOP

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
EX-DMH-27	27+09.5 3.0' RT	171.70	I = 166.1' ± (EXIST) I = 166.4' ± (EXIST) I=168.10' (CBCI-27)	I = 166.0' ± (EXIST)	
EX-DMH-28	29+59.8 0.1' RT	168.80	I=163.30' (DMH-28) I=163.50' (DMH-29) I=163.70' (CB-28-B)	I = 163.1' ± (EXIST)	

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
CBCI-30	30+16 18.5' RT	168.66		I=164.70' (EX-DMH-30)	
CBCI-31	30+12.7 -17.9' LT	168.65		I=164.70' (EX-DMH-30)	FLAT TOP OFFSET COVER
DMH-30-A	30+25.2 30.7' RT	169.37	I = 164.2' ± (EXIST)	I=164.10' (DMH-30-B)	BUILD ON EXIST
DMH-30-B	29+92.3 40.5' RT	169.11	I=163.70' (DMH-30-A) I=163.70' (EX-DMH-30)	I = 163.6' (VAULT)	BUILD ON EXIST
DMH-300	29+78.8 -21.7' LT	169.00	I = 164.3' ± MATCH PROP CULVERT	MATCH PROP CULVERT	
EX-DMH-30	29+96.4 21.2' RT	168.53	I = 164.3' ± (EXIST) I=164.50' (CBCI-30)	I=164.00' (DMH-30-B)	

N/F UNITED STATES POSTAL SERVICE 12 GILES PL ASSESS. MAP 17 PARCEL ID: 17–7 DEED BK 3528 / PAGE 126

ROSEWOOD REALTY TRUST 287 CHAUNCY ST ASSESS. MAP 17 – PARCEL ID: 17–4 DEED BK 13234 / PAGE 164

GEM REALTY TRUST 273 CHAUNCY ST ASSESS. MAP 17 – PARCEL ID: 17–6 DEED BK 21367 / PAGE 196

EXISTING BUILDING MONARCH REALTY GROUP 273 CHAUNCY STREET #273

BROOKSIDE OFFICE CONDO PAR 272 CHAUNCY ST ASSESS. MAP 20 PARCEL ID: 20–186 LC. DEED BK CS / PAGE 1 LD. CERT. #C6 LC. CASE #23116

MANISHA REALTY, LLC 282 CHAUNCY ST ASSESS. MAP 20 – PARCEL ID: 20–183 DEED BK 79 / PAGE 79 LC. CERT. #14688 LC. CASE #26023

REM UP #34-2 & GUY WIRES (BO)
PROP 1-3P PRIMARY ELEC SERVICE RELOCATION (ITEM 826.7) (B.O.)
CONTRACTOR SHALL USE ENCASED POST FOR SHALLOW MOUNT (MASSDOT STD 400.5.1) WHERE NEEDED OR AS DIRECTED BY ENGINEER
REFER TO SHEET 28 FOR QUANTIFICATION OF IMPACTS
PROP CONC MASONRY PIPE END SEE DETAIL
R&R 45' UP #309S PROP 15' GUY (BO)
8 LF - 12" CL IV RCP
11 LF - 12" CL IV RCP
17 LF - 12" CL IV RCP
38 LF - 24" DI (REM EXIST)
REM UP #34 (BO)
REM UP #33 (BO)
101 LF - 18" CL IV RCP (REM EXIST)
CONNECT 5 LF - 12" RCP TO EXIST RCP AT JOINT
CONNECT 7 LF - 12" CL IV RCP TO EXIST RCP AT JOINT
REM UP #34-1 (BO)
REM CB
CBCI-26
CBCI-29-A (LP)
CBCI-31
DMH-300
CBCI-29-B
DMH-29
1980 SHLO NO. 6345
1981 SHLO NO. 6467
233+73.67
233
CONTINUED ON SHEET NO. 23
CONTINUED ON SHEET NO. 25
CHAUNCY STREET (ROUTE 106)
ADJ WG
ADJ EX-DMH-27
ADJ (BO)
ABAN
26 LF - 12" DI
CBCI-27
REM CB
16 LF - 10" DI
19 LF - 12" CL IV RCP (REM EXIST)
DMH-28
20 LF - 12" CL IV RCP
REM CB & PIPE
R&R 55' UP #307 PROP 2-20' GUYS (BO)
ADJ CB
RET CB
PROP STONE FOR PIPE ENDS AT EXIST OUTLET
R&R 55' UP #308 (BO)
CONNECT TO EXIST DUCT BANK (BO)
PROP 6-4" PVC (BO)
REM UP #35/1S (BO)
R&R TEL CABINET (BO)
RELOCATE UG 1-3P PRIMARY ELEC SERVICE (BO)
R&R 55' UP #309 PROP 12' GUY (BO)
ADJ TMH (BO)
20' WIDE SEWER EASEMENT L.C. DOC #78241, L.C. CERT. #9882
CBCI-28-A
CB-28-B (LP)
REM CB
ADJ EX-DMH-28
PROP 72 LF - 18" DIP REM EXIST
PROP 72 LF - 18" DIP REM EXIST
CBCI-30
32 LF - 16" DI
REM DMH & PIPES
TEST PIT TO CONFIRM EXIST INVERT
DRAINAGE EASEMENT WIDTH VARIES BOOK 2010 PAGE 288
18 LF - 12" DI
DMH-30-B
DMH-30-A
5 LF - 16" DI (REM EXIST) (MATCH EXIST INV)
R&R 55' UP #312 (BO) SEE NOTE 1
TO WIDE SEWER EASEMENT L.C. DOC #78354 L.C. CERT. #7924, BOOK 8018 AND 8019
20' WIDE SEWER ACCESS & UTILITY EASEMENT L.C. DOC #78241, L.C. CERT. #9882
25' RIGHT OF WAY EASEMENT L.C. DOC #27784 - L.C. CERT. #7924
COMMERCIAL STREET (ROUTE 140)
1980 SHLO NO. 6345
CIT-157
14 LF - 12" CL IV RCP
CB-157
100-FT WETLAND BUFFER
WF1-101
WF1-102
WF1-103
WF1-104
WF1-105
WF1-106
WF1-107/B3-300
WF2-200
WF2-201
WF2-202
WF2-203
WF2-204
WF2-205
WF2-206
WF2-207
WF2-208
WF2-209
WF3-300
WF3-301
WF3-302
WF3-303
WF3-304
WF3-305
WF3-306
B1-100
B1-102
B2-200
B2-201
B2-202
B2-203
B3-301
B4-400
B4-401
B4-402

0 20 50 100
SCALE: 1" = 20'

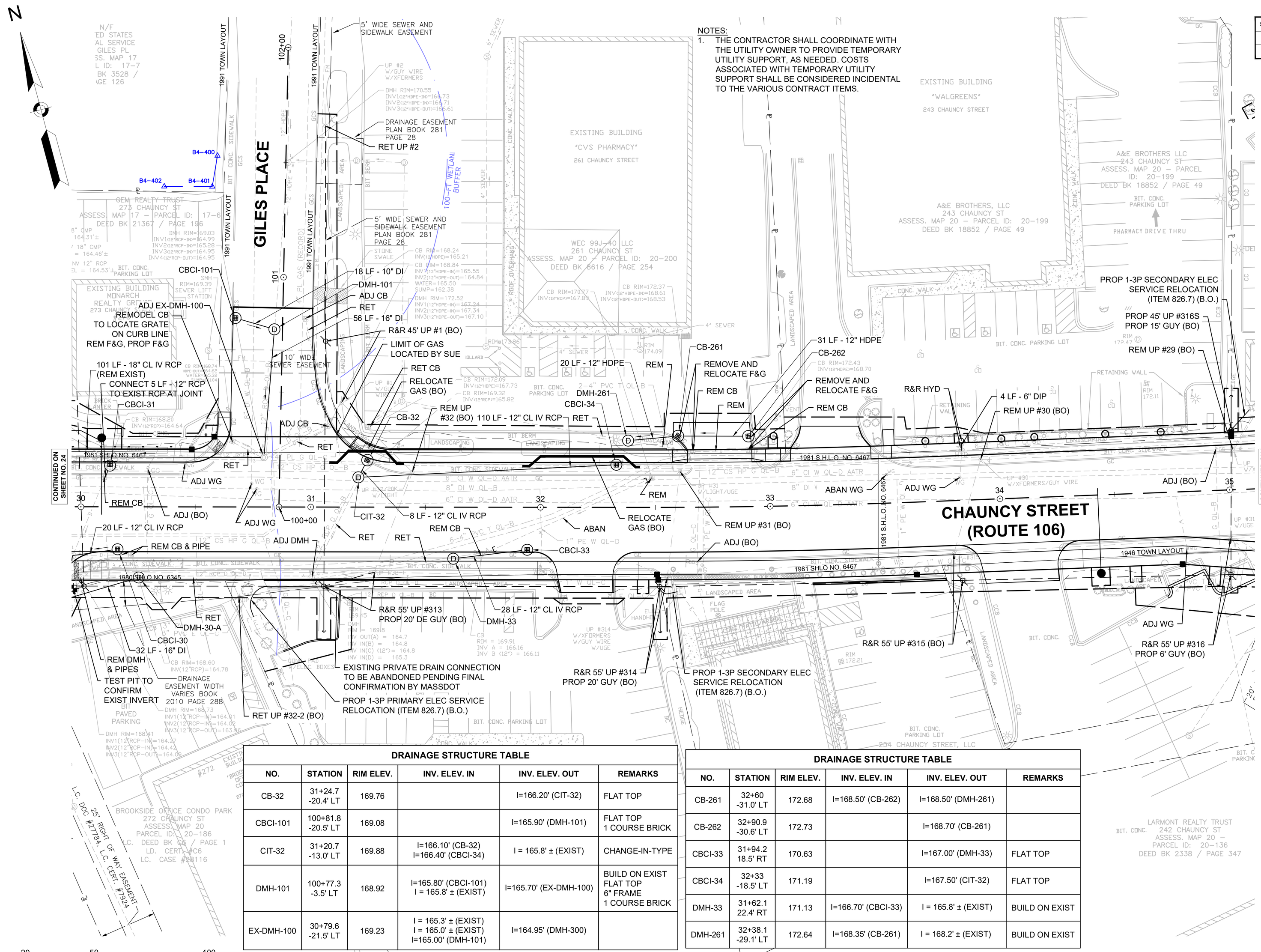
IMPACTS LEGEND
- BANK (TEMPORARY)
- BANK (PERMANENT)
- LAND UNDER WATER (TEMPORARY)
- LAND UNDER WATER (PERMANENT)

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	25	28
PROJECT FILE NO.		613052	

DRAINAGE & UTILITY PLAN

NOTES:
1. THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY OWNER TO PROVIDE TEMPORARY UTILITY SUPPORT, AS NEEDED. COSTS ASSOCIATED WITH TEMPORARY UTILITY SUPPORT SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS CONTRACT ITEMS.



DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
CB-32	31+24.7 -20.4' LT	169.76		I=166.20' (CIT-32)	FLAT TOP
CBCI-101	100+81.8 -20.5' LT	169.08		I=165.90' (DMH-101)	FLAT TOP 1 COURSE BRICK
CIT-32	31+20.7 -13.0' LT	169.88	I=166.10' (CB-32) I=166.40' (CBCI-34)	I = 165.8' ± (EXIST)	CHANGE-IN-TYPE
DMH-101	100+77.3 -3.5' LT	168.92	I=165.80' (CBCI-101) I = 165.8' ± (EXIST)	I=165.70' (EX-DMH-100)	BUILD ON EXIST FLAT TOP 6" FRAME 1 COURSE BRICK
EX-DMH-100	30+79.6 -21.5' LT	169.23	I = 165.3' ± (EXIST) I = 165.0' ± (EXIST) I=165.00' (DMH-101)	I=164.95' (DMH-300)	

DRAINAGE STRUCTURE TABLE

NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
CB-261	32+60 -31.0' LT	172.68	I=168.50' (CB-262)	I=168.50' (DMH-261)	
CB-262	32+90.9 -30.6' LT	172.73		I=168.70' (CB-261)	
CBCI-33	31+94.2 18.5' RT	170.63		I=167.00' (DMH-33)	FLAT TOP
CBCI-34	32+33 -18.5' LT	171.19		I=167.50' (CIT-32)	FLAT TOP
DMH-33	31+62.1 22.4' RT	171.13	I=166.70' (CBCI-33)	I = 165.8' ± (EXIST)	BUILD ON EXIST
DMH-261	32+38.1 -29.1' LT	172.64	I=168.35' (CB-261)	I = 168.2' ± (EXIST)	BUILD ON EXIST

0 20 50 100
SCALE: 1" = 20'

608944_HD(6076 DRAIN UTILITY).DWG Plotted on 14-May-2025 8:22 AM

Proposal No. 613052-131228

608944_HD(6076 DRAIN UTILITY).DWG Plotted on 14-May-2025 8:22 AM

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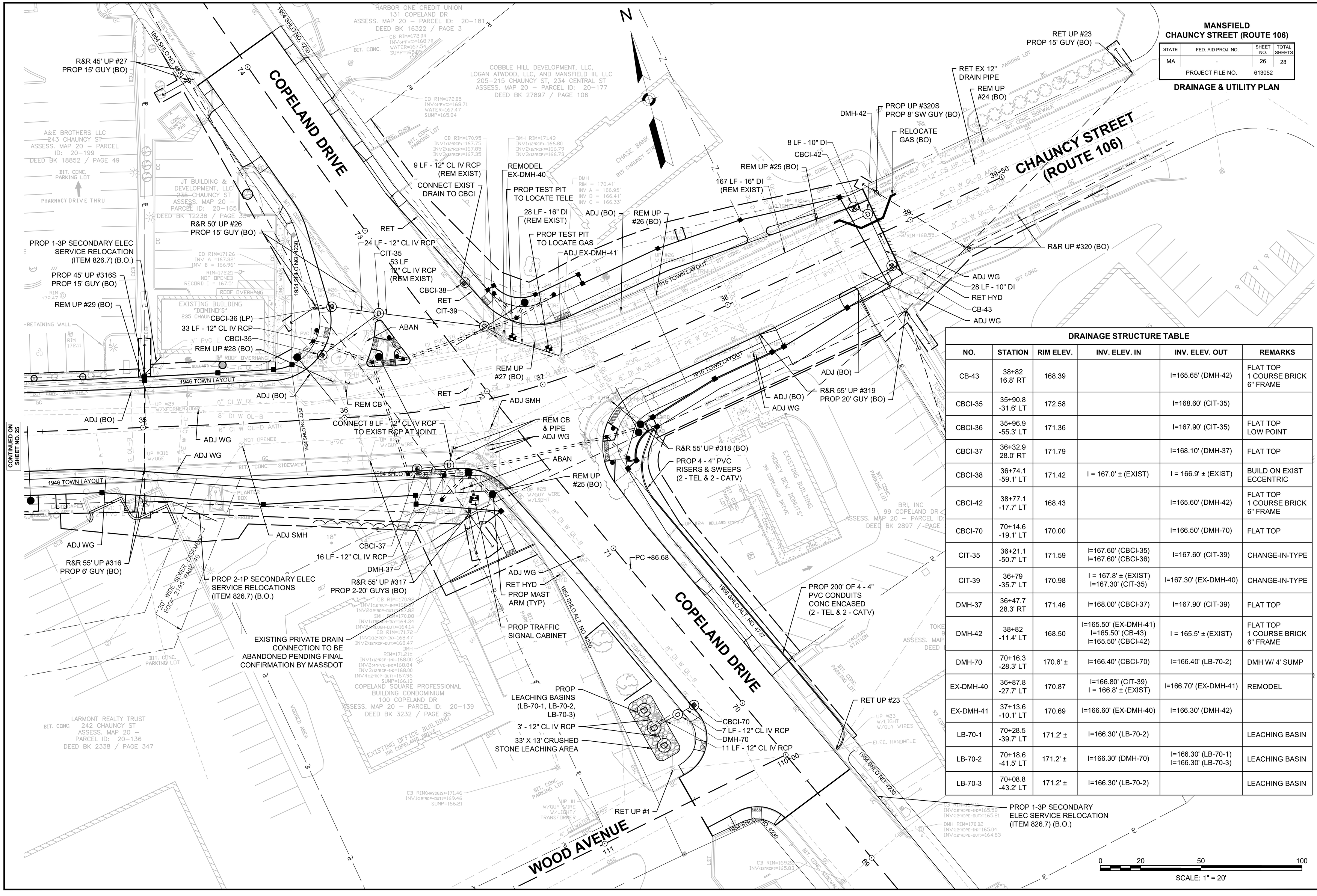
MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	26	28
PROJECT FILE NO.		613052	

DRAINAGE & UTILITY PLAN



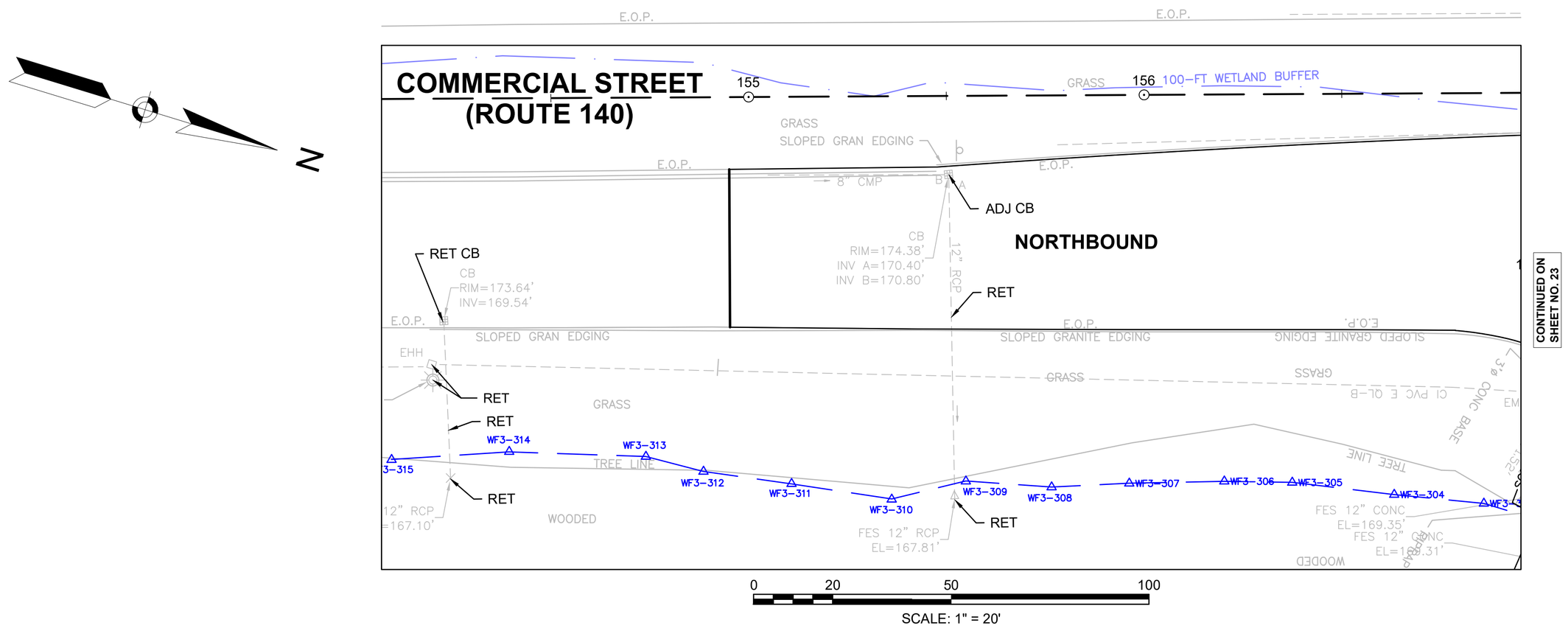
DRAINAGE STRUCTURE TABLE

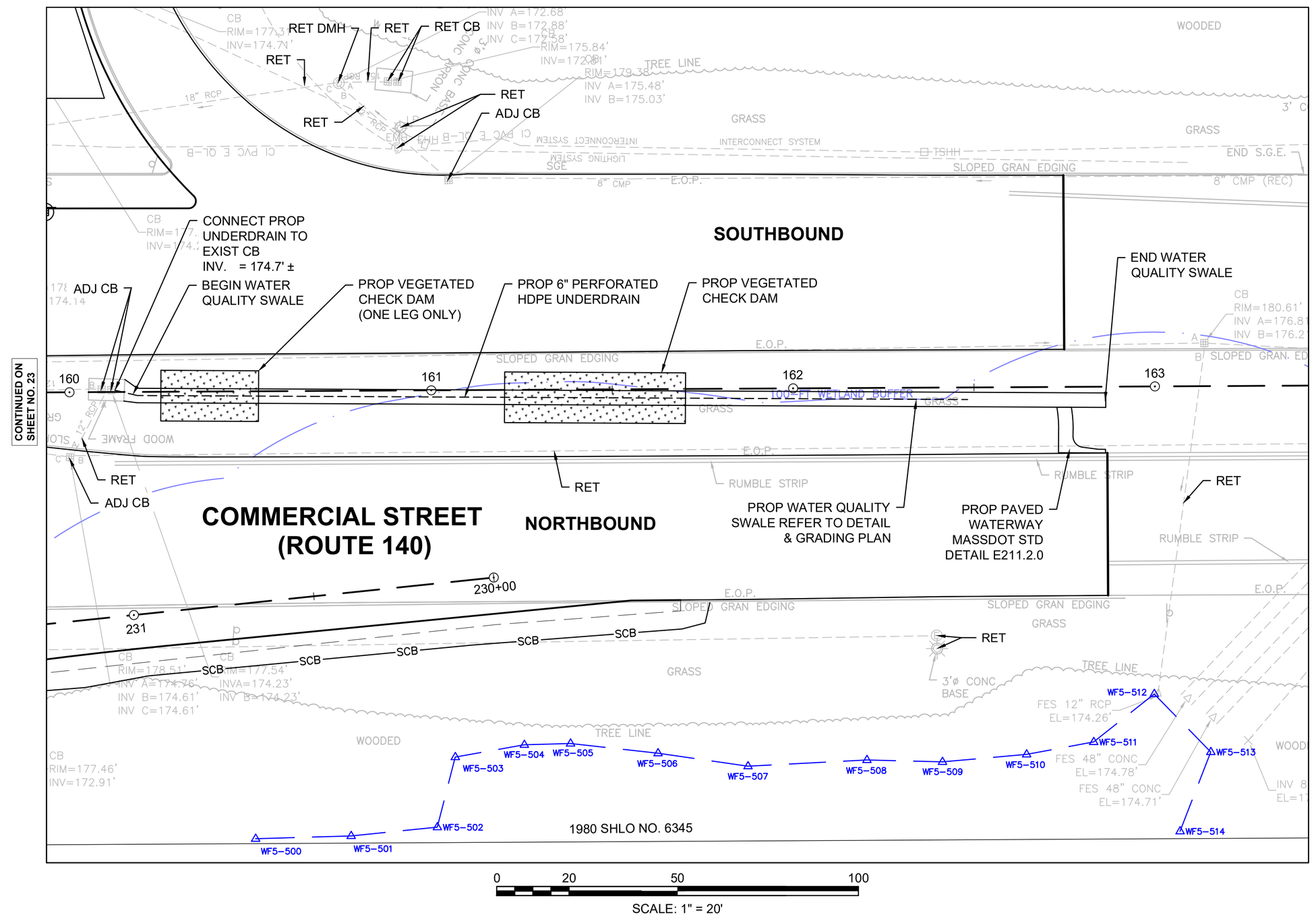
NO.	STATION	RIM ELEV.	INV. ELEV. IN	INV. ELEV. OUT	REMARKS
CB-43	38+82 16.8' RT	168.39		I=165.65' (DMH-42)	FLAT TOP 1 COURSE BRICK 6" FRAME
CBCI-35	35+90.8 -31.6' LT	172.58		I=168.60' (CIT-35)	
CBCI-36	35+96.9 -55.3' LT	171.36		I=167.90' (CIT-35)	FLAT TOP LOW POINT
CBCI-37	36+32.9 28.0' RT	171.79		I=168.10' (DMH-37)	FLAT TOP
CBCI-38	36+74.1 -59.1' LT	171.42	I = 167.0' ± (EXIST)	I = 166.9' ± (EXIST)	BUILD ON EXIST ECCENTRIC
CBCI-42	38+77.1 -17.7' LT	168.43		I=165.60' (DMH-42)	FLAT TOP 1 COURSE BRICK 6" FRAME
CBCI-70	70+14.6 -19.1' LT	170.00		I=166.50' (DMH-70)	FLAT TOP
CIT-35	36+21.1 -50.7' LT	171.59	I=167.60' (CBCI-35) I=167.60' (CBCI-36)	I=167.60' (CIT-39)	CHANGE-IN-TYPE
CIT-39	36+79 -35.7' LT	170.98	I = 167.8' ± (EXIST) I=167.30' (CIT-35)	I=167.30' (EX-DMH-40)	CHANGE-IN-TYPE
DMH-37	36+47.7 28.3' RT	171.46	I=168.00' (CBCI-37)	I=167.90' (CIT-39)	FLAT TOP
DMH-42	38+82 -11.4' LT	168.50	I=165.50' (EX-DMH-41) I=165.50' (CB-43) I=165.50' (CBCI-42)	I = 165.5' ± (EXIST)	FLAT TOP 1 COURSE BRICK 6" FRAME
DMH-70	70+16.3 -28.3' LT	170.6' ±	I=166.40' (CBCI-70)	I=166.40' (LB-70-2)	DMH W/ 4' SUMP
EX-DMH-40	36+87.8 -27.7' LT	170.87	I=166.80' (CIT-39) I = 166.8' ± (EXIST)	I=166.70' (EX-DMH-41)	REMODEL
EX-DMH-41	37+13.6 -10.1' LT	170.69	I=166.60' (EX-DMH-40)	I=166.30' (DMH-42)	
LB-70-1	70+28.5 -39.7' LT	171.2' ±	I=166.30' (LB-70-2)		LEACHING BASIN
LB-70-2	70+18.6 -41.5' LT	171.2' ±	I=166.30' (DMH-70)	I=166.30' (LB-70-1) I=166.30' (LB-70-3)	LEACHING BASIN
LB-70-3	70+08.8 -43.2' LT	171.2' ±	I=166.30' (LB-70-2)		LEACHING BASIN

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	27	28
PROJECT FILE NO.	613052		

DRAINAGE & UTILITY PLAN





Proposal No. 613052-131228

608944_HD(6076 DRAIN UTILITY).DWG Plotted on 14-May-2025 8:22 AM

Proposal No. 613052-131228

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	28	28
PROJECT FILE NO.	613052		

IMPACT PLAN

N

REGRADE TEMPORARY IMPACTED BANK TO MATCH EXISTING. RESTORE WITH WETLAND SEED - RIPARIAN MIX (ITEM 765.553) STABILIZE SLOPE WITH COIR LOG (ITEM 767.122) AND JUTE MESH (ITEM 767.9)

PROP CONTROL OF WATER

TEMP BANK IMPACT LENGTH = 12 LF

TEMP BANK IMPACT LENGTH = 13 LF

TEMP LAND UNDER WATER IMPACT AREA = 132 SF

PROP COIR LOGS AT BANK OF STREAM

PERM BANK IMPACT LENGTH = 13 LF

PERM LAND UNDER WATER IMPACT AREA = 115 SF

PROP SEDIMENT CONTROL BARRIER (TYP)

PROP COIR LOGS AT BANK OF STREAM

PERM BANK IMPACT LENGTH = 11 LF

TEMP BANK IMPACT LENGTH = 61 LF ON EACH SIDE OF CULVERT (122 LF)

TEMP LAND UNDER WATER IMPACT AREA = 92 SF

TEMP BANK IMPACT LENGTH = 62 LF ON EACH SIDE OF CULVERT (124 LF)

TEMP LAND UNDER WATER IMPACT AREA = 93 SF

WF1–103
WF1–102
WF1–101
B1–102
B2–202
B1–101
B2–201
B1–100
B2–200

FLOW

SCB
BOS
TOS
BOS
TOS

WOODED
BIT BERM
BIT AVED RIVE
GRASS
MULCH
GRAN CURB
EXISTING BUILDING
MONARCH
REALTY GROUIP
273 CHAUNCY STREET
#273
GILES PLACE
10' WIDE SEWER EASEMENT
1980 SHLO NO. 6345
1981 SHLO NO. 6467
12" RCP D QL-B
12" RCP D QL-D
101
1991
PI +50.00
AUXILIARY BASELINE "C"
29
30
31
100+00
CHAUNCY STREET
(ROUTE 106)
UTILITY PATCH
20' WIDE SEWER EASEMENT L.C. DOC #78241, L.C. CERT.° #9882
5'x8' CONC VAULT (RECORD)
GRAN CURB
CCB
GC
BC
DRAINAGE EASEMENT WIDTH VARIES BOOK 2010 PAGE 288
BIT PAVED DRIVE
100-FT WETLAND BU

IMPACTS LEGEND

- BANK (TEMPORARY)
- BANK (PERMANENT)
- LAND UNDER WATER (TEMPORARY)
- LAND UNDER WATER (PERMANENT)

0 10 20 30 40
SCALE: 1" = 10'

608944_HD(6076 IMPACT_CULVERT).DWG Plotted on 14-May-2025 8:14 AM

A00861 - 42

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	27	81
PROJECT FILE NO.		613052	

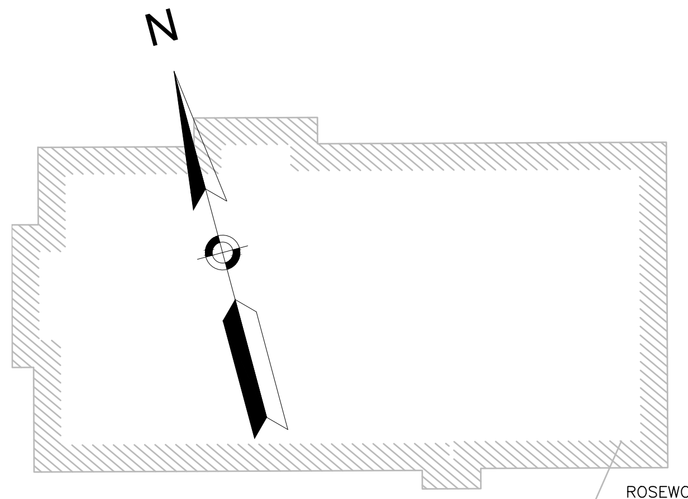
CURB TIE & GRADING PLAN

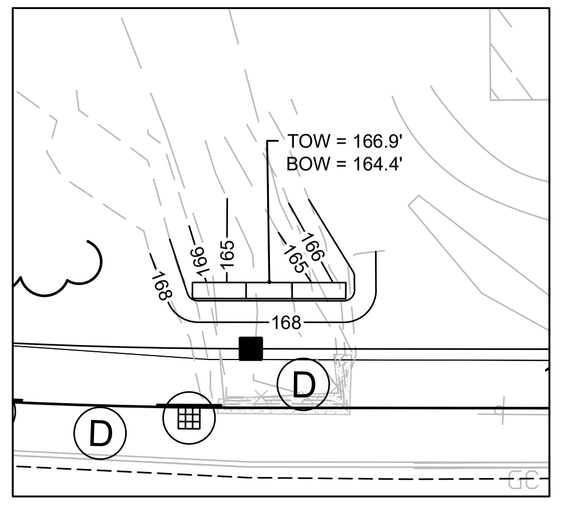
LEGEND

XXX.XX	PROP. ROADWAY GRADE
XXX.XX	PROP. TOP OF CURB/ SURFACE OF SIDEWALK GRADE. 6" TYPICAL REVEAL WHERE TOP OF CURB ELEVATION NOT PROVIDED
(XXX.XX)	MEET EXISTING GRADE

NOTE:

1. CURB REVEAL = 6" UNLESS OTHERWISE NOTED





INSET A
1" = 10'

ROSEWOOD REALTY TRUST
287 CHAUNCY ST
ASSESS. MAP 17 – PARCEL ID: 17–4
DEED BK 13234 / PAGE 164

N/F
UNITED STATES
POSTAL SERVICE
12 GILES PL
ASSESS. MAP 17
PARCEL ID: 17–7
DEED BK 3528 /
PAGE 126

GEM REALTY TRUST
273 CHAUNCY ST
ASSESS. MAP 17 – PARCEL ID: 17–6
DEED BK 21367 / PAGE 196

REFER TO INSET A

CONTINUED ON SHEET NO.26

CONTINUED ON SHEET NO. 28

CHAUNCY STREET (ROUTE 106)

Curve Table				
Curve #	Delta	Radius	Length	Tangent
C19	165°01'34"	2.00	5.76	15.22
C23	6°13'09"	60.00	6.51	3.26
C24	138°03'56"	2.00	4.82	5.22
C25	35°30'53"	100.00	61.99	32.02
C26	3°38'47"	100.00	6.36	3.18
C27	143°12'03"	2.00	5.00	6.01
C28	4°55'33"	85.00	7.31	3.66
C29	41°20'31"	85.00	61.33	32.07
C30	180°00'00"	3.00	9.42	INFINITY
C31	22°27'00"	20.00	7.84	3.97
C32	50°57'04"	20.00	17.79	9.53
C33	33°16'43"	21.62	12.56	6.46

MANISHA REALTY, LLC
292 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–183
DEED BK 79 / PAGE 80
LC. CERT. #14689
LC. CASE #26023

Curve Table				
Curve #	Delta	Radius	Length	Tangent
C34	41°54'09"	20.00	14.63	7.66
C35	31°00'10"	28.00	15.15	7.77
C36	36°27'07"	28.00	17.81	9.22
C37	17°33'51"	20.00	6.13	3.09
C38	36°52'12"	20.00	12.87	6.67
C39	38°30'35"	17.00	11.43	5.94
C70	10°10'04"	280.00	49.69	24.91
C72	44°47'32"	8.00	6.25	3.30
C73	5°31'32"	500.00	48.22	24.13
C84	4°58'27"	250.00	21.70	10.86

BOUND LOCATION - CHAUNCY STREET			
STATION	OFFSET	NORTHING	EASTING
28+60.66	52.43' LT	2836482.5523	728953.2243
28+61.53	46.32' LT	2836476.4227	728952.4714
28+74.63	32.30' LT	2836459.4802	728961.4851
29+26.31	27.30' LT	2836441.2194	729010.0806
29+73.92	25.00' LT	2836426.6248	729055.4610
30+48.22	25.00' LT	2836407.3124	729127.2080
30+58.07	30.56' LT	2836410.1196	729138.1608

MANISHA REALTY, LLC
282 CHAUNCY ST
ASSESS. MAP 20 – PARCEL ID: 20–183
DEED BK 79 / PAGE 79
LC. CERT. #14688
LC. CASE #26023

BROOKSIDE OFFICE CONDO PAR
272 CHAUNCY ST
ASSESS. MAP 20
PARCEL ID: 20–186
LC. DEED BK 66 / PAGE 1
LD. CERT. #C6
LC. CASE #28116

0 20 50 100
SCALE: 1" = 20'

608944_HD(6076 GRADING).DWG Plotted on 14-May-2025 1:36 PM

MANSFIELD
CHAUNCY STREET (ROUTE 106)

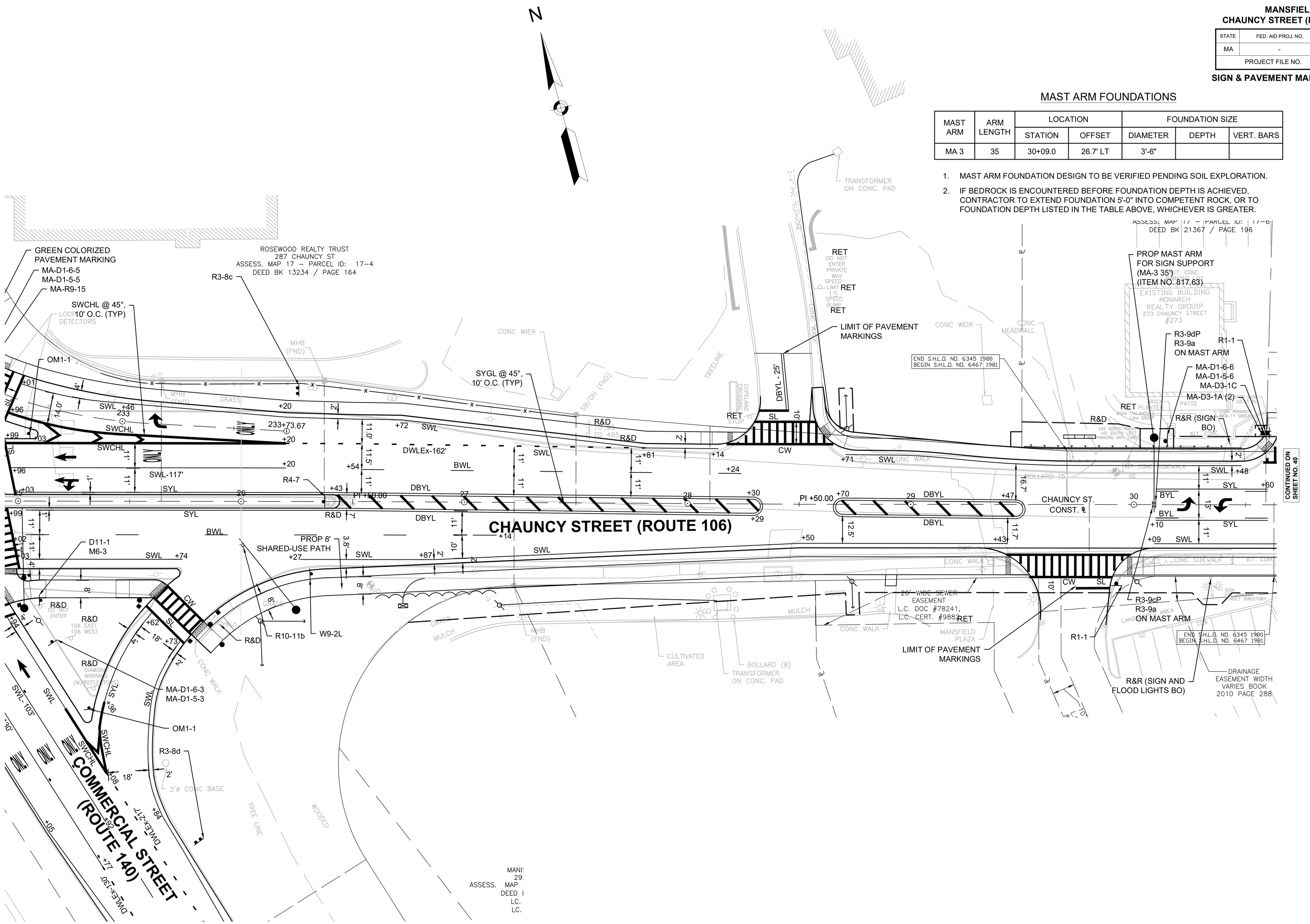
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	39	81
PROJECT FILE NO.	613052		

SIGN & PAVEMENT MARKINGS PLAN

MAST ARM FOUNDATIONS

MAST ARM	ARM LENGTH	LOCATION		FOUNDATION SIZE		
		STATION	OFFSET	DIAMETER	DEPTH	VERT. BARS
MA 3	35	30+09.0	26.7' LT	3'-6"		

1. MAST ARM FOUNDATION DESIGN TO BE VERIFIED PENDING SOIL EXPLORATION.
2. IF BEDROCK IS ENCOUNTERED BEFORE FOUNDATION DEPTH IS ACHIEVED, CONTRACTOR TO EXTEND FOUNDATION 5'-0" INTO COMPETENT ROCK, OR TO FOUNDATION DEPTH LISTED IN THE TABLE ABOVE, WHICHEVER IS GREATER.



Proposal No. 613052-131228
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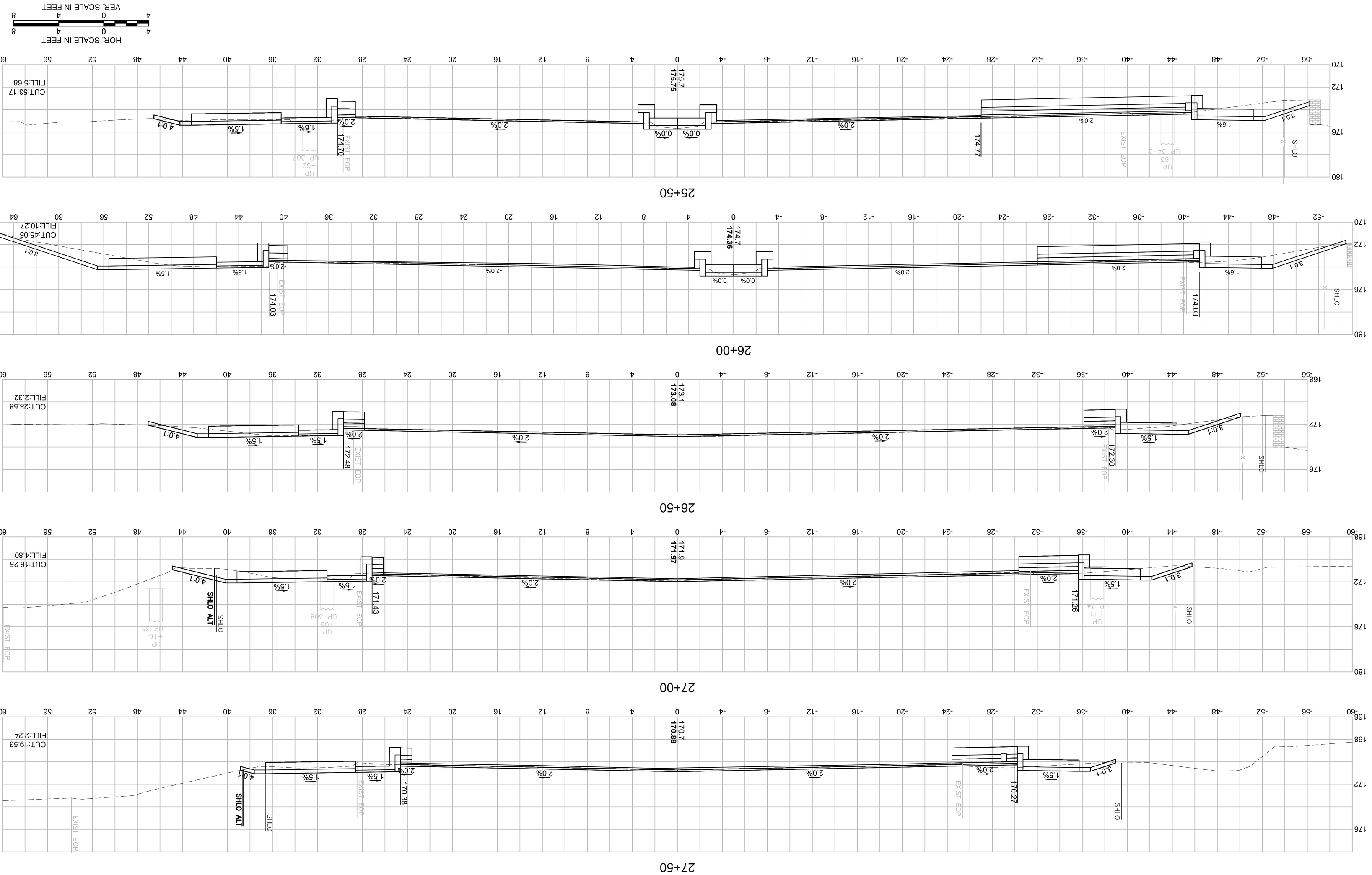
A00861 - 44



MANSFIELD
CHAUNCY STREET (ROUTE 106)

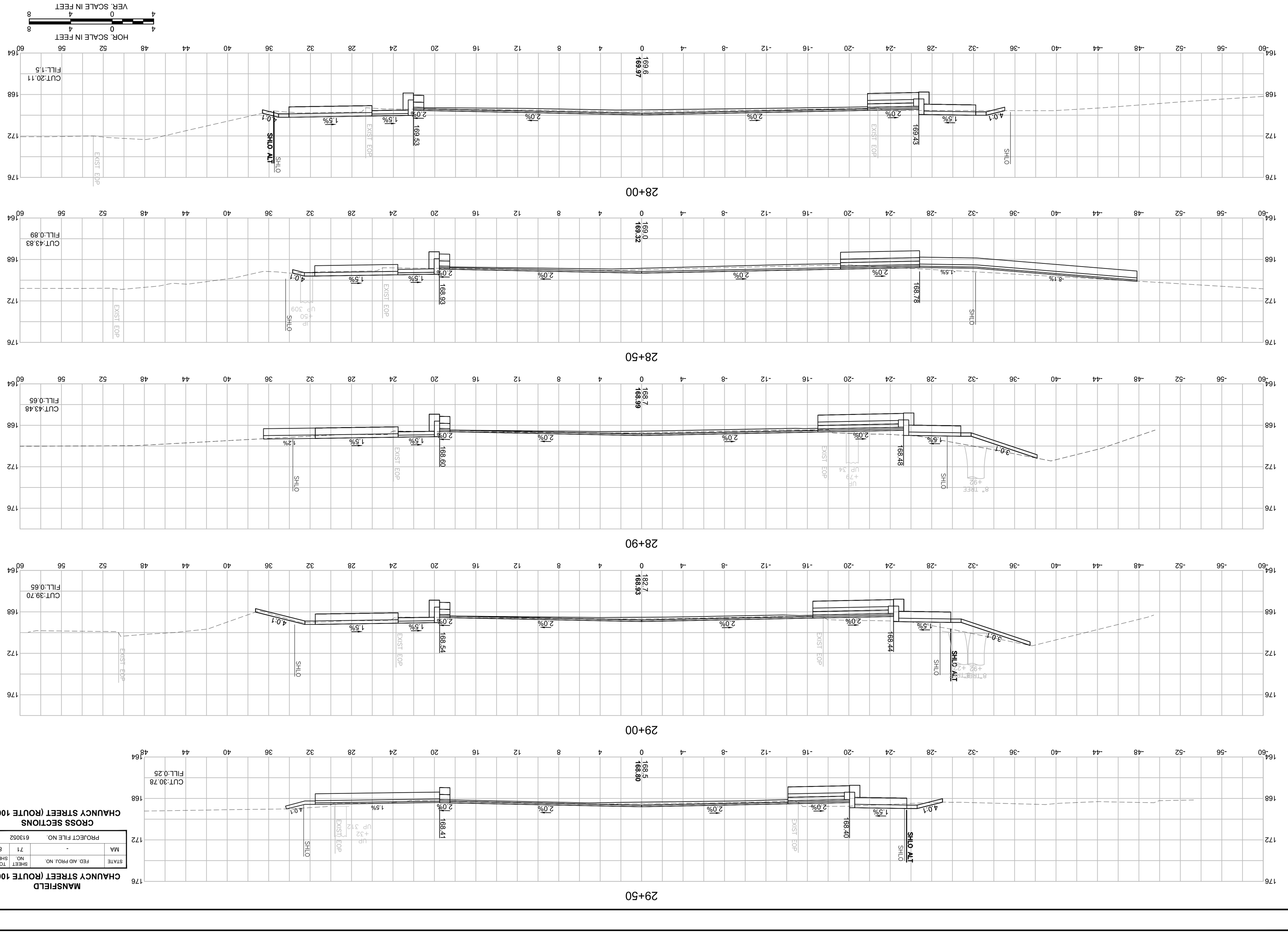
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	70	81
PROJECT FILE NO. 613052			

CROSS SECTIONS
CHAUNCY STREET (ROUTE 106)

A00861 - 45

608944_HDI(6076 XS).DWG Plotted on 12-May-2025 3:40 PM

Proposal No. 613052-1312228



MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	71	81
PROJECT FILE NO. 613052			

CROSS SECTIONS
CHAUNCY STREET (ROUTE 106)

608944_HD(6076 XS).DWG Plotted on 11-Feb-2025 11:54 AM

Proposal No. 613052-131228

IMPROVING COMMUNITIES TOGETHER

MEMORANDUM

Date:	May 14, 2025	Job No.:	23.10326.21
To:	Michael Healey, Chair (Town of Mansfield Conservation Commission) Katelyn Merrill Gonyer, Environmental and Conservation Planner (Town of Mansfield) Richard Alves, Town Engineer/ Assistant Director (Town of Mansfield) Joshua Reinke, DPW Director (Town of Mansfield)		
Cc:	Erica Larner, Wetlands & Water Resources Coordinator (MassDOT) Kevin Thompson, Environmental Analyst (MassDOT)		
From:	Elyse Tripp, Project Scientist (BETA) Christopher Roy, Senior Project Manager (BETA) Matthew Crowley, Associate (BETA)		
Subject:	**Improvements to Chauncy Street (Route 106) NOI Response to Town Comments MassDOT Project No. 613052, MassDEP File No: 211-1017**		

INTRODUCTION

The purpose of this memorandum is to respond to comments and questions provided via email on April 17, 2025 by Katelyn Merrill Gonyer (Environmental and Conservation Planner) and Richard Alves (Town Engineer/ Assistant Director) associated with the NOI submitted for the Route 106 Intersections Improvements Project from Route 140 to Copeland Drive (Phase 1) in Mansfield, Massachusetts. These comments were additionally discussed on April 23, 2025 during a virtual meeting of which Katelyn Merrill Gonyer (Town of Mansfield), Joshua Reinke (Town of Mansfield), Christopher Roy (BETA), Matthew Crowley (BETA), Elyse Tripp (BETA), Erica Larner (MassDOT), and Kevin Thompson (MassDOT) were in attendance.

A subsequent meeting was held on May 8, 2025, to further discuss the comments and responses with the Town. Katelyn Merrill Gonyer (Town of Mansfield), Richard Alves (Town of Mansfield), Christopher Roy (BETA), Matthew Crowley (BETA), Elyse Tripp (BETA) and Kevin Thompson (MassDOT) were in attendance.

The comments provided by the Town of Mansfield are quoted below in *italics*, with BETA's responses provided in **bold**.

COMMENTS

1. *SWM Report- Appendix D: Hydrologic Data Peak Rate of Runoff chart shows an increase in flow. Not Acceptable.*

   BETA: This project has been filed as a Limited Project under the WPA and is a Redevelopment Project under the Stormwater Standards. The project has significant right-of-way constraints, which severely restrict the opportunity to install substantial Structural Control Measures (SCMs) for the mitigation of peak flow rates. Opportunities for structural SCMs are restricted by the limited right-of-way, existing utilities, and proximity to wetland resource areas. A second potential area for leaching basins was considered at the southeast corner of the Route 140/106 intersection; this area was deemed infeasible due to the presence of shallow groundwater and conflicts with existing gas and communications utilities which restrict the installation of drainage pipes for stormwater conveyance to the basins. Other areas adjacent to the 140/106 intersection were also explored but were not considered practicable due to limited right-of-way, presence of utilities, and lack of grade differential between the existing stormwater

conveyances and surrounding land. Therefore, providing stormwater control measures to mitigate peak flow rates is not practicable.

2. *Impact Plan Sheet No. 28 No grades shown – what is the approximate slope of reconstructed inland bank (coir logs & jute netting).*

   BETA: The slope at the reconstructed bank will be 2:1 maximum, to be tied into the existing bank. The proposed slope is consistent with portions of the existing bank. The Grading Plan depicting the reconstructed bank (refer to inset) has been attached (Sheet 27). Also, a revised detail for the proposed concrete masonry pipe end (i.e. headwall) is included in the Revised Project Plans to graphically represent the existing and proposed bank slopes.

3. *Drainage Sheet & Utility Plan Sheet 23 - New drainage tying into existing structure near wetland flag w3-302? This structure should be cleaned out and new riprap to be installed as necessary.*

   BETA: All structures and pipes within the project area will be cleaned as part of the project. Based on review of conditions on April 23, 2025, BETA confirmed that existing rip rap in this area is insufficient. The Drainage and Utility plan has been revised to include new rip rap.

4. *Drainage Sheet & Utility Plan Sheet 24 - Two (2) 18" CMP to be replaced with DI piping under Chauncy Street (Per Manning equation, is there an increase in flow downstream? If so, how does this impact existing 30" pipe? Does slope of pipe need to be adjusted?*

   BETA: Although replacement of the existing CMPs with DI piping will provide a theoretical increase in capacity, an increase in flow to the 30" pipe downstream is not expected as the characteristics of the upstream watershed will remain unchanged. With the understanding that the existing culverts are conveying stream flows without overtopping the roadway, the proposed DI pipes will convey the same flows, only with a shallower headwater at the culvert entrance. No adverse impacts to the existing 30" pipe are anticipated and an adjustment to the slope of the proposed culverts is not required.

5. *Drainage Sheet & Utility Plan Sheet 24 - It appears that the Westbound road layout of Chauncy Street is misaligned at curb cut from Giles Place to Route 140 (edge of roadway is aligned with sidewalk/handicap ramp), please clarify.*

   BETA: Although this comment is not within the purview of the Conservation Commission and the Wetlands Protection Act (WPA), revisions to the project plans were made to the extent feasible to work with the Town in an effort to implement the best possible project. The curb in the westbound direction, east of Copeland Crossing (287 Chauncy St.), has been revised so that it no longer aligns with the back of sidewalk on the west side of Copeland Crossing. Also, in response to the Town's additional comment of extending the right turn lane from Chauncy Street to Route 140, we were able to extend the full width of the right turn lane back an additional 50 feet to Sta. 26+72 as shown on the attached Sign and Pavement Markings Plan (Sheet 39). We could not extend further than that and we could not push the sidewalk all the way back to the State Layout Line because we needed space within the layout for the side slope to tie back into existing ground. See attached cross sections 27+00, 27+50 and 28+00 on Sheets 70 and 71.

Attachments: **Revised Project Plans dated 5.14.2025**
Revised Sheets 27, 39, 70 and 71 of the 100% Design Plans

Conservation Commission

6 Park Row, Mansfield, Massachusetts 02048

Special Conditions for Order of Conditions for roadway and pedestrian improvements to Chauncy St. (Rt. 106) from the intersection of Copeland Dr. to the Rt. 140 intersection, Mansfield, MA (DEP SE 211-1017) under the Mansfield Protection Bylaw Chapter 220

To issue an Order of Conditions to Erica Larner, Mass DOT Highway Division, for roadway and pedestrian improvements to Chauncy St. (Rt. 106) from the intersection of Copeland Dr. to the Rt. 140 intersection within the 100-foot buffer zone of a Bordering Vegetated Wetland. Work will also include culvert extension and replacement within an Intermittent Stream with the following conditions:

1. RECORD ORDER No work can be started until the Order of Conditions has been recorded with the Bristol County Registry of Deeds and the receipt of the Order is returned to the Commission filled in by the Registry.

2. PLAN OF RECORD All work must conform to the plan dated, referenced as “the plan of record” in this Order.

3. LIMIT OF WORK All limits of work and erosion controls shall be installed prior to any construction, clearing, or excavation. The erosion controls shall consist of a 8” diameter biodegradable mulch-filled silt sock with wooden stakes every 10 feet on each sides of sock or equivalent (do not pierce silt sock with stakes). In addition to the silt sock, trenched-in silt fence may be required depending on the specific site conditions. See the Conservation Agent (Agent) for specific erosion control design standards. The Applicant shall notify the Agent when any such devices or measures are installed so that a site visit can be conducted prior to the commencement of work.

4. ADDITIONAL MITIGATION The Commission reserves the right to require additional mitigation or erosion control devices or measures if mitigation or erosion control devices are not adequately installed or maintained on site.

5. STABILIZATION The Applicant shall ensure that all demarcation (i.e. limits of work) and erosion control devices will remain in place and be maintained throughout the construction process and until all disturbed areas are stabilized. Stabilization shall be achieved once a complete vegetative cover is reached. Seeded areas shall be covered with a suitable protective cover to allow the seed to germinated and become established. All side slopes greater than 3:1 (but less than 2:1) are to be covered with jute mesh and seeded. At no point shall erosion occur resulting in sediment entering the wetland areas. If erosion occurs, the Agent is to be contacted to review the extent of the erosion and determine follow-up actions.

6. ROOF RUNOFF All roof runoff is to be directed in to drywells or equivalent drainage components approved by the Commission. The Commission or its agent shall review the locations of the drywells.

7. CONSTRUCTION SEQUENCE A construction sequence is to be submitted to the Commission prior to the start of work.

8. START WORK NOTIFICATION The Conservation Commission or its agent is to be notified of the starting date of the work prior to its commencement.

9. PRE-CONSTRUCTION MEETING Prior to the commencement of work, a pre-construction meeting shall be held with the Agent, the Engineer and/or Representative, and the General Contractor to review the Order of Conditions, scope of work and construction sequencing.

10. OOC ON-SITE The Applicant shall be responsible to ensure that all contractors on site during the construction have received and reviewed the Order of Conditions and all plans of record.

11. WETLAND FLAGGING Wetland flagging must remain in place until the project has been completed and the Certificate of Compliance issued.

12. COC WITH AS-BUILT The Certificate of Compliance shall be requested in writing upon completion of the project. At the same time, the applicant or any successor shall, upon completion of the project; submit an as-built plan and letter signed by a professional engineer, certifying that the work has been done in accordance with the approved plan.

13. REVISIONS TO BE REVIEWED Any modifications or revisions to the plan(s) referenced in this Order must be submitted to the Commission for review. For single family lots, this Order is for the structures shown on the plan of record only. Any additional structures including, but not limited to, decks, patios, sheds, pools, walkways and/or any hardscape features must be reviewed by the Commission. If, after their review, the Commission finds that the changes are not significant enough (minor modifications) to warrant an Amended Order or new Notice of Intent, then the revised plans shall be considered the new plan of record. If the changes are significant enough to warrant an Amended Order or new Notice of Intent, then the applicant is required to file accordingly.

14. NO SYNTHETIC CHEMICALS No synthetic fertilizer, herbicides, pesticides or fungicides can be used; only organic products may be used.

15. STORMWATER O&M All the terms and conditions set forth in the Stormwater Management Plan for (project title) prepared by (Engineer), submitted on (date) are to be included with this Order of Conditions. All on-going O&M plan activities are to be recorded as noted. All reports and checklist are to be submitted to the Commission as noted.

16. **DUMPING OF LAWN CLIPPINGS IS PROHIBITED** Dumping of lawn clippings and/or yard debris into a wetland and/or 25-foot No Disturb Zone is prohibited. Storage is prohibited in these areas as well.

Special Conditions:

- Order is not to be issued until any and all comments by Town Engineer as satisfied
- Prior to the start of clearing of the site, all existing areas containing Knotweed must be identified. A Knotweed Invasive Species Vegetation Management Plan (VMP) outlining site-specific scope of removal and treatment activities shall submitted to the Agent for approval. Once approved, the Knotweed VMP must be implemented during and post construction. Once the project is complete, the Agent shall conduct a site inspection to review the status of Knotweed onsite. Additional VMP activities may be necessary prior to the removal of the erosion control and/or the issuance of a Certificate of Compliance.
- If it is determined that the intermittent stream flow needs to be diverted during construction, the Town Engineer and the Agent shall meet onsite to review the dewatering/diversion procedure before the water is re-routed.

DOCUMENT A00870

MASSACHUSETTS
DIVISION OF FISHERIES AND WILDLIFE

NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM

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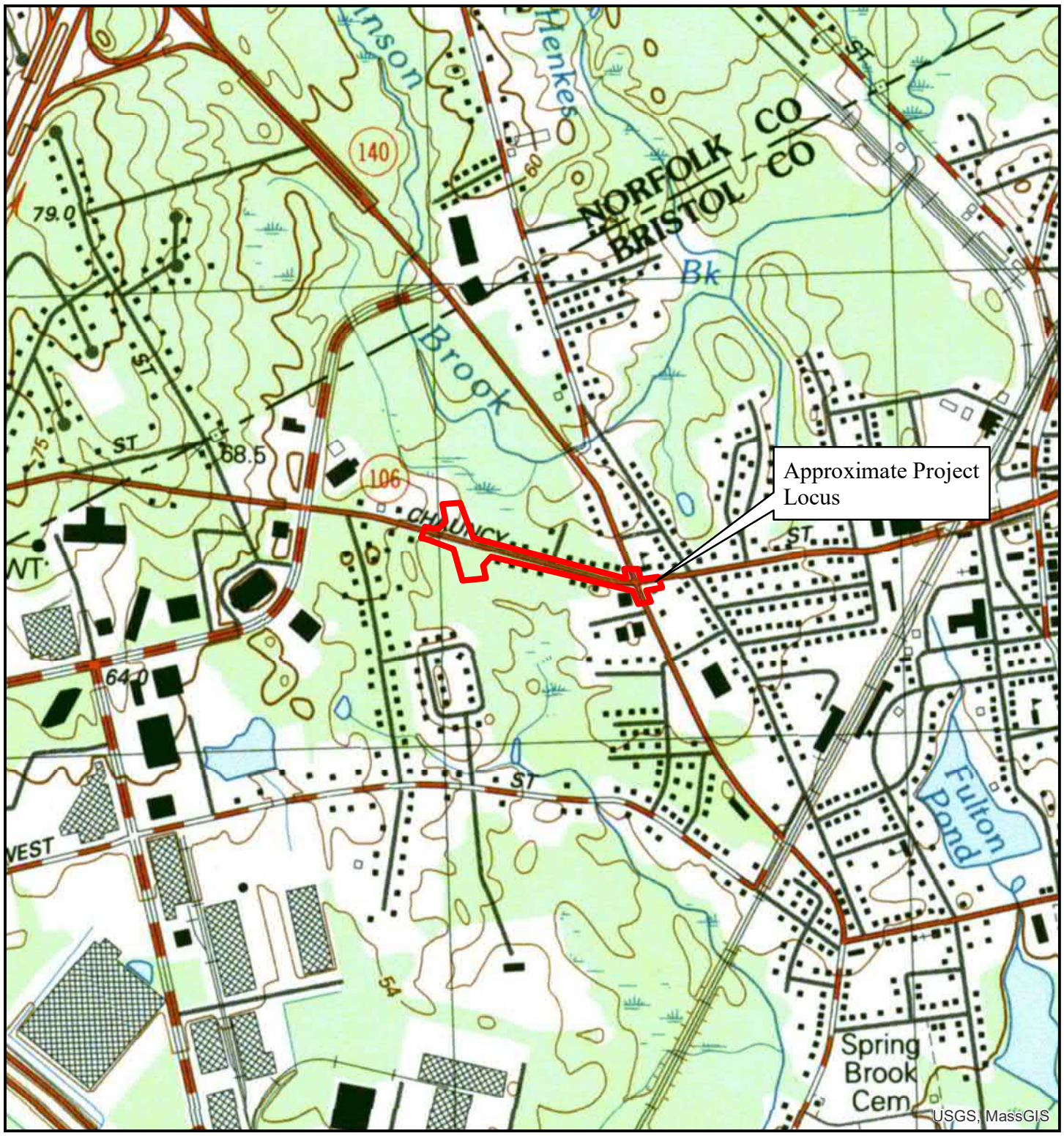


BETA
IMPROVING COMMUNITIES TOGETHER

N
W E
S

0 1,000 2,000 Feet

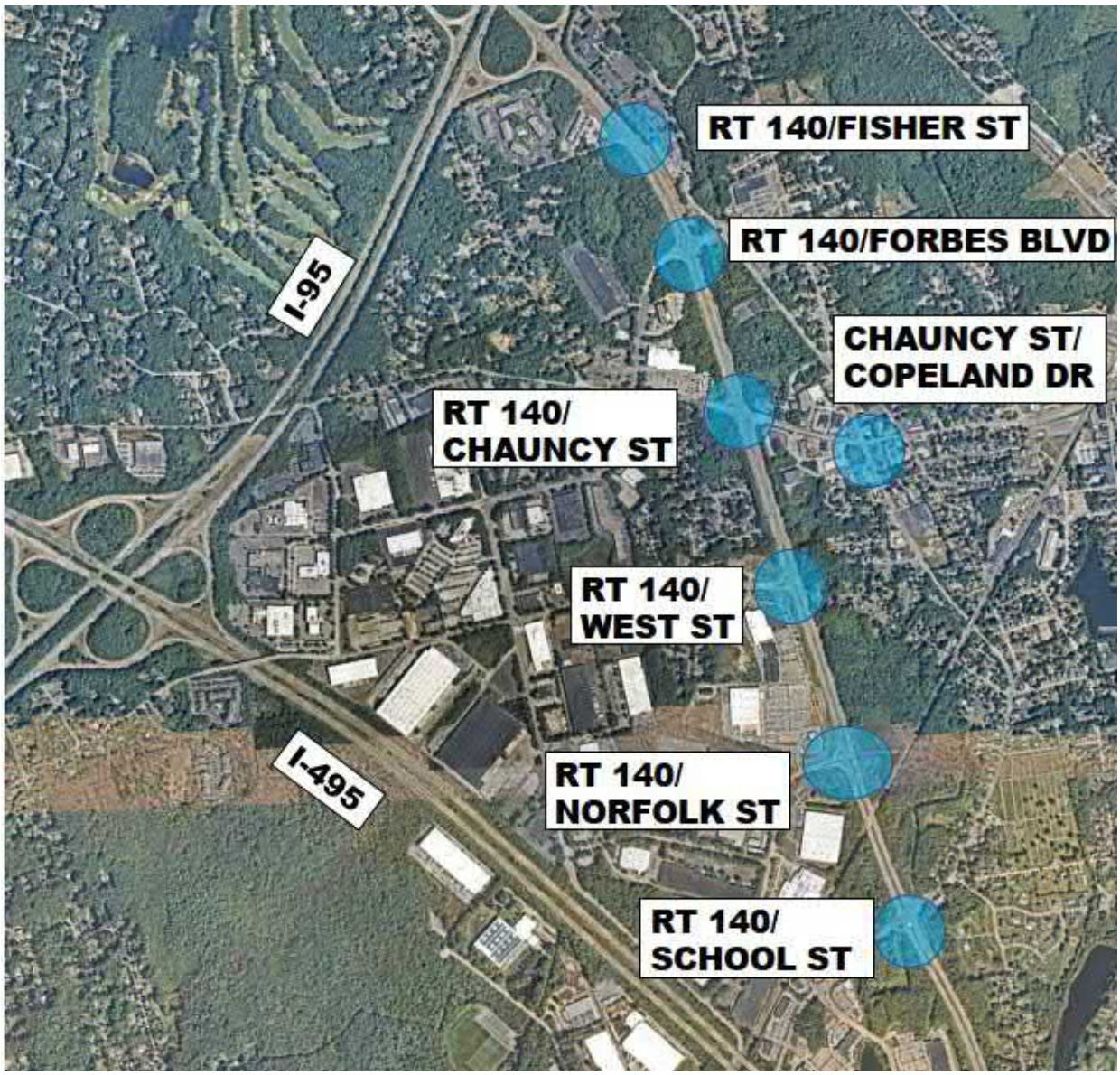
1 inch = 1,000 feet

Figure 1
Site Locus
Chauncy Street (Route 6)
Mansfield, MA

Data Source: MassGIS USGS Topographic Quadrangle Images (2001)

PROJECT LOCUS MAP

Signalized Intersection



Proposal No. 61305-131228

A00870 - 5

Figure 4
Environmental Justice Map
Chauncy Street (Route 106)
Improvements Phase 1
Mansfield, Massachusetts

Approximate Project Locus

Legend

- Project Location

2020 Environmental Justice Block Groups

EJ Criteria

- Minority
- Income
- English isolation
- Minority and Income
- Minority and English isolation
- Income and English isolation
- Minority, Income and English isolation
- Town Boundary

N
W E
S

0 800 1,600 Feet

1 inch = 850 feet

Data Source: MassGIS Orthophoto (2013/2014); MassGIS Data: MHC Historic Inventory

BETA

PROJECT TOTALS			
AFFECTED PROPERTIES	FEE TAKINGS	PERMANENT EASEMENTS	TEMPORARY EASEMENTS
17	0	41	16

PRELIMINARY RIGHT OF WAY
PARCEL SUMMARY SHEET
SHEET 1 OF 2

PROJECT FILE NO. 613052		
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	8	15

MANSFIELD
CHAUNCY STREET (ROUTE 106)

PARCEL NO.	PLAN SHEET NO.	TITLEHOLDER	TITLE REFERENCE			TAKEN			EASEMENT		REMAINING	TOTAL PROPERTY AREA (S.F.)	FRONTAGE ON ROW PLAN (FT)	PROPERTY ADDRESS	REMARKS	LAND RESTRICTIONS FROM DEED
			DEED BOOK	PAGE NO.	L.C. CASE NO.	CERT. NO.	CITY	STATE	TYPE	AREA	TOTAL TAKEN					
13-PUE-1	11	LESTER S. & JAMES M. EPSTEIN	19124	31					PERM	871			2042	126	360 CHAUNCY STREET	OVERHEAD WIRES
13-4	11	LESTER S. & JAMES M. EPSTEIN	12215	15				1954			1954	16729	16924	756	CHAUNCY STREET REAR	ROAD WIDENING, SHARED USE PATH
13-PUE-2	11	LESTER S. & JAMES M. EPSTEIN	12215	15					PERM	1716						OVERHEAD WIRES, UTILITY POLE, GUY WIRE
13-TE-1	11	LESTER S. & JAMES M. EPSTEIN	12215	15					TEMP	1135						GRADING (MAX 3:1), LOAM & SEEDING
13-5	12	MANISHA REALTY LLC	22063	258	26023			19			19	10385	705	292 CHAUCY STREET		SHARED USE PATH
13-PUE-3	12	MANISHA REALTY LLC	22063	258	26023		14688 & 14689		PERM	2442						OVERHEAD WIRES, UTILITY POLE, GUY WIRE
13-TE-6	12	MANISHA REALTY LLC	22063	258	26023		14688 & 14689		TEMP	82						GRADING (MAX 3:1), LOAM & SEEDING
13-6	12	ROSEWOOD REALTY TRUST	13234	164				193			193	49283	1208	287 CHAUNCY STREET		SIDEWALK
13-PUE-4	12	ROSEWOOD REALTY TRUST	13234	164					PERM	114						UTILITY POLE, GUY WIRE
13-TE-5	12	ROSEWOOD REALTY TRUST	13234	164					TEMP	2100						GRADING (MAX 3:1), LOAM & SEEDING, DRIVEWAY WORK
13-7	12.13	GEM REALTY TRUST	21367	196				121			121	12969	109	273 CHAUNCY STREET		SIDEWALK
13-D-GR-1	12.13	GEM REALTY TRUST	21367	196					PERM	365						CULVERT, HEADWALL, GUARDRAIL
13-HS-1	12.13	GEM REALTY TRUST	21367	196					PERM	106						HIGHWAY SIGN
13-HS-5	12.13	GEM REALTY TRUST	21367	196					PERM	17						HIGHWAY SIGN
13-TE-2	12.13	GEM REALTY TRUST	21367	196					TEMP	236						GRADING (MAX 3:1), LOAM & SEEDING
13-TE-7	12.13	GEM REALTY TRUST	21367	196					TEMP	418						GRADING (MAX 3:1), LOAM & SEEDING
13-PUE-5	12.13	COLLABORATIVE RESOURCES LLC	C6	28					PERM	788		3022	106	272 CHAUNCY STREET		OVERHEAD WIRES, UTILITY POLE
13-TE-8	12.13	COLLABORATIVE RESOURCES LLC	C6	28					TEMP	664						GRADING (MAX 3:1), LOAM & SEEDING, DRIVEWAY WORK
13-TE-3	12.13	COLLABORATIVE RESOURCES LLC	C6	28					TEMP	36						GRADING (MAX 3:1), LOAM & SEEDING
13-8	13	DANGELO INC. #825	0	152	22135	7909		238			238	3306	188	260 CHAUNCY STREET		SHARED USE PATH
13-PUE-6	13	DANGELO INC. #825	0	152	22135	7909			PERM	1698						OVERHEAD WIRES, UTILITY POLE, GUY WIRE
13-TE-9	13	DANGELO INC. #825	0	152	22135	7909			TEMP	70						GRADING (MAX 3:1), LOAM & SEEDING, DRIVEWAY WORK
13-9	13	WEC 99J-40 LLC	8616	254				456			456	4566	613	261 CHAUNCY STREET		ROADWAY, SIDEWALK
13-PUE-7	13	WEC 99J-40 LLC	8616	254					PERM	1116						OVERHEAD WIRES, UTILITY POLE
13-HS-2	13	WEC 99J-40 LLC	8616	254					PERM	20						HIGHWAY SIGN
13-TE-10	13	WEC 99J-40 LLC	8616	254					TEMP	2321						GRADING (MAX 3:1), LOAM & SEEDING, DRIVEWAY WORK
13-10	13	254 CHAUNCY STREET LLC	22278	179				313			313	1854	125	254 CHAUNCY STREET		SHARED USE PATH
13-PUE-8	13	254 CHAUNCY STREET LLC	22278	179					PERM	972						OVERHEAD WIRES, UTILITY POLE
13-11	13.000000	A&E BROTHERS LLC	18852	49				505			505	5372	692	243 CHAUNCY STREET		SIDEWALK
13-PUE-9	13.14	A&E BROTHERS LLC	18852	49					PERM	57						UTILITY POLE, GUY WIRE
13-TE-11	13.14	A&E BROTHERS LLC	18852	49					PERM	1231						GRADING (MAX 3:1), LOAM & SEEDING, DRIVEWAY WORK

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Proposal No. 613052-131228

PROJECT TOTALS			
AFFECTED PROPERTIES	FEE TAKINGS	PERMANENT EASEMENTS	TEMPORARY EASEMENTS
17	0	41	16

PARCEL NO.	PLAN SHEET NO.	TITLEHOLDER	TITLE REFERENCE				TAKEN			EASEMENT			REMAINING	PROPERTY ADDRESS	FRONTAGE ON ROW PLAN (FT)	TOTAL PROPERTY AREA (S.F.)	REMARKS	LAND RESTRICTIONS FROM DEED
			DEED BOOK	PAGE NO.	L.C. CASE NO.	CERT. NO.	CITY	STATE	TYPE	AREA	TOTAL TAKEN						
13-12	13	LARMONT REALTY TRUST	2338	347				2129			2129	80711		242 CHAUNCY STREET	266	82840	SHARED USE PATH	
13-PUE-10	13,14	LARMONT REALTY TRUST	2338	347					PERM	2241							OVERHEAD WIRES, UTILITY POLE, GUY WIRE	
13-HS-3	13,14	LARMONT REALTY TRUST	2338	347					PERM	63							HIGHWAY SIGN	
13-TE-12	13,14	LARMONT REALTY TRUST	2338	347					TEMP	1304							GRADING (MAX 3:1), LOAM & SEEDING, DRIVEWAY WORK, HMA BERM	
13-13	13,14	JT BUILDING & DEVELOPMENT LLC	12238	334			147				147	8652		235 CHAUNCY STREET	267	8799	SIDEWALK	
13-PUE-11	13,14	JT BUILDING & DEVELOPMENT LLC	12238	334					PERM	57							UTILITY POLE, GUY WIRE	
13-PUE-12	13,14	JT BUILDING & DEVELOPMENT LLC	12238	334					PERM	806							OVERHEAD WIRES	
13-PUE-20	13,14	JT BUILDING & DEVELOPMENT LLC	12238	334					PERM	22							GUY WIRE	
13-TE-13	13,14	JT BUILDING & DEVELOPMENT LLC	12238	334					TEMP	432							GRADING (MAX 3:1), LOAM & SEEDING	
13-14	14	TURESKY JON D & GAYLE TRS	7809	169				186			186	22010		100 COPELAND DRIVE	36	22196	SHARED USE PATH	
13-PUE-13	14	TURESKY JON D & GAYLE TRS	7809	169					PERM	591							OVERHEAD WIRES	
13-TE-14	14	TURESKY JON D & GAYLE TRS	7809	169					TEMP	577							GRADING (MAX 3:1), LOAM & SEEDING	
13-15	14	COBBLE HILL DEV LLC	27897	106				1880			1880	18457		215 CHAUNCY STREET	249	20337	SHARED USE PATH	
13-19	14	COBBLE HILL DEV LLC	27897	106			263				1880	18184		205 CHAUNCY STREET	213	20064	SHARED USE PATH	
13-WM-2	14	COBBLE HILL DEV LLC	27897	106					PERM	40							HYDRANT	
13-HS-4	14	COBBLE HILL DEV LLC	27897	106					PERM	24							HIGHWAY SIGN	
13-PUE-17-T	14	COBBLE HILL DEV LLC	27897	106					PERM	66							UTILITY POLE, GUY WIRE	
13-PUE-18-T	14	COBBLE HILL DEV LLC	27897	106					PERM	73							GUY WIRE	
13-TE-15	14	COBBLE HILL DEV LLC	27897	106					TEMP	1497							GRADING (MAX 3:1), LOAM & SEEDING	
13-TE-17	14	COBBLE HILL DEV LLC	27897	106					TEMP	304							GRADING (MAX 3:1), LOAM & SEEDING	
13-16	14	BRI INC	2897	217				808			808	17558		99 COPELAND DRIVE	282	18366	SIDEWALK, TRAFFIC SIGNALS	
13-PUE-14	14	BRI INC	2897	217					PERM	2253							OVERHEAD WIRES	
13-TE-16	14	BRI INC	2897	217					TEMP	782							GRADING (MAX 3:1), LOAM & SEEDING, DRIVEWAY WORK	
13-PUE-15	14	TOKEN ENTERPRISES INC	1662	251					PERM	261				93 COPELAND DRIVE	12	21803	OVERHEAD WIRES	
13-PUE-19	14	TOKEN ENTERPRISES INC	1662	251					PERM	116							OVERHEAD WIRES	
13-PUE-16-T	14	RKM REALTY TRUST	9086	92					PERM	790				200 CHAUNCY STREET	169	39745	OVERHEAD WIRES, UTILITY POLE, GUY WIRE	

PRELIMINARY RIGHT OF WAY
PARCEL SUMMARY SHEET
SHEET 2 OF 2

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	9	15
PROJECT FILE NO. 613052			

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Proposal No. 613052-131228

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: November 08, 2022
Project code: 2023-0011744
Project Name: 608944 - MANSFIELD- RECONSTRUCTION ON CHAUNCY STREET (ROUTE 106)

Subject: Concurrence verification letter for the '608944 - MANSFIELD- RECONSTRUCTION ON CHAUNCY STREET (ROUTE 106)' project under the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

To whom it may concern:

The U.S. Fish and Wildlife Service (Service) has received your request dated November 08, 2022 to verify that the **608944 - MANSFIELD- RECONSTRUCTION ON CHAUNCY STREET (ROUTE 106)** (Proposed Action) may rely on the concurrence provided in the February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (PBO) to satisfy requirements under Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C 1531 *et seq.*).

Based on the information you provided (Project Description shown below), you have determined that the Proposed Action is within the scope and adheres to the criteria of the PBO, including the adoption of applicable avoidance and minimization measures, and may affect, but is not likely to adversely affect (NLAA) the endangered Indiana bat (*Myotis sodalis*) and/or the threatened Northern long-eared bat (*Myotis septentrionalis*). Consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) is required.

The Service has 14 calendar days to notify the lead Federal action agency or designated non-federal representative if we determine that the Proposed Action does not meet the criteria for a NLAA determination under the PBO. If we do not notify the lead Federal action agency or designated non-federal representative within that timeframe, you may proceed with the Proposed Action under the terms of the NLAA concurrence provided in the PBO. This verification period allows Service Field Offices to apply local knowledge to implementation of the PBO, as we may

identify a small subset of actions having impacts that were unanticipated. In such instances, Service Field Offices may request additional information that is necessary to verify inclusion of the proposed action under the PBO.

For Proposed Actions that include bridge/culvert or structure removal, replacement, and/or maintenance activities: If your initial bridge/culvert or structure assessments failed to detect Indiana bats, but you later detect bats prior to, or during construction, please submit the Post Assessment Discovery of Bats at Bridge/Culvert or Structure Form (User Guide Appendix E) to this Service Office. In these instances, potential incidental take of Indiana bats may be exempted provided that the take is reported to the Service.

If the Proposed Action is modified, or new information reveals that it may affect the Indiana bat and/or Northern long-eared bat in a manner or to an extent not considered in the PBO, further review to conclude the requirements of ESA Section 7(a)(2) may be required. If the Proposed Action may affect any other federally-listed or proposed species, and/or any designated critical habitat, additional consultation between the lead Federal action agency and this Service Office is required. If the proposed action has the potential to take bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act may also be required. In either of these circumstances, please contact this Service Office.

The following species may occur in your project area and **are not** covered by this determination:

- Monarch Butterfly *Danaus plexippus* Candidate

Project Description

The following project name and description was collected in IPaC as part of the endangered species review process.

Name

608944 - MANSFIELD- RECONSTRUCTION ON CHAUNCY STREET (ROUTE 106)

Description

608944 - MANSFIELD- RECONSTRUCTION ON CHAUNCY STREET (ROUTE 106)
This project includes the reconstruction of Route106 (Chauncy Street) from Route 140 to North Main Street for a distance of approximately 4,100 ft. The proposed work will include new granite curbing, sidewalks and wheelchair ramps to current ADA standards. Upgraded and/or new Traffic Signals at Copeland Drive, Highland Avenue and North Main Street will also be included in addition to signs, pavement markings, drainage upgrades, and decorative street lighting. 11'travel lanes with 5' shoulders, 5.5' sidewalks and 11' turn lanes are proposed. These improvements will help to mitigate congestion, enhance safety, and encourage healthy initiatives.
Monarch Butterfly: Candidate Species only, no conservation measures at this time.

Determination Key Result

Based on your answers provided, this project(s) may affect, but is not likely to adversely affect the endangered Indiana bat and/or the threatened Northern long-eared bat, therefore, consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required. However, also based on your answers provided, this project may rely on the concurrence provided in the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

Qualification Interview

1. Is the project within the range of the Indiana bat[1]?

   [1] See Indiana bat species profile

   Automatically answered
   No

2. Is the project within the range of the Northern long-eared bat[1]?

   [1] See Northern long-eared bat species profile

   Automatically answered
   Yes

3. Which Federal Agency is the lead for the action?

   A) Federal Highway Administration (FHWA)

4. Are *all* project activities limited to non-construction[1] activities only? (examples of non-construction activities include: bridge/abandoned structure assessments, surveys, planning and technical studies, property inspections, and property sales)

   [1] Construction refers to activities involving ground disturbance, percussive noise, and/or lighting.

   No

5. Does the project include *any* activities that are **greater than** 300 feet from existing road/rail surfaces[1]?

   [1] Road surface is defined as the actively used [e.g. motorized vehicles] driving surface and shoulders [may be pavement, gravel, etc.] and rail surface is defined as the edge of the actively used rail ballast.

   No

6. Does the project include *any* activities **within** 0.5 miles of a known Indiana bat and/or NLEB hibernaculum[1]?

   [1] For the purpose of this consultation, a hibernaculum is a site, most often a cave or mine, where bats hibernate during the winter (see suitable habitat), but could also include bridges and structures if bats are found to be hibernating there during the winter.

   No

7. Is the project located **within** a karst area?

   No

8. Is there *any* suitable[1] summer habitat for Indiana Bat or NLEB **within** the project action area[2]? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

   [1] See the Service's summer survey guidance for our current definitions of suitable habitat.

   [2] The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR Section 402.02). Further clarification is provided by the User's Guide for the Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat.

   No

9. Does the project include wetland or stream protection activities associated with compensatory wetland mitigation?

   No

10. Does the project include slash pile burning?

    No

11. Does the project include *any* bridge removal, replacement, and/or maintenance activities (e.g., any bridge repair, retrofit, maintenance, and/or rehabilitation work)?

    No

12. Does the project include the removal, replacement, and/or maintenance of *any* structure other than a bridge? (e.g., rest areas, offices, sheds, outbuildings, barns, parking garages, etc.)

    No

13. Will the project involve the use of **temporary** lighting *during* the active season?

    Yes

14. Is there *any* suitable habitat **within** 1,000 feet of the location(s) where **temporary** lighting will be used?

    Yes

15. Will the project install new or replace existing **permanent** lighting?

    No

16. Does the project include percussives or other activities (**not including tree removal/ trimming or bridge/structure work**) that will increase noise levels above existing traffic/ background levels?

    Yes

17. Will the activities that use percussives (**not including tree removal/trimming or bridge/ structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the active season[1]?

    [1] Coordinate with the local Service Field Office for appropriate dates.

    Yes

18. Will *any* activities that use percussives (**not including tree removal/trimming or bridge/ structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the inactive season[1]?

    [1] Coordinate with the local Service Field Office for appropriate dates.

    Yes

19. Are *all* project activities that are **not associated with** habitat removal, tree removal/ trimming, bridge and/or structure activities, temporary or permanent lighting, or use of percussives, limited to actions that DO NOT cause any additional stressors to the bat species?

    Examples: lining roadways, unlighted signage , rail road crossing signals, signal lighting, and minor road repair such as asphalt fill of potholes, etc.

    Yes

20. Will the project raise the road profile **above the tree canopy**?

    No

21. Is the location of this project consistent with a No Effect determination in this key?

    Automatically answered
    Yes, because the project action area is not within suitable Indiana bat and/or NLEB summer habitat and is outside of 0.5 miles of a hibernaculum.

22. **General AMM 1**
    Will the project ensure *all* operators, employees, and contractors working in areas of known or presumed bat habitat are aware of *all* FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable Avoidance and Minimization Measures?

    Yes

23. **Lighting AMM 1**
    Will *all* **temporary** lighting be directed away from suitable habitat during the active season?

    Yes

Project Questionnaire

1. Have you made a No Effect determination for *all* other species indicated on the FWS IPaC generated species list?

   N/A

2. Have you made a May Affect determination for *any* other species on the FWS IPaC generated species list?

   N/A

Avoidance And Minimization Measures (AMMs)

This determination key result includes the committment to implement the following Avoidance and Minimization Measures (AMMs):

LIGHTING AMM 1

Direct temporary lighting away from suitable habitat during the active season.

GENERAL AMM 1

Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs.

Determination Key Description: FHWA, FRA, FTA Programmatic Consultation For Transportation Projects Affecting NLEB Or Indiana Bat

This key was last updated in IPaC on October 11, 2022. Keys are subject to periodic revision.

This decision key is intended for projects/activities funded or authorized by the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and/or Federal Transit Administration (FTA), which may require consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the Endangered Species Act (ESA) for the endangered **Indiana bat** (*Myotis sodalis*) and the threatened **Northern long-eared bat** (NLEB) (*Myotis septentrionalis*).

This decision key should only be used to verify project applicability with the Service's February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects. The programmatic biological opinion covers limited transportation activities that may affect either bat species, and addresses situations that are both likely and not likely to adversely affect either bat species. This decision key will assist in identifying the effect of a specific project/activity and applicability of the programmatic consultation. The programmatic biological opinion is not intended to cover all types of transportation actions. Activities outside the scope of the programmatic biological opinion, or that may affect ESA-listed species other than the Indiana bat or NLEB, or any designated critical habitat, may require additional ESA Section 7 consultation.

IPaC User Contact Information

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Lead Agency Contact Information

Lead Agency: Federal Highway Administration

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: November 10, 2022
Project code: 2023-0009315
Project Name: 608053 - MANSFIELD- INTERSECTION & SIGNAL IMPROVEMENTS AT SR 140 (COMMERCIAL STREET) & SR 106 (CHAUN

Subject: Concurrence verification letter for the '608053 - MANSFIELD- INTERSECTION & SIGNAL IMPROVEMENTS AT SR 140 (COMMERCIAL STREET) & SR 106 (CHAUN' project under the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

To whom it may concern:

The U.S. Fish and Wildlife Service (Service) has received your request dated November 10, 2022 to verify that the **608053 - MANSFIELD- INTERSECTION & SIGNAL IMPROVEMENTS AT SR 140 (COMMERCIAL STREET) & SR 106 (CHAUN** (Proposed Action) may rely on the concurrence provided in the February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (PBO) to satisfy requirements under Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C 1531 *et seq.*).

Based on the information you provided (Project Description shown below), you have determined that the Proposed Action is within the scope and adheres to the criteria of the PBO, including the adoption of applicable avoidance and minimization measures, and may affect, but is not likely to adversely affect (NLAA) the endangered Indiana bat (*Myotis sodalis*) and/or the threatened Northern long-eared bat (*Myotis septentrionalis*). Consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) is required.

The Service has 14 calendar days to notify the lead Federal action agency or designated non-federal representative if we determine that the Proposed Action does not meet the criteria for a NLAA determination under the PBO. If we do not notify the lead Federal action agency or designated non-federal representative within that timeframe, you may proceed with the Proposed Action under the terms of the NLAA concurrence provided in the PBO. This verification period allows Service Field Offices to apply local knowledge to implementation of the PBO, as we may

identify a small subset of actions having impacts that were unanticipated. In such instances, Service Field Offices may request additional information that is necessary to verify inclusion of the proposed action under the PBO.

For Proposed Actions that include bridge/culvert or structure removal, replacement, and/or maintenance activities: If your initial bridge/culvert or structure assessments failed to detect Indiana bats, but you later detect bats prior to, or during construction, please submit the Post Assessment Discovery of Bats at Bridge/Culvert or Structure Form (User Guide Appendix E) to this Service Office. In these instances, potential incidental take of Indiana bats may be exempted provided that the take is reported to the Service.

If the Proposed Action is modified, or new information reveals that it may affect the Indiana bat and/or Northern long-eared bat in a manner or to an extent not considered in the PBO, further review to conclude the requirements of ESA Section 7(a)(2) may be required. If the Proposed Action may affect any other federally-listed or proposed species, and/or any designated critical habitat, additional consultation between the lead Federal action agency and this Service Office is required. If the proposed action has the potential to take bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act may also be required. In either of these circumstances, please contact this Service Office.

The following species may occur in your project area and **are not** covered by this determination:

- Monarch Butterfly *Danaus plexippus* Candidate

Project Description

The following project name and description was collected in IPaC as part of the endangered species review process.

Name

608053 - MANSFIELD- INTERSECTION & SIGNAL IMPROVEMENTS AT SR 140 (COMMERCIAL STREET) & SR 106 (CHAUN

Description

608053 - MANSFIELD- INTERSECTION & SIGNAL IMPROVEMENTS AT SR 140 (COMMERCIAL STREET) & SR 106 (CHAUNCEY STREET)
Work will consist of improving the intersection and signals at SR 140 (Commercial Street) and SR 106 (Chauncey Street).
Monarch Butterfly: Candidate Species only, no conservation measures at this time.

Determination Key Result

Based on your answers provided, this project(s) may affect, but is not likely to adversely affect the endangered Indiana bat and/or the threatened Northern long-eared bat, therefore, consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required. However, also based on your answers provided, this project may rely on the concurrence provided in the revised February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat.

Qualification Interview

1. Is the project within the range of the Indiana bat[1]?

   [1] See Indiana bat species profile

   Automatically answered
   No

2. Is the project within the range of the Northern long-eared bat[1]?

   [1] See Northern long-eared bat species profile

   Automatically answered
   Yes

3. Which Federal Agency is the lead for the action?

   A) Federal Highway Administration (FHWA)

4. Are *all* project activities limited to non-construction[1] activities only? (examples of non-construction activities include: bridge/abandoned structure assessments, surveys, planning and technical studies, property inspections, and property sales)

   [1] Construction refers to activities involving ground disturbance, percussive noise, and/or lighting.

   No

5. Does the project include *any* activities that are **greater than** 300 feet from existing road/ rail surfaces[1]?

   [1] Road surface is defined as the actively used [e.g. motorized vehicles] driving surface and shoulders [may be pavement, gravel, etc.] and rail surface is defined as the edge of the actively used rail ballast.

   No

6. Does the project include *any* activities **within** 0.5 miles of a known Indiana bat and/or NLEB hibernaculum[1]?

   [1] For the purpose of this consultation, a hibernaculum is a site, most often a cave or mine, where bats hibernate during the winter (see suitable habitat), but could also include bridges and structures if bats are found to be hibernating there during the winter.

   No

7. Is the project located **within** a karst area?

   No

8. Is there *any* suitable[1] summer habitat for Indiana Bat or NLEB **within** the project action area[2]? (includes any trees suitable for maternity, roosting, foraging, or travelling habitat)

   [1] See the Service's summer survey guidance for our current definitions of suitable habitat.

   [2] The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR Section 402.02). Further clarification is provided by the User's Guide for the Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat.

   Yes

9. Will the project remove *any* suitable summer habitat[1] and/or remove/trim any existing trees **within** suitable summer habitat?

   [1] See the Service's summer survey guidance for our current definitions of suitable habitat.

   Yes

10. Will the project clear more than 20 acres of suitable habitat per 5-mile section of road/rail?

    No

11. Have presence/probable absence (P/A) summer surveys[1][2] been conducted[3][4] **within** the suitable habitat located within your project action area?

    [1] See the Service's summer survey guidance for our current definitions of suitable habitat.

    [2] Presence/probable absence summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate distance from hibernacula) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

    [3] For projects within the range of either the Indiana bat or NLEB in which suitable habitat is present, and no bat surveys have been conducted, the transportation agency will assume presence of the appropriate species. This assumption of presence should be based upon the presence of suitable habitat and the capability of bats to occupy it because of their mobility.

    [4] Negative presence/probable absence survey results obtained using the summer survey guidance are valid for a minimum of two years from the completion of the survey unless new information (e.g., other nearby surveys) suggest otherwise.

    Yes

SUBMITTED DOCUMENTS

- *MassDOT_Mansfield_NLEB Memo-Final.pdf https://ipac.ecosphere.fws.gov/project/2XG35FIWCFFGDIVU6WACGYH4VU/projectDocuments/118552079*

12. Did the presence/probable absence (P/A) summer surveys detect Indiana bats and/or NLEB[1]?

    [1] P/A summer surveys conducted within the fall swarming/spring emergence home range of a documented Indiana bat hibernaculum (contact local Service Field Office for appropriate home range) that result in a negative finding requires additional consultation with the local Service Field Office to determine if clearing of forested habitat is appropriate and/or if seasonal clearing restrictions are needed to avoid and minimize potential adverse effects on fall swarming and spring emerging Indiana bats.

    No

13. Were the P/A summer surveys conducted **within** the fall swarming/spring emergence range of a documented Indiana bat hibernaculum[1]?

    [1] Contact the local Service Field Office for appropriate distance from hibernacula.

    No

14. Does the project include activities **within documented NLEB habitat**[1][2]?

    [1] Documented roosting or foraging habitat – for the purposes of this consultation, we are considering documented habitat as that where Indiana bats and/or NLEB have actually been captured and tracked using (1) radio telemetry to roosts; (2) radio telemetry biangulation/triangulation to estimate foraging areas; or (3) foraging areas with repeated use documented using acoustics. Documented roosting habitat is also considered as suitable summer habitat within 0.25 miles of documented roosts.)

    [2] For the purposes of this key, we are considering documented corridors as that where Indiana bats and/or NLEB have actually been captured and tracked to using (1) radio telemetry; or (2) treed corridors located directly between documented roosting and foraging habitat.

    No

15. Will the removal or trimming of habitat or trees occur **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors?

    Yes

16. What time of year will the removal or trimming of habitat or trees **within** suitable but **undocumented NLEB** roosting/foraging habitat or travel corridors occur?

    C) During both the active and inactive seasons

17. Will *any* tree trimming or removal occur **within** 100 feet of existing road/rail surfaces?

    Yes

18. Will *any* tree trimming or removal occur **between** 100-300 feet of existing road/rail surfaces?

    No

19. Are *all* trees that are being removed clearly demarcated?

    Yes

20. Will the removal of habitat or the removal/trimming of trees involve the use of **temporary** lighting?

    Yes

21. Will the removal of habitat or the removal/trimming of trees include installing new or replacing existing **permanent** lighting?

    No

22. Does the project include wetland or stream protection activities associated with compensatory wetland mitigation?

    No

23. Does the project include slash pile burning?

    No

24. Does the project include *any* bridge removal, replacement, and/or maintenance activities (e.g., any bridge repair, retrofit, maintenance, and/or rehabilitation work)?

    No

25. Does the project include the removal, replacement, and/or maintenance of *any* structure other than a bridge? (e.g., rest areas, offices, sheds, outbuildings, barns, parking garages, etc.)

    No

26. Will the project involve the use of *any* **temporary** lighting in addition to the lighting already indicated for habitat removal (including the removal or trimming of trees), or bridge/structure removal, replacement or maintenance activities?

    Yes

27. Is there *any* suitable habitat **within** 1,000 feet of the location(s) where **temporary** lighting (other than the lighting already indicated for habitat removal (including the removal or trimming of trees) or bridge/structure removal, replacement or maintenance activities) will be used?

    Yes

28. Will the project install new or replace existing **permanent** lighting?

    No

29. Does the project include percussives or other activities (**not including tree removal/ trimming or bridge/structure work**) that will increase noise levels above existing traffic/ background levels?

    Yes

30. Will the activities that use percussives (**not including tree removal/trimming or bridge/ structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the active season[1]?

    [1] Coordinate with the local Service Field Office for appropriate dates.

    Yes

31. Will *any* activities that use percussives (**not including tree removal/trimming or bridge/ structure work**) and/or increase noise levels above existing traffic/background levels be conducted *during* the inactive season[1]?

    [1] Coordinate with the local Service Field Office for appropriate dates.

    Yes

32. Are *all* project activities that are **not associated with** habitat removal, tree removal/ trimming, bridge and/or structure activities, temporary or permanent lighting, or use of percussives, limited to actions that DO NOT cause any additional stressors to the bat species?

    Examples: lining roadways, unlighted signage , rail road crossing signals, signal lighting, and minor road repair such as asphalt fill of potholes, etc.

    Yes

33. Will the project raise the road profile **above the tree canopy**?

    No

34. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) consistent with a Not Likely to Adversely Affect determination in this key?

    Automatically answered
    Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the active season within undocumented habitat.

35. Are the project activities that use percussives (not including tree removal/trimming or bridge/structure work) and/or increase noise levels above existing traffic/background levels consistent with a No Effect determination in this key?

    Automatically answered
    Yes, because the activities are within 300 feet of the existing road/rail surface, greater than 0.5 miles from a hibernacula, and conducted during the inactive season

36. Is the location of this project consistent with a Not Likely to Adversely Affect determination in this key?

    Automatically answered
    Yes, because no bats were detected during presence/probable absence surveys conducted during the summer survey season and outside of the fall swarming/spring emergence periods. Additionally, all activities were at least 0.5 miles from any hibernaculum.

37. **General AMM 1**
    Will the project ensure *all* operators, employees, and contractors working in areas of known or presumed bat habitat are aware of *all* FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable Avoidance and Minimization Measures?

    Yes

Project Questionnaire

1. Have you made a No Effect determination for *all* other species indicated on the FWS IPaC generated species list?

   N/A

2. Have you made a May Affect determination for *any* other species on the FWS IPaC generated species list?

   N/A

3. How many acres[1] of trees are proposed for removal between 0-100 feet of the existing road/rail surface?

   [1] If described as number of trees, multiply by 0.09 to convert to acreage and enter that number.

   0.1

Avoidance And Minimization Measures (AMMs)

This determination key result includes the committment to implement the following Avoidance and Minimization Measures (AMMs):

GENERAL AMM 1

Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all FHWA/FRA/FTA (Transportation Agencies) environmental commitments, including all applicable AMMs.

Determination Key Description: FHWA, FRA, FTA Programmatic Consultation For Transportation Projects Affecting NLEB Or Indiana Bat

This key was last updated in IPaC on October 11, 2022. Keys are subject to periodic revision.

This decision key is intended for projects/activities funded or authorized by the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and/or Federal Transit Administration (FTA), which may require consultation with the U.S. Fish and Wildlife Service (Service) under Section 7 of the Endangered Species Act (ESA) for the endangered **Indiana bat** (*Myotis sodalis*) and the threatened **Northern long-eared bat** (NLEB) (*Myotis septentrionalis*).

This decision key should only be used to verify project applicability with the Service's February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion for Transportation Projects. The programmatic biological opinion covers limited transportation activities that may affect either bat species, and addresses situations that are both likely and not likely to adversely affect either bat species. This decision key will assist in identifying the effect of a specific project/activity and applicability of the programmatic consultation. The programmatic biological opinion is not intended to cover all types of transportation actions. Activities outside the scope of the programmatic biological opinion, or that may affect ESA-listed species other than the Indiana bat or NLEB, or any designated critical habitat, may require additional ESA Section 7 consultation.

IPaC User Contact Information

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Phone: 6178964454

Lead Agency Contact Information

Lead Agency: Federal Highway Administration

CULTURAL RESOURCES PROJECT RECORD

City/Town	Mansfield	Project #	613052	Date Cleared	2/5/2024
Project Name	Corridor Improvements on Chauncy St (Rt 106) from State Rt 140 to Copeland Dr	Date Filed	2/5/2024	Finding Under Review	☐
		FHWA to MHC			
Project Type	Highway Reconstr - Restr and Rehab	Early Coord. Letter Sent:	☑		
Review	Section 106 (PA)	Comment Received: ☐ MHC ☐ LHC		Reviewer	MA
Finding:	Stip VB - No historic properties affected			Consultant	
Comment					

Determination based on: ☑ Scope of Work ☑ Plan ☑ Inventory ☐ Site Visit ☐ Archaeological Survey

Attach appropriate documentation for checked items

Projects Requiring No Massachusetts SHPO Review

Programmatic Agreement, Appendix 1 (check all that apply) :

- ☐ 1) Interstate bridge or roadway projects
- ☐ 2) Resurfacing, repair existing roadways
- * ☐ 3) Reconstruction on existing roadway
- * ☐ 4) Roadway geometrics, intersections
- * ☐ 5) Curbs and sidewalks
- ☐ 6) Pavement markings, rumble strips, etc
- ☐ 7) Curbs, sidewalks (MAAB, ADA)
- * ☐ 8) Removal of trees
- ☐ 9) Landscaping
- ☐ 10) Utilities
- ☐ 11) Railroad crossing
- ☐ 12) Stream stabilization and restoration
- ☐ 13) Wetland mitigation area
- * ☐ 14) Bridge (NR "Not Eligible" or "Conditionally Not Eligible")
- * ☐ 15) Bridge (concrete slab post 1900, steel stringer)
- ☐ 16) Bridge (less than 20' span)
- * ☐ 17) Highway safety improvement
- ☐ 18) Drainage system element
- * ☐ 19) Traffic signal, safety improvement
- * ☐ 20) Intelligent Transportation System project
- ☐ 21) Rest area, maintenance facility
- * ☐ 22) Bicycle, pedestrian lane, path or facility
- ☐ 23) Lighting system
- ☐ 24) Sign
- ☐ 25) Hazardous waste
- ☐ 26) Highway fencing
- ☐ 27) Emergency repair
- ☐ 28) Erosion control
- ☐ 29) Noise barrier

* National Register eligibility evaluation required

-OR-

No Historic Properties Affected
Programmatic Agreement Stipulation V.B. (check one):

- ☑ No NR listed or -eligible properties within Area of Potential Effect
- ☐ No effect on National Register listed or -eligible properties

Reviewer's Initials: MJA JMH

CULTURAL RESOURCES PROJECT RECORD

Summary of MassDOT Highway Division Finding
(Appendix 1 and Section V.B. Projects only)

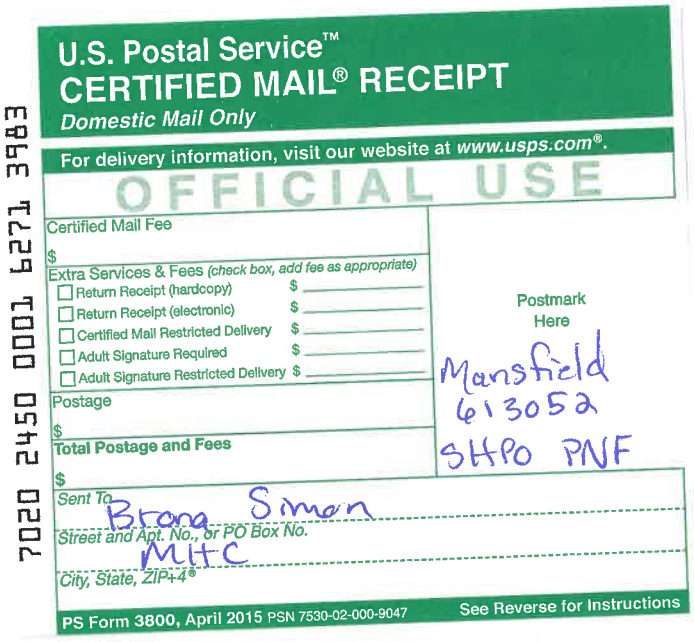
MassDOT proposes traffic and safety improvements along Route 106 (Chauncy Street), between the intersection of Route 106 and State Route 140 (Commercial Street) and the intersection of Route 106 and Copeland Drive in Mansfield. The project will establish an 11-ft-wide travel lane in both directions, a 5.5-ft sidewalk on the north side, and an 8-ft-wide shared-use path with a 4-ft brick buffer on the south side of Route 106. Project work includes full-depth box widening and minor roadway widening; pavement milling and overlay; reconstruction of sidewalks with ADA improvements at intersections, driveways, and crosswalks at intersecting side streets; and new signage, traffic signals, and pavement markings will be installed. Widening and establishment/extension of turn lanes will occur at intersections within the above-described project area. Improvements, including adjusting and reconstructing, will be made to the existing drainage system as needed. Utility poles will be relocated as needed in areas of widening and new sidewalk and shared-use path construction. The project requires permanent and temporary easements from 18 properties for utility relocations, highway signage, shared-use path construction, grading, placing loam and seed, and driveway work. Coordinated timing modifications will be made to traffic signals at the five intersections of Route 140 with School Street, Norfolk Street, West Street, Forbes Boulevard, and Fisher Street. All existing equipment will remain, and no additional project work is proposed within these intersections.

A review of MACRIS revealed no National Register-listed or -eligible districts or individual properties within or adjacent to the project area. This review of MACRIS also revealed no extant previously inventoried properties or areas within or adjacent to the project area.

A review of the MHC's archaeological maps in MACRIS revealed no recorded sites in the vicinity of the project area. The proposed project work will be confined to disturbed and/or unfavorable areas within an existing roadway footprint and adjacent roadside areas. It is the opinion of MassDOT Archaeologist, Jameson Harwood, that low sensitivity can be ascribed to the project's APE based on the impacts of urban development, including road construction, as well as nearby residential and commercial development.

This project is a partial combination of work previously proposed under MassDOT Project Nos. 608053 and 608944. The work proposed under MassDOT Project No. 608053 was cleared in-house under Appendix 1, with a letter sent to the Mansfield Historical Commission, and PNF submitted to the MHC and Aquinnah THPO on October 30, 2018. The work proposed under MassDOT Project No. 608944 was not reviewed by CRU staff. However, a letter was submitted on March 17, 2021, before the cancellation and combining of these two projects. No responses were received from the Mansfield Historical Commission and copies were forwarded to the MHC at those times. An updated letter was sent to the Mansfield Historical Commission and MHC by MassDOT on 1/12/2024 and a PNF, as required by a Section 404 permit, was submitted on 2/5/2024 and 2/6/204 to the MHC, BUAR, Mashpee THPO, Aquinnah THPO, and Narragansett THPO for the current proposed project. A response of no concerns regarding the project was received by the Mansfield Historical Commission on 2/6/2024. Responses are pending for the PNF.

Reviewer's Initials: _____



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PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

From:	Microsoft Outlook
To:	Robinson, David S (EEA)
Subject:	Delivered: MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements
Date:	Monday, February 5, 2024 12:05:41 PM
Attachments:	MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements.msg

Your message has been delivered to the following recipients:
Robinson, David S (EEA) (David.S.Robinson@mass.gov) <mailto:David.S.Robinson@mass.gov>
Subject: MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements

From:	Microsoft Outlook
To:	106review@mwtribe-nsn.gov; David.weeden@mwtribe-nsn.gov
Subject:	Relayed: MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements
Date:	Monday, February 5, 2024 12:06:47 PM
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Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:
106review@mwtribe-nsn.gov (106review@mwtribe-nsn.gov) <mailto:106review@mwtribe-nsn.gov>
David.weeden@mwtribe-nsn.gov (David.weeden@mwtribe-nsn.gov) <mailto:David.weeden@mwtribe-nsn.gov>
Subject: MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements

From:	Microsoft Outlook
To:	tashtesook@aol.com
Subject:	Relayed: MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements
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tashtesook@aol.com (tashtesook@aol.com) <mailto:tashtesook@aol.com>
Subject: MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements

From:	Microsoft Outlook
To:	thpo@wampanoagtribe-nsn.gov
Subject:	Relayed: MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements
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Subject: MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A
MASSACHUSETTS HISTORICAL COMMISSION
220 MORRISSEY BOULEVARD
BOSTON, MASS. 02125
617-727-8470, FAX: 617-727-5128

PROJECT NOTIFICATION FORM

Project Name: Route 106 (Chauncy St) Corridor Improvements (MassDOT Project # 613052)

Location /Address: Route 106 (Chauncy St), from State Route 140 to Copeland Dr

City/Town: Mansfield

Project Proponent

Name: Massachusetts Department of Transportation

Address: 10 Park Plaza

City/Town/Zip/Telephone: Boston, MA 02116

Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies).

Agency Name	Type of License or funding (specify)
FHWA	Federal Funding (FHWA is lead federal agency)
USACO	Section 404 permit

Project Description (narrative):

MassDOT proposes traffic and safety improvements along Route 106 (Chauncy Street), between the intersection of Route 106 and State Route 140 (Commercial Street) and the intersection of Route 106 and Copeland Drive in Mansfield. The project will establish an 11-ft-wide travel lane in both directions, a 5.5-ft sidewalk on the north side, and an 8-ft-wide shared-use path with a 4-ft brick buffer on the south side of Route 106. Project work includes full-depth box widening and minor roadway widening; pavement milling and overlay; reconstruction of sidewalks with ADA improvements at intersections, driveways, and crosswalks at intersecting side streets; and new signage, traffic signals, and pavement markings will be installed. Widening and establishment/extension of turn lanes will occur at intersections within the above-described project area. Improvements, including adjusting and reconstructing, will be made to the existing drainage system as needed. Utility poles will be relocated as needed in areas of widening and new sidewalk and shared-use path construction. The project requires permanent and temporary easements from 18 properties for utility relocations, highway signage, shared-use path construction, grading, placing loam and seed, and driveway work. Coordinated timing modifications will be made to traffic signals at the five intersections of Route 140 with School Street, Norfolk Street, West Street, Forbes Boulevard, and Fisher Street. All existing equipment will remain, and no additional project work is proposed within these intersections.

Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.

N/A

Does the project include rehabilitation of any existing buildings? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation.

N/A

Does the project include new construction? If so, describe (attach plans and elevations if necessary).

See plans

To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify.

A review of MACRIS revealed no National Register-listed or -eligible districts or individual properties within or adjacent to the project area. This review of MACRIS also revealed no extant previously inventoried properties or areas within or adjacent to the project area.

A review of the MHC's archaeological maps in MACRIS revealed no recorded sites in the vicinity of the project area. The proposed project work will be confined to disturbed and/or unfavorable areas within an existing roadway footprint and adjacent roadside areas. It is the opinion of MassDOT Archaeologist, Jameson Harwood, that low sensitivity can be ascribed to the project's APE based on the impacts of urban development, including road construction, as well as nearby residential and commercial development.

What is the total acreage of the project area?

Woodland	_____	acres	Productive Resources:		
Wetland	_____	acres	Agriculture	_____	acres
Floodplain	_____	acres	Forestry	_____	acres
Open Space	_____	acres	Mining/Extraction	_____	acres
Developed	_____	acres	Total Project Acreage	_____	acres

What is the acreage of the proposed new construction? _____ acres

What is the present land use of the project area?

The project area consists of existing signalized intersections and developed roadway corridor in a commercial and residential setting.

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

Signature of person submitting this form: Melissa Andrade **Date:** 2/5/2024

Name: Melissa Andrade

Address: 10 Park Plaza

City/Town/Zip: Boston, MA 02717

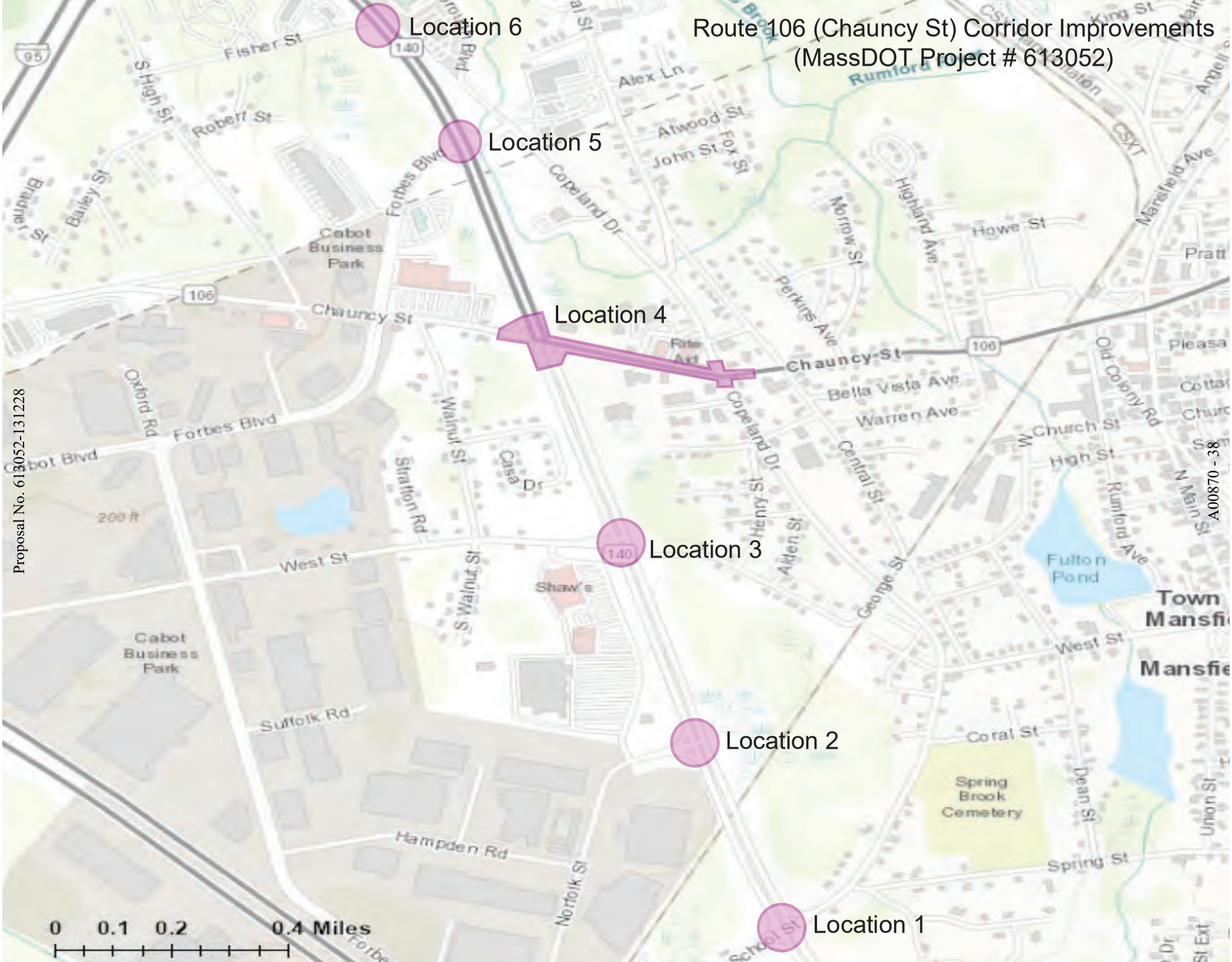
Telephone: Email: melissa.j.andrade@state.ma.us

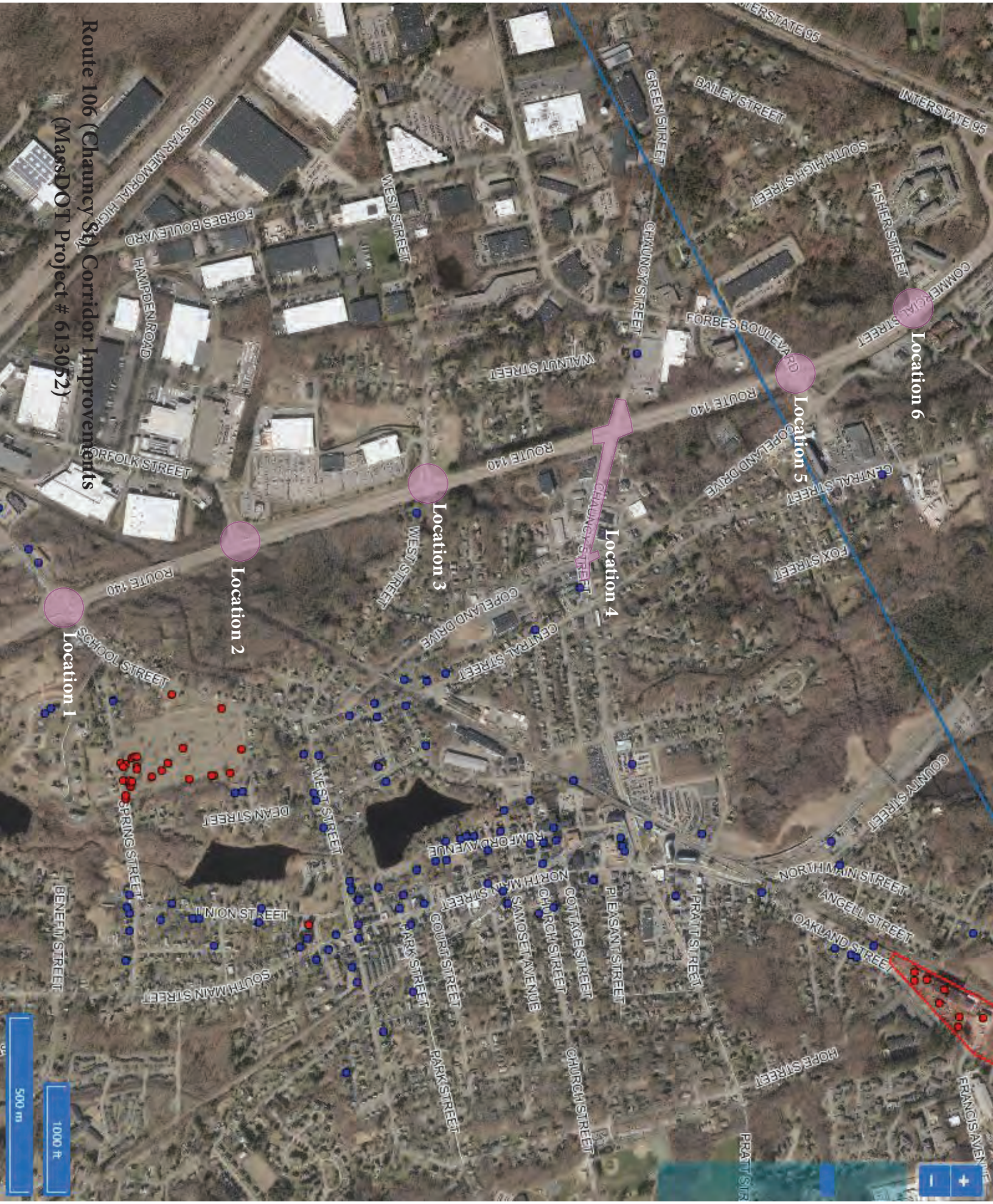
REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.

CC

CC:


Route 106 (Chauncy St) Corridor Improvements
(MassDOT Project # 613052)
Location 6
Location 5
Location 4
Location 3
Location 2
Location 1
Proposal No. 613052-131228
A00870 - 38
0 0.1 0.2 0.4 Miles
Fisher St
S High St
Robert St
Forbes Blvd
Alex Ln
Atwood St
John St
Fox St
Copeland Dr
Cabot Business Park
Chauncy St
Perkins Ave
Morrow St
Highland Ave
Howe St
Mansfield Ave
Chauncy St
Bella Vista Ave
Warren Ave
Oxford Rd
Walnut St
Casa Dr
Stratton Rd
Central St
Henry St
Alden St
George St
W Church St
High St
Old Colony Rd
Rumford Ave
N Main St
West St
S Walnut St
Shaw's
Fulton Pond
Suffolk Rd
Coral St
Spring Brook Cemetery
Dean St
Spring St
Hampden Rd
Norfolk St
Union St


Route 106 (Chauncy St) Corridor Improvements
(MassDOT Project # 613052)
Location 1
Location 2
Location 3
Location 4
Location 5
Location 6
INTERSTATE 95
BAILEY STREET
GREEN STREET
SOUTH HIGH STREET
FISHER STREET
COMMERCIAL STREET
FORBES BOULEVARD
CHAUNCY STREET
WALNUT STREET
ROUTE 140
COPELAND DRIVE
CENTRAL STREET
FOX STREET
WEST STREET
BLUE STAR MEMORIAL HIGHWAY
HAMPDEN ROAD
NORFOLK STREET
SCHOOL STREET
DEAN STREET
SPRING STREET
BENEFIT STREET
UNION STREET
SOUTH MAIN STREET
ROMFORD AVENUE
NORTH MAIN STREET
COURT STREET
PARK STREET
SAMOSET AVENUE
CHURCH STREET
COTTAGE STREET
PLEASANT STREET
PRATT STREET
COUNTY STREET
ANGELL STREET
OAKLAND STREET
HOPE STREET
FRANCIS AVENUE
500 m
1000 ft

Route 106 (Chauncy St) Corridor
Improvements (MassDOT Project # 613052)
(Demolished)
ROUTE 140
CHAUNCY STREET
GILES PLACE
COPELAND DRIVE
WOOD AVENUE
PAINE ROAD
CENTRAL STREET
MH-F82
50 m
100 ft

January 12, 2024

Mansfield Historical Commission
6 Park Row
Mansfield, MA 02048

RE: Route 106 (Chauncy St) Corridor Improvement Project
MassDOT Highway Division – Project Number #613052
Section 106 Review – Early Environmental Coordination

Dear Commission members:

The Massachusetts Department of Transportation, Highway Division (MassDOT) is proposing traffic and safety improvements on Route 106 (Chauncy Street), between and including the intersections of Route 106 and State Route 140 (Commercial Street) and of Route 106 and Copeland Drive in Mansfield. This project will be supported in part with federal funds dispersed through MassDOT. The project, therefore, will require review under Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800). The enclosed project information is provided to the Mansfield Historical Commission to initiate consultation with appropriate representatives of local government in compliance with the regulations governing Section 106.

The project will establish an 11-ft-wide travel lane in both directions and one 8-ft-wide shared-use path on the south side of Route 106. Project work includes full-depth box widening at various locations; pavement milling and overlay; reconstruction of sidewalks on the north side of Route 106 with ADA improvements at intersections, driveways, and crosswalks at intersecting side streets; and installation of new signage, traffic signals, and pavement markings. Widening and the establishment and extension of turn lanes will occur at intersections. Improvements will be made to the existing drainage system, including adjusting the existing system and structures as needed. Utility poles will be relocated as needed in areas of widening and new sidewalk construction.

MassDOT requests that the Commission review the enclosed materials at their earliest convenience. Please submit written comments to: Carrie Lavallee, P.E., Chief Engineer, MassDOT, Highway Division, 10 Park Plaza, Room 4260, Boston, MA 02116, Attn: Melissa Andrade.

If you have any questions, please feel free to contact me at melissa.j.andrade@state.ma.us.

Sincerely,

Melissa Andrade

Melissa Andrade
MassDOT Architectural Historian
Environmental Services

atts: Locus
cc: B. Simon, MHC w/atts.

From: Andrade, Melissa J. (DOT)
To: DiGregorio, Giampaolo
Subject: RE: Rte 106 (Chauncy Street) corridor Improvement Project (#613052)
Date: Wednesday, February 7, 2024 11:09:00 AM

Good morning,

Thank you to the commission for reviewing the project information and providing me comments on it. No further action is required by the commission since you all have no preservation concerns.

Thank you,
Melissa

Melissa Andrade, Architectural Historian
Environmental Services
***MassDOT* – Highway Division**
10 Park Plaza
Boston, MA 02116

From: DiGregorio, Giampaolo <GDiGregorio@bridgew.edu>
Sent: Tuesday, February 6, 2024 10:15 PM
To: Andrade, Melissa J. (DOT) <melissa.j.andrade@dot.state.ma.us>
Subject: Rte 106 (Chauncy Street) corridor Improvement Project (#613052)

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Good Evening,

I am the chair of the Mansfield Historical Commission. Last week we received your letter informing us of the above named project.

In discussion with the members of the commission, we have determined that there is no need for a formal historical preservation assessment of the project area.

Are we required to submit a formal response, or will this message suffice?

Thank you,

GAD

G. A. Di Gregorio

Tillinghast 223
History Department
Bridgewater State University

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DOCUMENT A00871

MASSACHUSETTS HISTORICAL COMMISSION PROJECT NOTIFICATION FORM

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MassDOT - Cultural Resources Unit (Project #613052)

Section 106 Notification Checklist for USACOE Section 404 Permit - Project Notification Forms (PNF)

1. State Historic Preservation Office (SHPO)

- ☐ PNF submitted by certified mail (receipt attached)
- ☒ SHPO stamped PNF received (attached)
- ☐ No comments received within 30-day review period
- ☐ No PNF submitted in accordance with 2013 letter from USACOE, MassDOT in-house Section 106 clearance attached
- ☐ Section 106 No Adverse Effect or Adverse Effect documentation attached

2. Board of Underwater Archaeological Resources (BUAR)

- ☒ PNF submitted by e-mail with delivery receipt (attached)
- ☐ Comments received within 30-day review period (attached)
- ☒ No comments received within 30-day review period

3. Mashpee Wampanoag Tribe (MTHPO)

- ☒ PNF submitted by e-mail with delivery receipt (attached)
- ☐ Comments received within 30-day review period (attached)
- ☒ No comments received within 30-day review period

4. Wampanoag Tribe of Gay Head Aquinnah (ATHPO)

- ☒ PNF submitted by e-mail with delivery receipt (attached)
- ☐ Comments received within 30-day review period (attached)
- ☒ No comments received within 30-day review period

5. Stockbridge-Munsee Community (SMTHPO)

- ☐ PNF submitted by e-mail with delivery receipt (attached)
- ☐ Comments received within 30-day review period (attached)
- ☐ No comments received within 30-day review period
- ☒ N/A (Project not within tribe's area of interest)

6. Narragansett Indian Tribe (NTHPO)

- ☒ PNF submitted by e-mail with delivery receipt (attached)
- ☐ Comments received within 30-day review period (attached)
- ☒ No comments received within 30-day review period

Proposal No. 613052-131228

CULTURAL RESOURCES PROJECT RECORD

City/Town	Mansfield	Project #	613052	Date Cleared	2/5/2024
Project Name	Corridor Improvements on Chauncy St (Rt 106) from State Rt 140 to Copeland Dr	Date Filed	2/5/2024	Finding Under Review	☐
		FHWA to MHC			
Project Type	Highway Reconstr - Restr and Rehab	Early Coord. Letter Sent:	☑		
Review	Section 106 (PA)	Comment Received: ☐ MHC ☐ LHC		Reviewer	MA
Finding:	Stip VB - No historic properties affected			Consultant	
Comment					

Determination based on: ☑ Scope of Work ☑ Plan ☑ Inventory ☐ Site Visit ☐ Archaeological Survey

Attach appropriate documentation for checked items

Projects Requiring No Massachusetts SHPO Review

Programmatic Agreement, Appendix 1 (check all that apply) :

- ☐ 1) Interstate bridge or roadway projects
- ☐ 2) Resurfacing, repair existing roadways
- * ☐ 3) Reconstruction on existing roadway
- * ☐ 4) Roadway geometrics, intersections
- * ☐ 5) Curbs and sidewalks
- ☐ 6) Pavement markings, rumble strips, etc
- ☐ 7) Curbs, sidewalks (MAAB, ADA)
- * ☐ 8) Removal of trees
- ☐ 9) Landscaping
- ☐ 10) Utilities
- ☐ 11) Railroad crossing
- ☐ 12) Stream stabilization and restoration
- ☐ 13) Wetland mitigation area
- * ☐ 14) Bridge (NR "Not Eligible" or "Conditionally Not Eligible")
- * ☐ 15) Bridge (concrete slab post 1900, steel stringer)
- ☐ 16) Bridge (less than 20' span)
- * ☐ 17) Highway safety improvement
- ☐ 18) Drainage system element
- * ☐ 19) Traffic signal, safety improvement
- * ☐ 20) Intelligent Transportation System project
- ☐ 21) Rest area, maintenance facility
- * ☐ 22) Bicycle, pedestrian lane, path or facility
- ☐ 23) Lighting system
- ☐ 24) Sign
- ☐ 25) Hazardous waste
- ☐ 26) Highway fencing
- ☐ 27) Emergency repair
- ☐ 28) Erosion control
- ☐ 29) Noise barrier

* National Register eligibility evaluation required

-OR-

No Historic Properties Affected
Programmatic Agreement Stipulation V.B. (check one):

- ☑ No NR listed or -eligible properties within Area of Potential Effect
- ☐ No effect on National Register listed or -eligible properties

Reviewer's Initials: MJA JMH

CULTURAL RESOURCES PROJECT RECORD

Summary of MassDOT Highway Division Finding
(Appendix 1 and Section V.B. Projects only)

MassDOT proposes traffic and safety improvements along Route 106 (Chauncy Street), between the intersection of Route 106 and State Route 140 (Commercial Street) and the intersection of Route 106 and Copeland Drive in Mansfield. The project will establish an 11-ft-wide travel lane in both directions, a 5.5-ft sidewalk on the north side, and an 8-ft-wide shared-use path with a 4-ft brick buffer on the south side of Route 106. Project work includes full-depth box widening and minor roadway widening; pavement milling and overlay; reconstruction of sidewalks with ADA improvements at intersections, driveways, and crosswalks at intersecting side streets; and new signage, traffic signals, and pavement markings will be installed. Widening and establishment/extension of turn lanes will occur at intersections within the above-described project area. Improvements, including adjusting and reconstructing, will be made to the existing drainage system as needed. Utility poles will be relocated as needed in areas of widening and new sidewalk and shared-use path construction. The project requires permanent and temporary easements from 18 properties for utility relocations, highway signage, shared-use path construction, grading, placing loam and seed, and driveway work. Coordinated timing modifications will be made to traffic signals at the five intersections of Route 140 with School Street, Norfolk Street, West Street, Forbes Boulevard, and Fisher Street. All existing equipment will remain, and no additional project work is proposed within these intersections.

A review of MACRIS revealed no National Register-listed or -eligible districts or individual properties within or adjacent to the project area. This review of MACRIS also revealed no extant previously inventoried properties or areas within or adjacent to the project area.

A review of the MHC's archaeological maps in MACRIS revealed no recorded sites in the vicinity of the project area. The proposed project work will be confined to disturbed and/or unfavorable areas within an existing roadway footprint and adjacent roadside areas. It is the opinion of MassDOT Archaeologist, Jameson Harwood, that low sensitivity can be ascribed to the project's APE based on the impacts of urban development, including road construction, as well as nearby residential and commercial development.

This project is a partial combination of work previously proposed under MassDOT Project Nos. 608053 and 608944. The work proposed under MassDOT Project No. 608053 was cleared in-house under Appendix 1, with a letter sent to the Mansfield Historical Commission, and PNF submitted to the MHC and Aquinnah THPO on October 30, 2018. The work proposed under MassDOT Project No. 608944 was not reviewed by CRU staff. However, a letter was submitted on March 17, 2021, before the cancellation and combining of these two projects. No responses were received from the Mansfield Historical Commission and copies were forwarded to the MHC at those times. An updated letter was sent to the Mansfield Historical Commission and MHC by MassDOT on 1/12/2024 and a PNF, as required by a Section 404 permit, was submitted on 2/5/2024 and 2/6/204 to the MHC, BUAR, Mashpee THPO, Aquinnah THPO, and Narragansett THPO for the current proposed project. A response of no concerns regarding the project was received by the Mansfield Historical Commission on 2/6/2024. No responses were received from the THPOS and BUAR on the PNF. MHC reviewed and stamped the PNF with a finding that the project is unlikely to affect significant historic or archaeological resources on 3/5/2024.

Reviewer's Initials: _____

7020 2450 0001 6271 3983

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Extra Services & Fees *(check box, add fee as appropriate)*
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- ☐ Adult Signature Required $ _____
- ☐ Adult Signature Restricted Delivery $ _____

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$

Total Postage and Fees
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Mansfield
613052
SHPO PNF

Sent To Brona Simon
Street and Apt. No., or PO Box No. MHC
City, State, ZIP+4®

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

Tracking Number:

70202450000162713983

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Latest Update

Your item was delivered to an individual at the address at 3:48 pm on February 7, 2024 in DORCHESTER, MA 02125.

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USPS Tracking Plus®

Delivered
Delivered, Left with Individual
DORCHESTER, MA 02125
February 7, 2024, 3:48 pm

Out for Delivery
ROXBURY, MA 02119
February 7, 2024, 9:38 am

Arrived at Post Office
ROXBURY, MA 02119
February 7, 2024, 9:27 am

Arrived at USPS Regional Facility
BOSTON MA DISTRIBUTION CENTER
February 7, 2024, 3:35 am

Proposal No. 613052-131228

A00871 - 7

From:	Microsoft Outlook
To:	Robinson, David S (EEA)
Subject:	Delivered: MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements
Date:	Monday, February 5, 2024 12:05:41 PM
Attachments:	MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements.msg

Your message has been delivered to the following recipients:
Robinson, David S (EEA) (David.S.Robinson@mass.gov) <mailto:David.S.Robinson@mass.gov>
Subject: MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements

From:	Microsoft Outlook
To:	106review@mwtribe-nsn.gov; David.weeden@mwtribe-nsn.gov
Subject:	Relayed: MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements
Date:	Monday, February 5, 2024 12:06:47 PM
Attachments:	MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements.msg

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:
106review@mwtribe-nsn.gov (106review@mwtribe-nsn.gov) <mailto:106review@mwtribe-nsn.gov>
David.weeden@mwtribe-nsn.gov (David.weeden@mwtribe-nsn.gov) <mailto:David.weeden@mwtribe-nsn.gov>
Subject: MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements

From:	Microsoft Outlook
To:	tashtesook@aol.com
Subject:	Relayed: MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements
Date:	Monday, February 5, 2024 12:03:28 PM
Attachments:	MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements.msg

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:
tashtesook@aol.com (tashtesook@aol.com) <mailto:tashtesook@aol.com>
Subject: MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements

From:	Microsoft Outlook
To:	thpo@wampanoagtribe-nsn.gov
Subject:	Relayed: MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements
Date:	Monday, February 5, 2024 12:11:14 PM
Attachments:	MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements.msg

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:
thpo@wampanoagtribe-nsn.gov (thpo@wampanoagtribe-nsn.gov) <mailto:thpo@wampanoagtribe-nsn.gov>
Subject: MassDOT Project #613052 - Mansfield Route 106 Corridor Improvements

RECEIVED
FEB 0 7 2024
MASS. HIST. COMM
RC.74377

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A

MASSACHUSETTS HISTORICAL COMMISSION
220 MORRISSEY BOULEVARD
BOSTON, MASS. 02125
617-727-8470, FAX: 617-727-5128

PROJECT NOTIFICATION FORM

Project Name: Route 106 (Chauncy St) Corridor Improvements (MassDOT Project # 613052)

Location /Address: Route 106 (Chauncy St), from State Route 140 to Copeland Dr

City/Town: Mansfield

Project Proponent

Name: Massachusetts Department of Transportation

Address: 10 Park Plaza

City/Town/Zip/Telephone: Boston, MA 02116

After review of MHC files and the material you submitted, it has been determined th this project is unlikely to affect significant historic or archaeological resources.

Brona Simon 3/5/24
Brona Simon Date
Executive Director
State Historic Preservation Officer
Massachusetts Historical Commission

Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies).

Agency Name	Type of License or funding (specify)
FHWA	Federal Funding (FHWA is lead federal agency)
USACO	Section 404 permit

Project Description (narrative):

MassDOT proposes traffic and safety improvements along Route 106 (Chauncy Street), between the intersection of Route 106 and State Route 140 (Commercial Street) and the intersection of Route 106 and Copeland Drive in Mansfield. The project will establish an 11-ft-wide travel lane in both directions, a 5.5-ft sidewalk on the north side, and an 8-ft-wide shared-use path with a 4-ft brick buffer on the south side of Route 106. Project work includes full-depth box widening and minor roadway widening; pavement milling and overlay; reconstruction of sidewalks with ADA improvements at intersections, driveways, and crosswalks at intersecting side streets; and new signage, traffic signals, and pavement markings will be installed. Widening and establishment/extension of turn lanes will occur at intersections within the above-described project area. Improvements, including adjusting and reconstructing, will be made to the existing drainage system as needed. Utility poles will be relocated as needed in areas of widening and new sidewalk and shared-use path construction. The project requires permanent and temporary easements from 18 properties for utility relocations, highway signage, shared-use path construction, grading, placing loam and seed, and driveway work. Coordinated timing modifications will be made to traffic signals at the five intersections of Route 140 with School Street, Norfolk Street, West Street, Forbes Boulevard, and Fisher Street. All existing equipment will remain, and no additional project work is proposed within these intersections.

APPENDIX A (continued)

Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.

N/A

Does the project include rehabilitation of any existing buildings? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation.

N/A

Does the project include new construction? If so, describe (attach plans and elevations if necessary).

See plans

To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify.

A review of MACRIS revealed no National Register-listed or -eligible districts or individual properties within or adjacent to the project area. This review of MACRIS also revealed no extant previously inventoried properties or areas within or adjacent to the project area.

A review of the MHC's archaeological maps in MACRIS revealed no recorded sites in the vicinity of the project area. The proposed project work will be confined to disturbed and/or unfavorable areas within an existing roadway footprint and adjacent roadside areas. It is the opinion of MassDOT Archaeologist, Jameson Harwood, that low sensitivity can be ascribed to the project's APE based on the impacts of urban development, including road construction, as well as nearby residential and commercial development.

What is the total acreage of the project area?

Woodland	_____	acres	Productive Resources:		
Wetland	_____	acres	Agriculture	_____	acres
Floodplain	_____	acres	Forestry	_____	acres
Open Space	_____	acres	Mining/Extraction	_____	acres
Developed	_____	acres	Total Project Acreage	_____	acres

What is the acreage of the proposed new construction? _____ acres

What is the present land use of the project area?

The project area consists of existing signalized intersections and developed roadway corridor in a commercial and residential setting.

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A (continued)

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

Signature of person submitting this form: Melissa Andrade **Date:** 2/5/2024

Name: Melissa Andrade

Address: 10 Park Plaza

City/Town/Zip: Boston, MA 02717

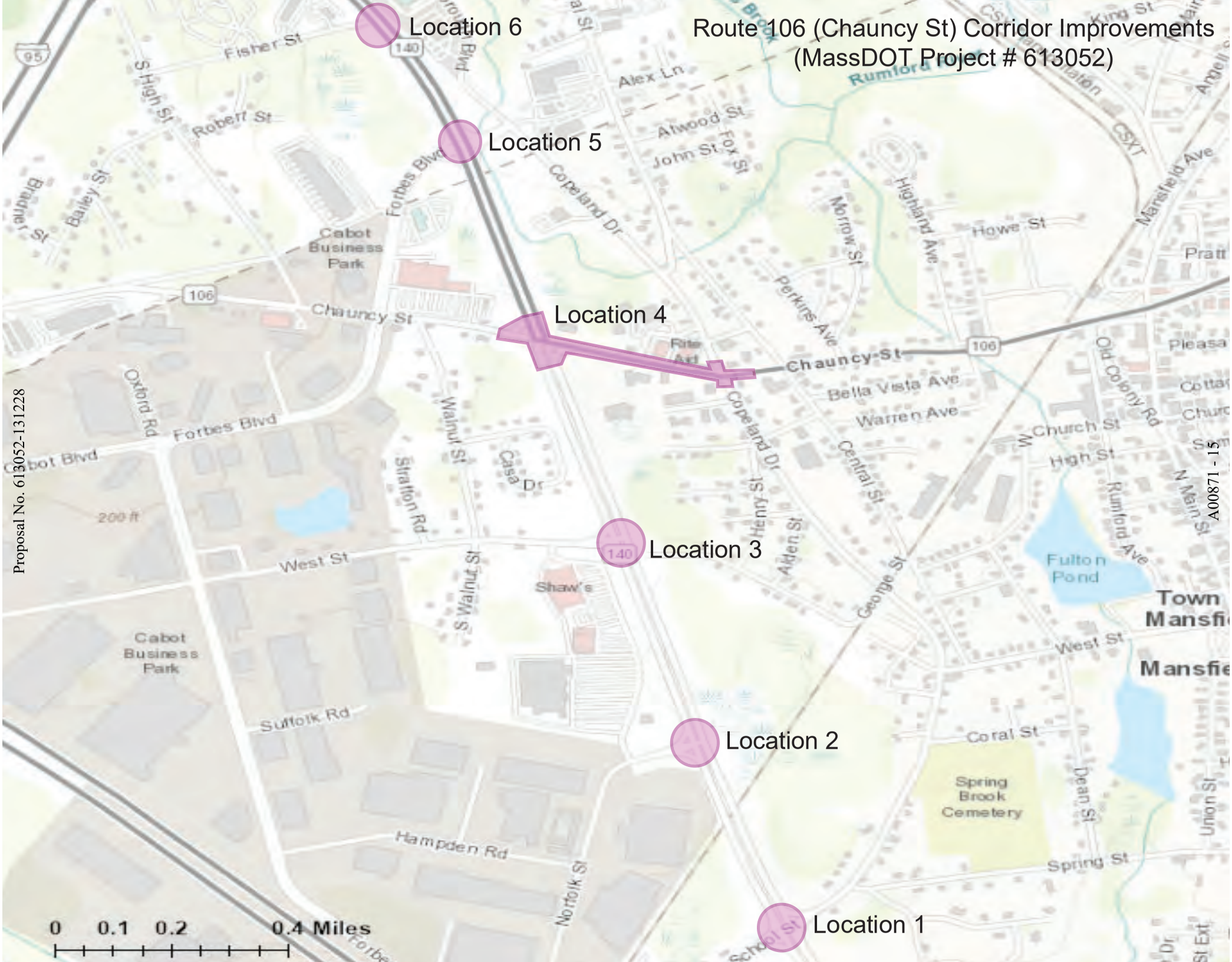
Telephone: Email: melissa.j.andrade@state.ma.us

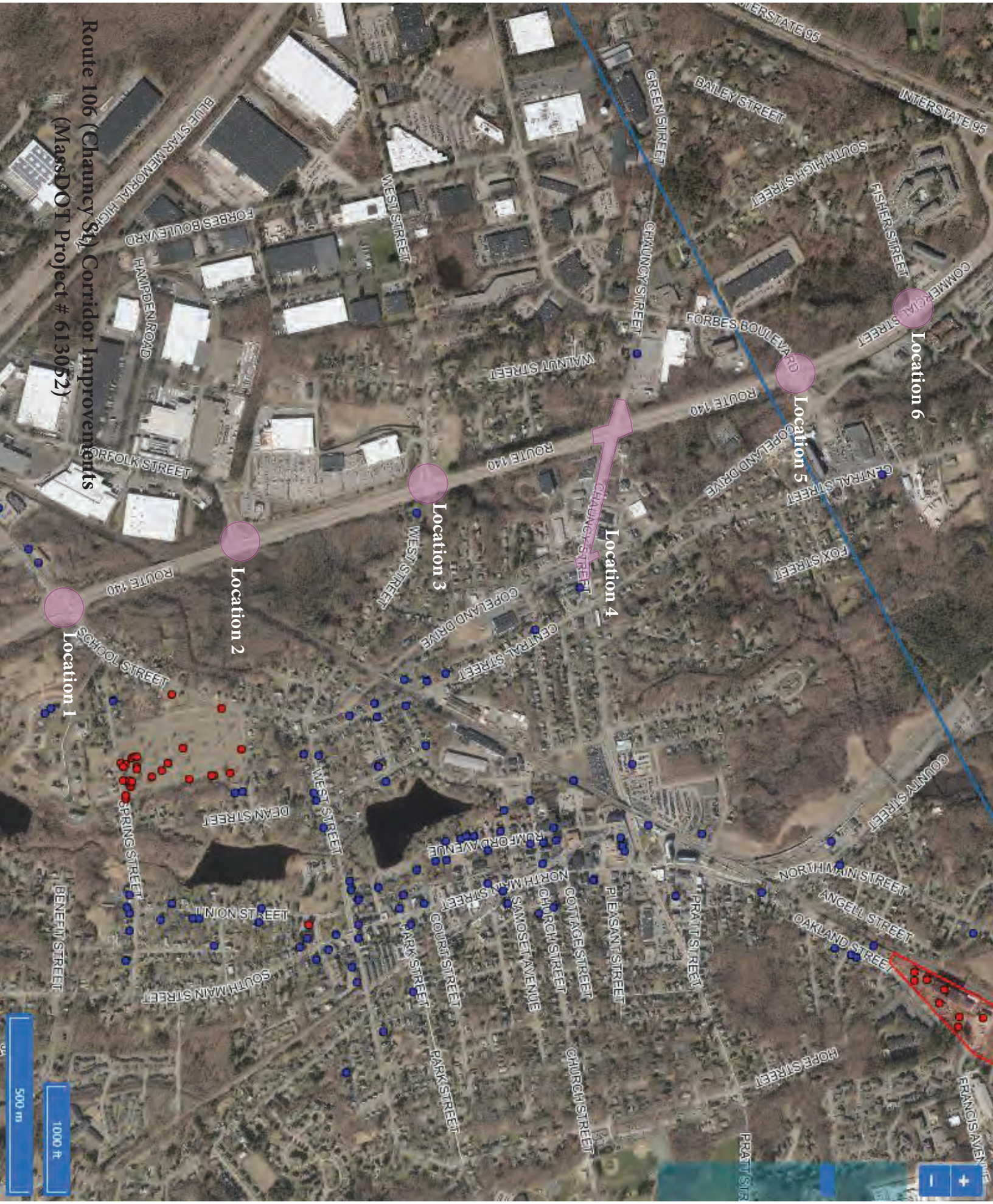
REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.

CC

CC:


Route 106 (Chauncy St) Corridor Improvements
(MassDOT Project # 613052)
Location 6
Location 5
Location 4
Location 3
Location 2
Location 1
Proposal No. 613052-131228
A00871 - 15
Chauncy St
Chauncy-St
West St
Forbes Blvd
Cabot Business Park
Fulton Pond
Spring Brook Cemetery
Shaw's
Rite Aid
Fisher St
Robert St
Alex Ln
Atwood St
John St
Fox St
Copeland Dr
Howe St
Morrow St
Highland Ave
Perkins Ave
Bella Vista Ave
Warren Ave
Central St
Henry St
Alden St
George St
Walnut St
Stratton Rd
Casa Dr
Oxford Rd
Suffolk Rd
Hampden Rd
Norfolk St
Coral St
Spring St
Dean St
Union St
Rumford Ave
Old Colony Rd
W Church St
High St
N Main St
Mansfield Ave
CSXT
0 0.1 0.2 0.4 Miles


Route 106 (Chauncy St) Corridor Improvements
(MassDOT Project # 613052)
Location 1
Location 2
Location 3
Location 4
Location 5
Location 6
INTERSTATE 95
BAILEY STREET
GREEN STREET
SOUTH HIGH STREET
FISHER STREET
COMMERCIAL STREET
FORBES BOULEVARD
CHAUNCY STREET
WALNUT STREET
ROUTE 140
CENTRAL STREET
COPELAND DRIVE
FOX STREET
WEST STREET
BLUE STAR MEMORIAL HIGHWAY
HAMPDEN ROAD
NORFOLK STREET
SCHOOL STREET
DEAN STREET
SPRING STREET
UNION STREET
BENEFIT STREET
SOUTH MAIN STREET
WEST STREET
ROMFORD AVENUE
NORTH MAIN STREET
COURT STREET
PARK STREET
SAMOSET AVENUE
CHURCH STREET
COTTAGE STREET
PLEASANT STREET
PRATT STREET
COUNTY STREET
NORTH MAIN STREET
ANGELL STREET
OAKLAND STREET
HOPE STREET
FRANCIS AVENUE
500 m
1000 ft

Proposal No. 613052-131228

Maura Healey, Governor
Kimberley Driscoll, Lieutenant Governor
Monica Tibbits-Nutt, Secretary & CEO
Jonathan L. Gulliver, Highway Administrator

MassDOT
Massachusetts Department of Transportation
Highway Division

January 12, 2024

Mansfield Historical Commission
6 Park Row
Mansfield, MA 02048

RE: Route 106 (Chauncy St) Corridor Improvement Project
MassDOT Highway Division – Project Number #613052
Section 106 Review – Early Environmental Coordination

Dear Commission members:

The Massachusetts Department of Transportation, Highway Division (MassDOT) is proposing traffic and safety improvements on Route 106 (Chauncy Street), between and including the intersections of Route 106 and State Route 140 (Commercial Street) and of Route 106 and Copeland Drive in Mansfield. This project will be supported in part with federal funds dispersed through MassDOT. The project, therefore, will require review under Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800). The enclosed project information is provided to the Mansfield Historical Commission to initiate consultation with appropriate representatives of local government in compliance with the regulations governing Section 106.

The project will establish an 11-ft-wide travel lane in both directions and one 8-ft-wide shared-use path on the south side of Route 106. Project work includes full-depth box widening at various locations; pavement milling and overlay; reconstruction of sidewalks on the north side of Route 106 with ADA improvements at intersections, driveways, and crosswalks at intersecting side streets; and installation of new signage, traffic signals, and pavement markings. Widening and the establishment and extension of turn lanes will occur at intersections. Improvements will be made to the existing drainage system, including adjusting the existing system and structures as needed. Utility poles will be relocated as needed in areas of widening and new sidewalk construction.

MassDOT requests that the Commission review the enclosed materials at their earliest convenience. Please submit written comments to: Carrie Lavallee, P.E., Chief Engineer, MassDOT, Highway Division, 10 Park Plaza, Room 4260, Boston, MA 02116, Attn: Melissa Andrade.

If you have any questions, please feel free to contact me at melissa.j.andrade@state.ma.us.

Sincerely,

Melissa Andrade

Melissa Andrade
MassDOT Architectural Historian
Environmental Services

atts: Locus
cc: B. Simon, MHC w/atts.

Ten Park Plaza, Suite 4160, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
mass.gov/massdot

From: Andrade, Melissa J. (DOT)
To: DiGregorio, Giampaolo
Subject: RE: Rte 106 (Chauncy Street) corridor Improvement Project (#613052)
Date: Wednesday, February 7, 2024 11:09:00 AM

Good morning,

Thank you to the commission for reviewing the project information and providing me comments on it. No further action is required by the commission since you all have no preservation concerns.

Thank you,
Melissa

Melissa Andrade, Architectural Historian
Environmental Services
***MassDOT* – Highway Division**
10 Park Plaza
Boston, MA 02116

From: DiGregorio, Giampaolo <GDiGregorio@bridgew.edu>
Sent: Tuesday, February 6, 2024 10:15 PM
To: Andrade, Melissa J. (DOT) <melissa.j.andrade@dot.state.ma.us>
Subject: Rte 106 (Chauncy Street) corridor Improvement Project (#613052)

CAUTION: This email originated from a sender outside of the Commonwealth of Massachusetts mail system. Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Good Evening,

I am the chair of the Mansfield Historical Commission. Last week we received your letter informing us of the above named project.

In discussion with the members of the commission, we have determined that there is no need for a formal historical preservation assessment of the project area.

Are we required to submit a formal response, or will this message suffice?

Thank you,

GAD

G. A. Di Gregorio

Tillinghast 223
History Department
Bridgewater State University

DOCUMENT A00875

POLICY DIRECTIVE P-22-001
AND
POLICY DIRECTIVE P-22-002

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massDOT Massachusetts Department of Transportation Highway Division

Number: P-22-001
Date: 9/23/22

POLICY DIRECTIVE

Jonathan Gulliver (signature on original)
HIGHWAY ADMINISTRATOR

Off-Site Stockpiling of Soil from MassDOT Construction Projects

Purpose

The purpose of this Policy Directive is to formally establish a policy and procedures for managing and stockpiling soil generated and transported from MassDOT construction projects. This Policy Directive does not supersede any Federal, State, or Local regulations.

Date of Effect

This Policy Directive is effective immediately for all projects, including active construction projects.

For active construction projects and for other projects advertised prior to October 15, 2022, changes to the contract documents needed to implement the requirements of this Policy Directive will be considered on a case-by-case basis and shall be approved by the District Highway Director, as necessary.

For projects advertised on or after October 15, 2022, MassDOT will include the requirements and implementation procedures of this Policy Directive in the construction contract documents.

Policy Requirements

This policy is intended to prevent the off-site relocation of excavated soil generated from MassDOT projects to areas near residential receptors and to control potential fugitive dusts and/or contaminants. To that end, excavated soil may not be moved from the project site without knowledge of the content of the material. Knowledge may include visual field observations for presence of staining, odor, and/or debris, screening with a photoionization detector (PID), laboratory analysis, and/or site history. Pavement millings and other non-soil materials are not subject to the requirements of this Policy Directive.

Moving soil from a MassDOT project site to a temporary off-site storage location must be approved in writing by the District Highway Director.

The Contractor must select a storage location that is at least 500 feet away from residential receptors, as defined herein to include, but not be limited to, residential dwellings, residentially

zoned property, schools, daycare facilities, playgrounds, parks, recreational areas, hospitals, elderly housing and convalescent facilities.

Temporary off-site storage of excavated soil from a MassDOT project is only permissible at a location approved and permitted by MassDOT. The temporary storage location should be located within the same municipality where the soil was excavated, where possible. Stockpiled soil must be securely covered, and appropriate measures must be taken to minimize fugitive dust and erosion.

Signs indicating the source of the soil, the date the soil was generated, and contact information must be erected and maintained until the stockpiled soils are transported to a disposal facility or reused on the project site.

Implementation Procedures

To ensure that off-site storage of excavated soils is managed properly on MassDOT projects, this policy requires the following:

1. **Off-Site Stockpile Storage Locations**
    a. The Contractor shall provide proposed off-site storage locations to the Engineer for approval at least 30 days prior to transporting soil off site. Off-site storage locations should be in the same municipality as the work site.
    b. The Contractor shall keep excavated soil on site until adequately characterized to the satisfaction of the Engineer.
    c. The Contractor shall provide notification of the approved off-site storage location to the local Board of Health and the Town Manager's/Mayor's Office at least 7-days prior to transporting soil off site.
    d. The Contractor shall provide the Engineer with at least 3-days' notice prior to transporting soil off site.
    e. For off-site storage locations on MassDOT property, the Contractor is required to obtain an Access Permit through the District Permits Office prior to storage of soil or other materials. MassDOT will issue these permits at no cost to the Contractor. Information to be submitted by the Contractor as part of the permit application shall include:
        i. A description of material to be stored off-site, including available analytical data;
        ii. A figure of the location with distances to residences and residential receptors; and
        iii. Anticipated duration of temporary storage.
    f. Stockpile locations should not be within 500 feet of residential receptors (e.g., residential dwellings, residentially zoned property, schools, daycare facilities, playgrounds, parks, recreational areas, hospitals, elderly housing and convalescent facilities).
        i. If the stockpile location must be within 500 feet of residential receptors, then soil must be less than RCS-1 (per 310 CMR 40.1600) and free of potentially hazardous or regulated items.

g. For off-site storage locations on non-MassDOT property, the Contractor must notify the property owner(s) at least 7 days prior to transporting material.
h. Exceptions to these rules will be reviewed by MassDOT and may be approved by the District Highway Director on a case-by-case basis.

2. Off-Site Stockpile Management

a. The Contractor shall keep soil stockpiles on impermeable surfaces (e.g., asphalt or concrete) or on 10-mil polyethylene sheeting.
b. The Contractor shall cover soil stockpiles with 10-mil polyethylene sheeting and surround with a berm made of hay bales, straw wattles, or similar.
    i. Piles that are actively being worked on must be covered and re-secured at the end of the work shift.
c. The Contractor shall label stockpiles with signs, including:
    i. Location of origin (including any Release Tracking Numbers)
    ii. Stockpile ID number (including MassDOT District office-assigned tracking ID, if different)
    iii. Date of initial accumulation
    iv. Applicable telephone numbers for the Contractor and MassDOT.
d. The Contractor shall mitigate fugitive dust at storage locations under the direction of an appropriately trained/certified environmental professional.
e. The Contractor shall remedy noncompliance with this policy within 48 hours.
f. The Contractor shall remedy noncompliance with this policy on the SAME DAY for potentially hazardous material, as determined by the Engineer.
g. The Contractor shall handle excavated soil according to federal, state, and local regulations.
h. The Contractor shall use appropriate shipping documents for all movements of excavated soil on public roadways (e.g., Bill of Lading, Material Shipping Record, Manifest, Asbestos Waste Shipment Record, etc.).

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massDOT
Massachusetts Department of Transportation
Highway Division

Number: P-22-002
Date: 9/23/22

POLICY DIRECTIVE

Jonathan Gulliver (signature on original)
HIGHWAY ADMINISTRATOR

Use of MassDOT Property for Staging and other Construction-Related Operations

Purpose

This Policy Directive is intended to address the use of MassDOT property by MassDOT Contractors for construction staging and other construction-related operations that are not specifically defined in the construction contract. Such use of MassDOT property will only be allowed if permitted by the District Office in accordance with 700 CMR 13.00, Approval of Access to MassDOT Highways and Other Property. This includes the use of MassDOT property for staging, laydown, and storage of equipment and materials, including soil excavated from a project site.

This Policy Directive requires the Contractor/applicant to obtain a Non-Vehicular Access Permit from MassDOT to use MassDOT property for these purposes.

This Policy Directive is effective immediately and applies to all MassDOT construction projects.

General Permit Considerations and Conditions

In addition to other normal MassDOT Access Permit procedures, MassDOT shall consider the following during the application, review, implementation and monitoring processes of Access Permits required by this Policy Directive:

- Storage and placement of the Contractor's equipment and materials should not be allowed within the clear zone of the roadway.
- Stockpiled soils should not be located within 500 feet of residential receptors, as defined herein to include, but not be limited to, residential dwellings, residentially zoned property, schools, daycare facilities, playgrounds, parks, recreational areas, hospitals, elderly housing and convalescent facilities.
- The Contractor/applicant shall identify the access/egress locations of the proposed storage areas. MassDOT will only approve locations determined to be safe for roadway users, construction workers and the general public.
- The Contractor may be required to submit a Traffic Management Plan and/or Lighting Plan for MassDOT review and approval as part of the permit application, depending on the proposed use of the area.

- The Contractor shall submit the permit application through MassDOT's online State Highway Access Permit System (SHAPS).
- MassDOT will waive the permit application fee for any application received from a MassDOT Contractor for any permit required by this Policy Directive and will waive any subsequent amendment and extension fees that may otherwise be required.
- MassDOT will review the permit application in accordance with applicable standard procedures and will apply standard permit terms and conditions, as necessary.
- The Resident Engineer will verify that the permit is approved before allowing the Contractor to use the affected area for the requested purpose.
- Areas permitted are for use by the approved applicant only and are not to be shared with or used by other vendors. Subcontractors specifically engaged with the applicant working on the specific MassDOT project will be allowed to use the area in accordance with the terms of the permit.
- Permits are issued on an annual basis and will require the Contractor to file for an extension each year to continue use.

Exemptions from Permit Requirements

Equipment and materials being used for active construction operations and located within the work zone of the construction contract are exempt from this permit requirement, provided they do not interfere with the safety or operation of the roadway or the work zone. Examples of these types of exempt uses are:

- Equipment and materials parked or stored within a protected (barriered) work zone.
- Materials placed in the work zone prior to same-day installation or use.
- Soils excavated temporarily and scheduled to be replaced, such as for trenching operations or for installation of drainage structures.

DOCUMENT A00891

TOWN OF MANSFIELD
STANDARD PLANS AND SPECIFICATIONS

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TOWN OF MANSFIELD
DRAINLAYER'S LICENSE AND
SEWER DESIGN AND CONSTRUCTION
REGULATIONS
2005

Adopted March 2, 2005
Mansfield Board of Selectmen

DEFINITIONS: **5**

1.0 PURPOSE **8**

2.0 APPLICABILITY **8**

3.0 DRAINLAYER'S LICENSE **8**

3.1 Issuance of Drainlayer Licenses 8
3.2 Application 9
3.2.1 Insurance 9
3.2.2 License Term 9
3.2.3 License Fees 9
3.2.4 Performance Bond 9
3.2.5 References 10
3.3 Notice of Violation 10
3.4 Fines 10
3.5 Terminations and Suspension of License 11
3.6 License Application/Renewal Forms 11

4.0 SEWER PERMITS **11**

4.0.1 Permit Required 11
4.0.2 State Permits 12
4.0.3 Permit Types 12
4.0.4 Additional Requirements 12
4.0.5 Cost of Sewer 12
4.0.6 Unauthorized Work 12
4.0.7 Licensed Contractors (Drainlayer's) 12
4.0.8 Sewer Permit Process 13
4.0.9 Permit Fee 13
4.0.10 Street Opening Permit 13
4.0.11 DIGSAFE and Mansfield Water Department 14
4.0.12 Application for Local Permit 14
4.0.13 Eligibility 14
4.0.14 Expiration of Permit 15
4.0.15 Mandatory Inspection of Sewer Work 15
4.0.16 Video Camera Inspection 15
4.0.17 Right of Entry 16

4.1 SEWER CONNECTION PERMIT **16**

4.1.1 Minimum Size, Fittings and Clean-outs 16
4.1.2 Wye Saddles 17
4.1.3 Minimum Elevations for Gravity Connection 18
4.1.4 Grease Traps 18
4.1.5 Industrial Connections 18
4.1.6 Inspection 19
4.1.7 Grinder Pumps and Sewage Ejectors 19
4.1.8 Testing of Service Connections 19

4.2 SEWER EXTENSION PERMIT **19**

4.2.1 Design 19
4.2.2 Paper Streets 19
4.2.3 Master Plan 19

4.2.4 Future Connections 20
4.2.5 Minimum Size 20
4.2.6 Depth 20
4.2.7 Slope 20
4.2.8 Minimize Solids Deposition 21
4.2.9 Slope Between Manholes 21
4.2.10 High Velocity Protection 21
4.2.11 Steep Slope Protection 21
4.2.12 Impervious Dams 21
4.2.13 Alignment 21
4.2.14 Changes in Pipe Size 21
4.2.15 Manhole Locations 21

4.3 SEWER REPAIR PERMIT 22

4.4 SEWER DISCONNECTION PERMIT 22

5.0 TECHNICAL REQUIREMENTS 22

5.1 Trench Excavation and Backfill 22
5.1.1 Traffic Control & Safety 22
5.1.2 Materials 22
5.2 General Construction 23
5.2.1 Clearing the Right of Way 23
5.2.2 Pavement Removal and Replacement 24
5.2.3 Blasting 24
5.2.4 Trench Width 24
5.2.5 Grade 24
5.2.6 Shoring, Sheeting, and Boxing of Trenches 24
5.2.7 Location of Excavated Materials 25
5.2.8 Debris 25
5.2.9 Safety 25
5.2.10 Removal of Water 25
5.2.11 Trench Backfill Compaction 25
5.2.12 Excess Excavated Material 26
5.2.13 Rock Excavation 26
5.2.14 Controlled Density Fill 26
5.3 Sewer Pipe Installation 26
5.3.1 Scope 26
5.3.2 Materials 27
5.3.3 Joints 27
5.3.4 Preparation of Trench 27
5.3.5 Preparation of Sewer Pipe 28
5.3.6 Laying and Jointing Pipe and Fittings 28
5.3.7 Sewer Installation 28
5.3.8 Testing of Sewer Pipe & Appurtenances 30
5.4 Manhole and Clean-out Construction 30
5.4.1 Concrete 30
5.4.2 Precast Manhole Sections 30
5.4.3 Special Fittings 30
5.4.4 Drop Manholes 31
5.4.5 Manhole Frames and Covers 31

5.4.6 Watertightness 31
5.4.7 Coating 31
5.4.8 Manhole Steps 31
5.4.9 Manhole Stubs 32
5.4.10 Manhole Bench (Table) 32
5.4.11 Manhole Inverts (Flow Channel) 32
5.4.12 Buoyancy 32
5.5 Grinder Pumps and Sewage Ejectors 33
5.6 Pressure Sewer Systems 33
5.6.1 Layout 34
5.6.2 Pipe Size 34
5.6.3 Pipe Material 34
5.6.4 Valves 34
5.6.5 Air Release Valves 34
5.6.6 Cleanout Connections 34
5.7 Wastewater Pumping Stations and Force Mains 34
5.8 Trenchless Technology 35
5.8.1 Existing Utilities 35
5.8.2 Pipe Jacking 35
5.8.3 Horizontal Directional Drilling 35
5.8.4 Boring Path Report 35
5.8.5 As-Built Trenchless Sewers 36

6.0 SEWER TESTING 36

6.1 Low Pressure Air Testing 36
6.2 Vacuum Test (Negative Air Pressure) 37
6.3 Exfiltration Testing 38
6.4 Force Main Testing 39
6.5 Deflection Testing 40

7.0 SEWER EASEMENTS 41

7.1 Public Sewers 41
7.2 Private Sewers 41
7.3 Rules Regarding Sewer Easements 41

8.0 PROTECTION OF WATER SUPPLY 42

8.1 Cross Connections 42
8.2 Relation to Water Main 42
8.2.1 Horizontal Separation 42
8.2.2 Vertical Separation 42
8.2.3 Concrete Encasement 42
8.3 Well Areas-Zone II 42
8.4 Location of Sewers in Streams 43
8.4.1 Cover Depth 43
8.4.2 Alignment 43

9.0 VALIDITY 43

APPENDIX A – Sewer Construction Details
APPENDIX B – Drainlayers License Application and Bond Form

DEFINITIONS:

Appurtenance shall mean any piece associated with the physical operation of the Mansfield Sewerage System.

ASTM shall mean the material standard of the American Society for Testing and Materials.

Board shall mean the Board of Selectmen, acting as Sewer Commissioners, or their authorized agent.

Building Sewer shall mean the extension from the interior plumbing to the public sewer or other place of disposal. The building sewer extends from the foundation at the building to the property line.

CDF shall mean controlled density fill or flowable fill.

Concentric shall mean the relationship between two different circular, cylindrical sewer pipes, when one is exactly centered within the other.

DEP shall mean the Massachusetts Department of Environmental Protection.

Director shall mean the Director of Public Works of the Town of Mansfield, or his authorized agent or representative.

Drain - Any system of pipes, catch basins, ditches, leaching facilities, or similar installations, which collect and carry storm water or rain water and is:

a. Located in a subdivision approved under the subdivision control Law after the adoption of these regulations.
b. On land subject to site plan approval under Mansfield Zoning By-Law.
c. Connected directly or indirectly to the Town's drainage facilities.

Drainlayer shall mean a person or entity fully licensed, bonded, and insured to install sewers or drains in the Town of Mansfield.

Drainlayer License - A license required by the Sewer Commissioners for any person or entity installing a public or building sewer or drain in the Town of Mansfield.

Engineer shall mean any person who is licensed by the Commonwealth of Massachusetts to perform professional engineering services.

EPA shall mean the United States Environmental Protection Agency.

Garage shall mean any structure or property where one or more motor vehicles are kept, stored, or serviced, including a public or private garage, carport, motor vehicle repair shop, paint shop, service station, lubritorium, car wash, gasoline station with grease pits or wash racks or areas, or any building used for similar purposes.

Gallons Per Day (GPD) shall mean the estimated flow of sewerage based on DEP regulations 314 CMR 7.15.

Industrial Discharge Permit shall mean the permit required or issued by a Municipality for the discharge of industrial waste.

Infiltration shall mean the water entering a Sewerage System from the ground or a water body, including through such means as, defective building drains and sewers, pipes, pipe joints, connections, or manhole walls.

Inflow shall mean the discharge into a Sewerage System, including service connections, from such sources including, but not limited to: roof leaders, cellars, yards, and area drains, foundation drains, sump pumps, Cooling Water discharges, drains from springs, and swampy areas, manhole covers, cross connections from Storm Sewers and Combined Sewers, catch basins, storm water, surface runoff, or street wash water.

Licensed Drainlayer shall mean a drainlayer who has a valid and current drainlayer license issued by the Town of Mansfield.

Lot shall mean an area of land in one ownership, with definite boundaries used, or available for use, as the site of one or more buildings.

May is permissive; shall is mandatory.

M.G.L. shall mean Massachusetts General Law.

Owner shall mean the person(s) holding fee simple title to a parcel, tract or lot of land, as shown by the record in the appropriate Land Registration Office, Registry of Deeds or Registry of Probate.

Paper Street shall mean any road, street or way not legally accepted as a public way by the Town of Mansfield.

Person shall mean an individual or two or more individuals, or trust, or a group or association of individuals, having a common or undivided interest in a tract of land including a partnership or corporation.

Plans shall mean approved contract drawings, Town standards, working drawings, Detail sheets or exact reproductions thereof, which show the location, character, dimensions and details of the work to be done.

Private Sewer System shall mean any portion of sewer, which is located on private property, within a private easement, on a private way, or in an unaccepted way prior to Town acceptance and is privately owned and maintained.

Public Sewer System shall mean any portion of the Mansfield Sewer System which is located in a public way, on Town owned land, in a Town sewer easement, or any sewer which has been formally accepted by the Town of Mansfield and is controlled by the Board of Selectmen acting as Sewer Commissioners, and maintained by the Director of Public Works.

Recorded shall mean recorded in the Registry of Deeds of Bristol County, except that, as affecting registered land, it shall mean filed with the Recorder of The Land Court. (Section 81-L of Chapter 41, M.G.L.).

Right-of-Way shall mean the area that has been laid out for travel purposes.

Sanitary Sewer shall mean a Sewer that carries Sanitary Sewage and/or Industrial Wastes.

Sewage shall mean the spent water of a community, which may be a combination of liquid and water-carried Wastes from residences, commercial buildings, industrial facilities, and institutions, together with any groundwater, surface water, and/or storm water that may be present.

Sewer shall mean a pipe or conduit that carries Sewage.

Sewer System shall mean pipelines or conduits, pumping stations, force mains, and all other structures, devices, appurtenances, and facilities used for collecting and conveying wastes to a site or works for treatment or disposal.

Sewer Connection shall mean the sewer pipes and appurtenant works necessary to connect a building or estate to a sewer system.

Sewer Extension shall mean the addition to a sewer system of a sewer pipe, together with appurtenant works, which when connected to the sewer system becomes the property of, and is operated and maintained by, the person owning the sewer system.

Shall is mandatory; may is permissive.

Slope shall mean the inclination of a trench bottom or a trench sidewall, expressed as a ratio of vertical distance to the horizontal distance. For example, a 3:1 slope shall rise or fall 3 vertical feet in a distance of 1 horizontal foot.

Solid Waste shall mean any unwanted or discarded solid material, consisting of putrecible or nonputrescible solid waste material, including garbage and rubbish.

Storm Drain or Storm Sewer shall mean a pipe or conduit for conveying ground, storm, or surface waters, roof and surface runoff, uncontaminated Cooling Water, and non-contact industrial process waters.

Subgrade shall mean the plane at the bottom of the subbase.

Surveyor shall mean a person who is registered by the Commonwealth of Massachusetts to perform professional land surveying services.

Town Engineer shall mean the Town Engineer of the Town of Mansfield, or his duly authorized agent or representative.

Wastewater shall mean sewage, industrial waste, other wastes or any combination of the three.

1.0 Purpose

These regulations are intended to protect the public health, safety and welfare and the environment and to ensure proper and safe operation of the Mansfield Municipal Sewer System by regulating the direct and indirect discharge of wastewater and pollutants to the Sewerage System in accordance with 360 CMR 10.000 and the Town of Mansfield Sewer Use Regulations adopted by the Board of Selectmen on February 21, 1996.

In the absence of code provisions or in amplification thereof, the materials and procedures as set forth in appropriate specifications shall apply:

- American Society of Testing Material (ASTM), and the Water Pollution Control Federation (WPCF) Manual of Practice No.7, "Operation and Maintenance of Wastewater Collection Systems".
- American Society of Civil Engineers (ASCE), Manuals and Reports in Engineering Practice No.60, "Gravity Sanitary Sewer Design and Construction".
- New England Interstate Water Pollution Control Commission Technical Report #16 (TR-16), "Guides for the Design of Wastewater Treatment Works".

The Town Engineer shall, in the case of any discrepancies or questions, direct the Contractor accordingly.

2.0 Applicability

2.1 The Town of Mansfield Board of Sewer Commissioners requires all contractors in the business of installing sewer and drains to be licensed with the Town. The Sewer Commissioners have designated the Town Engineer to administer the licensing program as described by these regulations.

2.2 No unauthorized person shall uncover, make any connections with or opening into, use, alter, or disturb any public or private sewer appurtenance thereof without first obtaining approval of a Sewer Permit for the connection, extension, or repair of a sewer as appropriate from the Town Engineer.

2.3 Every person who directly or indirectly discharges Wastewater to the Town of Mansfield Sewerage System shall ensure that such discharge complies with 360 CMR 10.000. The requirements of 360 CMR 10.000 apply to direct discharges to the Mansfield Sewerage System and to discharges to the Mansfield Sewerage System through a municipal sewer.

3.0 Drainlayer's License

3.1 Issuance of Drainlayer Licenses

Any drainlayer working on land in the Town of Mansfield shall be licensed pursuant to these regulations. Licenses shall be obtained from the Sewer Commissioners through the Town Engineer or his designee at the Mansfield Town Hall, Six Park Row, Mansfield, Massachusetts, 02048, telephone number (508) 261-7377. The license shall be in the name of the entity or an individual. A drainlayer license application is attached in Appendix B.

3.2 Application

A license application shall not be considered complete unless a valid State of Massachusetts Heavy Equipment Operators License, Certificate(s) of Insurance, Performance Bond, references, and the appropriate fee accompany it. The entity or individual shall complete the license application and submit it to the Town Engineer, who will present the completed application to the Sewer Commissioners for approval within twenty-one (21) days. The Town shall maintain an up-to-date list of Licensed Drainlayers, which shall be provided to residents and others requesting the same.

3.2.1 Insurance

The licensed drainlayer shall file an insurance certificate(s) listing the Town as the additionally insured and stating that the Town shall be notified thirty (30) days prior to cancellation annually with the Town of Mansfield for the appropriate insurance coverage shown below:

a. Worker's Compensation Insurance for the protection of all employees in accordance with applicable state law.

b. Contractor's Liability with limits of $1,000,000.00.

c. Automotive liability on and off public highways, owned vehicles, hired vehicles, and non-ownership liability with a limit of $1,000,000.00.

Liability insurance shall cover property damage insurance, blasting and explosion, underground damage to utilities, and collapse, and be issued by an insurance agency licensed to do business in Massachusetts.

3.2.2 License Term

Beginning January 1, 2006 the license term for a Drainlayer shall be January 1st to December 31st. (Existing Drainlayer Licenses though 6/30/2005 are extended and shall expire December 31, 2005.)

3.2.3 License Fees

Licensed Drainlayers shall pay an annual license fee of $250.00 to the Town of Mansfield at the time of application or renewal. All licenses regardless of the date of application date shall expire on December 31st of that year (except for licenses granted between July 1, 2004 and December 31, 2004, which shall expire December 31, 2005.)

3.2.4 Performance Bond

A performance bond in the sum of $5,000 that shall remain in full effect for a period of three years from the effective date of the license and shall be required each year of licensure. The performance bond shall be prepared on the attached form included in Appendix B of these regulations.

Upon renewal of a license or in subsequent years application the drainlayer shall either submit a new bond which shall remain in full force for a period of three years from the date of application or renewal, or extend the length of the current bond on file, by means of a certificate of rider so that the expiration date of the current bond will be changed to be in full effect for a period of three years from the date of application or renewal.

3.2.5 References

The drainlayer shall submit a list of at least three references that are familiar with the past work and experience of the drainlayer. The list shall include the name, organization, contact number(s), and brief description of the type of work performed for each reference. Other municipal references are preferred.

3.3 Notice of Violation

The Town will issue a "Notice of Violation" whenever it determines that:

1. A contractor is performing work without proper licensure.
2. A contractor is in non-compliance with the Rules and Regulations set forth by the Department of Public Safety.
3. Construction is proceeding in a manner that jeopardizes public safety.
4. Construction is occurring in violation of these Standards and/or any other applicable approved specification or details.
5. Sewer construction is proceeding without a valid permit.
6. There is a connection of any source of clear water (inflow and/or infiltration) to the Building Sewer.
7. There is, or has been, a discharge, into the Town of Mansfield Sewerage System, of any prohibited water or wastes as defined in 360 CMR 10.000.
8. Work is taking place in the right-of-way without proper permits and/or notifications.
9. There is damage to the roadway, public property, or utilities resulting from the work.
10. There are Debris and/or soils in the roadway resulting from the work.
11. Work is not completed, including necessary testing and as-built documentation.

Any person found to be violating any provision of these Regulations shall be served by the Town with written notice stating the nature of the violation and provided with a reasonable time limit for the satisfactory correction thereof. The offender shall, within the period of time stated in such notice, permanently cease and correct all violations.

The Board of Selectmen have designated the Town Engineer to enforce these regulations.

3.4 Fines

The Town Engineer may impose a **$250.00** fine per day against any drainlayer who violates the requirements contained herein until the violation is rectified and accepted by the Town Engineer. The licensed drainlayer may appeal the fine to the Board of Sewer Commissioners. The appeal must be made in writing within 10 business days of issuance.

The Board of Selectmen acting as Sewer Commissioners may also assess a civil penalty of up to **$5,000.00** per day against the owner for each violation, including but not limited to hiring an unlicensed contractor to perform work on any sewer or drain, as described in Section 7 of the Town of Mansfield Sewer Use Regulations.

Any person violating any of the provisions of these Regulations shall become liable to the Town for any expense, loss or damage incurred by the Town by reason of such violations.

3.5 Terminations and Suspension of License

The Sewer Commissioners may terminate or suspend any drainlayer license upon due notice and after a public hearing for violating any of the specifications contained herein including the expiration of bonds and/or insurance. There shall not be any rebate on the annual fee upon termination. Termination will be for just cause including shoddy workmanship, performing work without a permit, excessive groundwater infiltration to sewers, deliberate groundwater infiltration, incomplete work, any violation of this regulation, not completing proper as-built plans, gravel or stones or soil entering the sewer, septage in flow, and other just causes. The contractor may apply for reinstatement, but the Town retains the right to not reissue the license or only reissue it in the future at its discretion.

3.6 License Application/Renewal Forms

The Application for Drainlayer's License can be found in Appendix B of these regulations. The Town Engineer may issue a negative recommendation to the Sewer Commissioners based on previous violations, negative references, or lack of relevant experience. Also, the Town of Mansfield may withhold approval of any licenses and/or permits for outstanding taxes or fees.

4.0 Sewer Permits

4.0.1 Permit Required

No person shall connect to a Municipal Sewer System, or construct, effect, modify, or maintain a Sewer extension, connection or repair, without a sewer permit issued by the Town Engineer, and when required a DEP extension/connection permit pursuant to M.G.L. c.21§ 43 and 314 CMR 7.00, 360 CMR 10.000.

Permit requirements are published by the DEP, and referenced by the application categories in the following table:

DEP Permit Application Categories: 310 CMR 4.00
BRP WP 13 Major Sewer Extension
BRP WP 14 Minor Sewer Extension; Connect w/Pump Station
BRP WP 17 Major Sewer Connection (≥50,000 gpd)
BRP WP 18 Minor Sewer Connection (15,000 to 50,000 gpd)
BRP WP 55 Industrial Wastewater

4.0.2 State Permits

All sewer extensions and sewer connections requiring a DEP Permit shall have a plan and necessary calculations prepared by a Registered Professional Engineer in the Commonwealth of Massachusetts. The Department of Environmental Protection (DEP) must approve the Sewer Extension or Connection before the Town will issue any Sewer Connection, Extension, or Street Opening Permits.

4.0.3 Permit Types

The Town of Mansfield Engineering Department must issue a Sewer Permit for all repairs, modifications, connections, or extensions to the Mansfield Sewer System. In addition, Sewer Permits are required for the expansion of any existing building connected to the system that requires alteration or retrofit of the existing sewer or any of its direct appurtenances.

4.0.4 Additional Requirements

Installation of Sewers and Drains shall be in accordance with these regulations and standards as well as any requirements of the Town Engineer and Subdivision Inspector. The Town of Mansfield reserves the right to waive any specification or to impose other regulations as required based on field conditions. Details of various Sewer components are attached in Appendix A and made a part of these regulations and standards.

4.0.5 Cost of Sewer

All costs and expense(s) incident to the installation and connection of the building sewer shall be borne by the owner. The owner shall indemnify the Town from any loss or damage that may directly or indirectly be occasioned by the installation of the building sewer.

4.0.6 Unauthorized Work

No unauthorized person shall maliciously, willfully or negligently break, damage, destroy, uncover, deface or tamper with any structure, appurtenance or equipment that is a part of the sewerage works. Any person violating this provision shall be subject to immediate arrest under the charge of disorderly conduct.

4.0.7 Licensed Contractors (Drainlayer's)

Only contractors licensed by the Town of Mansfield will be permitted to construct or repair Sewers. Any Sewer installed by contractors not licensed by the Town will be rejected. A list of Licensed Drainlayers may be obtained at the Mansfield Engineering Department. **Licensed Drainlayers shall not sub-contract Sewer installation work to anyone other than a Town licensed drainlayer.** If the Licensed Drainlayer of record does not perform the work the permit is null and void unless transferred to another licensed drainlayer per section 4.0.14. Failure to comply with this provision shall lead to a Notice of Violation for the Licensed Drainlayer and may result in loss of such License.

4.0.8 Sewer Permit Process

Prior to beginning any work on any sewer in the Town of Mansfield, a licensed drainlayer shall obtain the appropriate permits as listed below:

- Sewer connections with sewer flows estimated to be less than 2,000 gallons per day require a Mansfield Sewer Connection Permit to be issued by the Town Engineer.

- Sewer connections with sewer flows estimated to be greater than 15,000 gallons per day, sewer connections with a pump station, and industrial sewer connections require both:

  An appropriate Massachusetts DEP Permit; and

  A Mansfield Sewer Connection Permit issued by the Town Engineer

- All sewer main extensions (including sewers to be installed on private roads) require both:

  An appropriate Massachusetts DEP Permit; and

  A Mansfield Sewer Extension Permit issued by the Town Engineer.

- Sewer repairs require a Mansfield Sewer Repair Permit issued by the Town Engineer.

- Sewer Disconnections (cut and cap) require a Sewer Disconnection Permit issued by the Town Engineer.

In addition, any industrial user or domestic source with flows 2,000 gallons per day or greater shall apply to the Water Pollution Control Facility (WPCF – (508) 285-5746) for an Industrial Discharge Permit. The Town Engineer will not issue a Sewer Connection Permit until either a copy of the Industrial Discharge Permit or determination that permit is not required is received from the WPCF.

4.0.9 Permit Fee

A permit fee of $100.00 plus $1.00 per linear foot of sewer to be installed in excess of 100 feet shall be charged for each Permit. Additional inspections, if required, due to defective workmanship or incomplete construction may be assessed a re-inspection fee of an equal amount.

4.0.10 Street Opening Permit

A drainlayer shall obtain a Street Opening Permit from the Department of Public Works, and obtain a police detail when necessary as determined by the Chief of Police, if construction of the sewer requires construction in a traveled way of a street or work within the Right of Way.

4.0.11 DIGSAFE and Mansfield Water Department

Prior to beginning any excavation of a sewer or drain, the licensed drainlayer shall contact DIGSAFE at telephone number 1-888-DIG-SAFE to have all underground utilities located. The assigned DIGSAFE number shall be listed on the sewer permit application. The licensed drainlayer shall also notify the Mansfield Water Department (508) 261-7330 at least three (3) business days before construction is to begin so that the Water Department can mark the water lines at the site. The Water Department may waive the Water Department notification for sites located on unaccepted streets. The drainlayer must request waiver of this notification from the Water Department.

4.0.12 Application for Local Permit

A Permit application must be made on the form prescribed by the Town of Mansfield Engineering Department. The application will require at a minimum, the following information:

a. Location/Address of the work site;
b. Name of the Owner;
c. Name, license number, and telephone number of the drainlayer;
d. Length, size and material of all sewer to be installed;
e. Estimated residential, commercial and industrial sewer flow;
f. Dig-Safe Number;

And where appropriate, the following items:

- A sketch of the proposed sewer connection showing all bends and clean-outs (required for existing residential buildings and repairs)
- A plot plan of the proposed building showing the proposed sewer connection, manholes, bends, and clean-outs (required for new construction and connection with pump station)
- Design drawings and calculation performed by a Massachusetts Professional Engineer (required for all sewer extensions and low pressure sewers)
- Copy of DEP Permit (required for connections over 15,000 GPD, industrial connections, and sewer extensions)
- Proof of Mansfield Industrial Discharge Permit (required for all connections over 2,000 GPD and all industrial users)

4.0.13 Eligibility

The Town of Mansfield shall issue permits to contractors licensed to perform excavation in the Town of Mansfield.

NOTE: The Town of Mansfield may deny permits to any applicant who has previously violated, or is currently in violation of, these Standards or any other Mansfield rules, regulations, standards, specifications or details described herein. In addition the Town of Mansfield may deny permits to any drainlayer who has not satisfactorily completed or furnished required testing reports or as-builts for previous permits.

4.0.14 Expiration of Permit

A. The Permit will expire if the work is not initiated within one year (365 days) from the date of issuance. Upon Permit expiration, a new Permit, including payment of the Permit fee, will be required for the future connection and inspection(s).

B. A sewer permit will become void if request to cancel the permit is received by either the owner or drainlayer who originally applied for the permit. No refunds will be issued for canceled or duplicate permits. No permit shall be transferred to a different drainlayer unless permission to transfer is granted in writing by the original drainlayer on a permit.

C. The Town of Mansfield may extend the duration of the Permit for a reasonable period. Requests for extension of the Permit period must be submitted in writing to the Mansfield Engineering Department in advance of the expiration and must state the reason for request.

4.0.15 Mandatory Inspection of Sewer Work

A. The Contractor shall notify the Engineering Department prior to beginning any work and again (if necessary) when that sewer work is available for inspection. Notification is to be provided at least twenty-four (24) hours before the inspection is desired. The Engineering Department will perform inspections on Sewers during normal Town Hall business hours, or as agreed to in advance with the Engineering Department. No holiday or weekend work shall be allowed except by permission of the Engineering Department.

B. It is the responsibility of the Contractor to ensure that the sewer is inspected, in its entirety, and that all work is exposed for inspection and constructed in accordance with these standards. Under no circumstance shall the Sewer work be backfilled without an inspection by the Town Engineer or his authorized representative.

C. The Town Engineer may require re-excavation of a buried sewer utility if an inspection was not performed at the time of installation.

4.0.16 Video Camera Inspection

The Town Engineer or Public Works Department may, at their discretion, require the connection to be inspected using closed circuit television equipment. Video camera inspections shall be performed to inspect for, but not limited to, the following:

a. Joint separation.
b. Pipe sags.
c. Construction debris in sewer line.
d. Properly installed joints.
e. Deformed pipes.
f. Cracks in pipes.
g. Infiltration.
h. Number of fittings and distance between manholes.
i. Illegal discharge of clear water.

4.0.17 Right of Entry

An authorized representative of the Town of Mansfield shall have the right of entry to, upon or through the Owner's Premises for purposes of inspecting Building Sewers or to determine if any sources of clear water are connected to the Building Sewer.

4.1 Sewer Connection Permit

A Mansfield Sewer Connection Permit must be issued before the installation of any service connection. For connections to existing buildings, a completed sketch of a service connection shall be included with the sewer connection permit application. This sketch shall show the general alignment of the sewer including any bends, clean-outs, or manholes. The sketch shall also show the proximity of the sewer line to any significant features such as buildings, structures, paved areas, and water lines. In cases of distant or complex pipe configurations, the Town Engineer may require a plan and profile of a sewer connection to be completed by a Massachusetts Registered Professional Engineer. For connections to new buildings, a plot plan shall be included with the sewer connection permit application, which shows the proposed sewer including all bends, clean-outs, and manholes, along with the proposed building and all other utilities.

4.1.1 Minimum Size, Fittings and Clean-outs

A. Building Sewers must be a minimum of six (6) inches in diameter and sized based on the anticipated flows. Building Sewers must have a wye clean-out located no more than (10) feet from the buildings exterior wall.

B. If an existing sewer lateral servicing a property is five (5) inches or less in inside diameter the Drainlayer may use four (4) inch PVC SDR35 instead of six (6) inch with prior approval from the Town Engineer.

C. Sewer Service is to begin a maximum of ten (10) feet off the inside wall of building foundation.

D. Six (6) inch pipe must be used to within ten (10) feet of the building, at which point the plumbing regulations will be adhered to. If a four (4) inch pipe extends from the building, a four (4) to six (6) inch Fernco Flexible Coupling (or approved equal) will be used in joining the six (6) inch to the four (4) inch pipe. A licensed plumber must perform all work within ten (10) feet of the building.

E. All changes in direction are to be made with either twenty-two and a half (22½) or forty-five (45) degree bends with at least three (3) feet of horizontal pipe between fittings. At a minimum, where two bends are used to form a ninety (90) degree turn, a wye clean-out shall be provided. A clean-out shall be provided every one hundred (100) feet. Where conditions warrant, as determined by the Town Engineer, a sewer manhole shall be provided in lieu of a clean-out.

F. All clean-outs must be the same diameter as the horizontal Building Sewer into which the clean-out is connected; minimum of six (6) inches.

G. All clean-outs must be extended to within six (6) inches of finished grade and be provided with a screw on cap.

H. If a wye cleanout is installed under a paved or traveled area, an appropriate size frame and cover shall be provided and brought to grade with courses of barrel block, brick and mortar. The frame and cover shall be installed as to prevent any load from being transferred onto the PVC riser or screw plug.

I. Crushed stone shall be placed a minimum of six (6) inches above and below and all around the Sewer pipe at full width of the trench and around any cleanouts.

J. Slope requirements within the building must conform to the latest edition of the State of Massachusetts Plumbing Code, local codes, and to these standards, whichever is more stringent.

K. Building Sewers must be installed at a minimum slope of 2.00% (1/4" per foot) and a maximum slope of 7.00%. The Town, depending on site conditions, may modify the slope requirements.

L. Sewers must not connect directly into any manhole without the prior written approval of the Town Engineer. Inside drop connections to manholes are not permitted, unless prior approval of the Town Engineer is granted.

M. Building Sewers must maintain a minimum cover (from finished grade to top of pipe) of three (3) feet. The Town will not accept Sewers installed with less than three (3) feet of cover in a right-of-way or easement, unless prior permission has been obtained from the Town Engineer.

N. A separate and independent building sewer shall be provided for every building. However, where one building stands at the rear of another on an interior lot, both buildings are located in Mansfield, and no private sewer is available or can be constructed to the rear of the building through an adjoining alley, court, yard, or driveway, the building sewer from the front building may be extended to the rear building and the whole considered as one building sewer. If in the case of a residential accessory structure, an existing separate lateral or tee is to be used if available. If no available lateral or tee exists, the accessory structure may be connected by a wye into the existing house service provided that the entire service is upgraded to PVC.

O. Commercial and industrial properties shall use a sewer manhole, in lieu of a clean-out, for changes in direction.

4.1.2 Wye Saddles

A. Where a lateral or tee does not service a property, a wye saddle may be used on the sewer main with approval of the Town Engineer.

B. A Fernco-type wye saddle may be used under the following conditions. A hole shall be carefully drilled at the 10-12 o'clock position on the pipe, making sure not to damage the sewer main in any way. The saddle is then

strapped securely around the main with steel strapping and concrete is poured completely around the saddle.

C. No saddle connections to the sewer will be allowed in new subdivision construction.

4.1.3 Minimum Elevations for Gravity Connection

A. Upon exiting the building, the Sewer must maintain a minimum cover (from finished grade to top of pipe) of three (3) feet. Where an existing sewer pipe exits an existing building with less than three (3) feet of cover, the contractor shall install the connection so as to meet minimum cover requirements as soon as is practical.

B. In cases where the building sewer crosses a water main or service with less than eighteen (18) inches of vertical separation between the pipes, the Contractor shall completely encase the joints of the sewer pipe with six (6) inches of 3,000 PSI concrete using a form (not free flow). Any joint in the sewer pipe which falls within ten (10) feet measured horizontally from the centerline of the water main or service shall be encased. This encasement must be inspected by the Engineering Department prior to backfill. Based on existing or anticipated field conditions, the Engineering Department may require additional concrete encasement.

4.1.4 Grease Traps

A. All restaurant and food service establishments, as defined in 105 CMR 590.001 or any successor regulation, shall be equipped with a grease trap which complies with the construction and maintenance specifications set forth in Title V of the State Environmental Code 310 CMR 15.05 and 360 CMR 10.000.

B. Installation of a grease trap shall require the installation of an inspection manhole, immediately downstream of the grease trap. This inspection manhole shall be used to confirm the serviceability of the grease trap.

C. Where preliminary treatment or flow-equalizing facilities are provided for any waters or wastes, they shall be maintained continuously in satisfactory and effective operation by the owner at his own expense and reported to the Mansfield Sewer Department on an annual basis.

4.1.5 Industrial Connections

When required, the owner of any property serviced by a building sewer carrying industrial wastes shall install a suitable control manhole together with such necessary meters, and other appurtenances in the building sewer to facilitate observation, sampling, and measurement of wastes. Such manhole, when required, shall be accessible and safely located and shall be maintained by the owner so as to be safe and accessible at all times.

4.1.6 Inspection

A. At the time of inspection, the sewer shall be connected to the building plumbing. The Town shall inspect all work and the final connection before any portion of sewer is backfilled. All pipe installed shall be inspected by the Town engineer or his designee prior to approval. The pipe shall be bedded and backfilled to the springline of the pipe with the specified 3/4-inch crushed stone. Once the pipe has been inspected, the Registered Drainlayer may then complete the stone and gravel backfill as specified above. No stones or other materials greater than 6 inches shall be allowed within the backfilled trench. The Registered Drainlayer shall contact the Engineering Department a minimum of 24 hours prior to the inspection request, and notify the department when they are to begin work.

B. At the time of inspection, the Drainlayer shall have prepared an As-Built sketch of the service connection. The as-built shall include three measurements to a fixed location for the connection at the property line, cleanouts, bends, and Fernco.

4.1.7 Grinder Pumps and Sewage Ejectors

In cases where the existing sewer will not drain by gravity to the sewerage system, a pump system shall be designed and installed in accordance with Section 5.5.

4.1.8 Testing of Service Connections

Vacuum Testing will be required for all manholes (See Section 6). Air pressure tests may be required in some circumstances (See Section 6).

4.2 Sewer Extension Permit

4.2.1 Design

All sewer extensions shall be designed by a Massachusetts Registered Professional Engineer in accordance with TR-16 and The Town of Mansfield Sewer Regulations. All sizes, slopes and materials are to adhere to TR-16. A plan and profile along with associated details of the sewer extension shall be submitted to the Town Engineer with the permit application for review.

4.2.2 Paper Streets

All sewer design and construction work proposed or performed in paper streets, shall comply with the Town of Mansfield Subdivision Regulations.

4.2.3 Master Plan

All sewer extensions shall be designed to conform to the current Town of Mansfield Sewer Master Plan. In no case shall a sewer extension be approved or installed unless the proposed sewer provides the proper sewer pipe material, size, depth, and alignment to achieve the current and future goals or intent of the Master Plan.

In the absence of a Master Plan, or as an interpretation or clarification thereto, the Town Engineer may reasonably require a particular material, size, depth and alignment of a proposed sewer extension be modified to allow for future sewer service.

4.2.4 Future Connections

Where the sewer main passes in front of a property, provision for future connection of that property shall be provided by the Contractor and recorded with the Mansfield Engineering Department.

Building Sewers installed for future connections must be terminated at the limit of the right-of-way or easement and plugged to ensure water tightness. A standard 2"x4" with the top four feet painted green must be installed at the end of the plugged line and recorded with the Mansfield Engineering Department.

4.2.5 Minimum Size

No public gravity sewer shall be less than eight inches (20 cm) in diameter.

4.2.6 Depth

In general, sewers should be designed deep enough to drain basement fixtures and to prevent freezing. Insulation shall be provided for sewers that cannot be placed at a depth sufficient to prevent freezing.

4.2.7 Slope

All sewers should be so designed and constructed to give a velocity when flowing full of not less than 2.0 feet per second (0.61 m/s) based on Manning's formula using an "n" value of 0.013. Use of other "n" values may be permitted by the reviewing agency if deemed justifiable on the basis of research or field data presented. The following minimum slopes may be used only if absolutely necessary because of grade restrictions; however slopes greater than these are desirable.

Sewer Size	Minimum Slope in Feet Per Feet (m/m)
8 inch (203mm)	0.004
10 inch (254mm)	0.0028
12 inch (305mm)	0.0022
14 inch (356mm)	0.0017
15 inch (381mm)	0.0015
16 inch (406mm)	0.0014
18 inch (457mm)	0.0012
21 inch (533mm)	0.0010
24 inch (610mm)	0.0008
27 inch (686mm)	0.00067
30 inch (762mm)	0.00058
36 inch (914mm)	0.00046

4.2.8 Minimize Solids Deposition

The pipe diameter and slope shall be selected to obtain the greatest practical velocities to minimize settling problems. Oversizing of sewers in order to justify using flatter slopes is discouraged. If the proposed slope is less than the minimum slope of the smallest pipe which can accommodate the design peak hourly flow, the actual depths and velocities at minimum, average and maximum day and peak hourly flow for each design section of the sewer shall be calculated by the design engineer and submitted to the reviewing authority.

4.2.9 Slope Between Manholes

Sewers shall be laid with uniform slope between manholes.

4.2.10 High Velocity Protection

Velocities greater than 12 feet per second (3.7 m/s) will not be permitted under any flow conditions, unless adequate special provision is made to protect against displacement by erosion and impact.

4.2.11 Steep Slope Protection

Sewers on 15 percent slopes or greater shall be anchored securely to prevent displacement.

4.2.12 Impervious Dams

Impervious dams should be provided every 300 feet to control the flow of groundwater within the pipe bedding material.

4.2.13 Alignment

In general, sewers 30 inches or less in diameter should be laid out in a straight line and alignment should be checked with a laser beam.

4.2.14 Changes in Pipe Size

When a smaller sewer joins one of a larger diameter, the invert of the smaller sewer should be raised sufficiently to maintain the same energy gradient. An approximate method for securing these results is to match crowns.

4.2.15 Manhole Locations

Manholes shall be installed at the end of each line; at all changes in grade, size or alignment; at all intersections; and distances not greater than 400 feet for sewers 15 inches or less in diameter, and 500 feet for sewers 18 to 42 inches in diameter. Greater spacing may be permitted in larger sewers and on those carrying a settled effluent, with prior approval of the reviewing agency.

4.3 Sewer Repair Permit

4.3.1 If any private sewer service connection or main becomes obstructed or otherwise fails to work properly, notice must be given to the Town Engineer or his duly authorized agent. If maintenance or repair work is necessary on private property the owner shall pay the cost of such work. Repair work or maintenance of the sewer system on Town Property will be performed and paid for by the Town of Mansfield. The property owner(s) affected shall be responsible to determine that the obstruction is not on his property. In no way will the Town pay for or reimburse any owner or drainlayer who performs work on private property as a result of a blockage or maintenance issue on Town property.

4.3.2 A Mansfield Sewer Repair Permit must be issued before the repair of any sewer service, main, manhole or other appurtenance. A completed sketch of the proposed repair shall be included with the Sewer Repair Permit application. This sketch shall show the general alignment of the sewer including any bends, clean-outs, or manholes. The sketch shall also show the proximity of the sewer line to any significant features such as buildings, structures, paved areas, and water lines.

4.3.3 At the time of inspection, the Drainlayer shall have prepared an as-built sketch of the repair. The as-built shall include three measurements to a fixed location for the connection to existing pipes, cleanouts, and bends.

4.4 Sewer Disconnection Permit

Prior to the demolition of any building or structure that is connected to the sewer system, the sewer service for that building or structure must be permanently capped at the property line or at another location with the approval of the Town Engineer. A registered drainlayer shall obtain a Sewer Disconnection Permit for the work, and the work shall be inspected and as-built plan submitted in the same manner as described in Section 4.1.

5.0 Technical Requirements

5.1 Trench Excavation and Backfill

5.1.1 Traffic Control & Safety

A. All excavations for sewer installation shall be adequately guarded with barricades and lights so as to protect the public from hazard. Streets, sidewalks, parkways and other public property disturbed in the course of the work shall be restored in a manner satisfactory to the Town.

B. If work is being performed in a traveled way, it shall be at the discretion of the Chief of Police to require an assigned Police Detail to any and all work performed in the travel way.

C. Any work within a State Highway shall be coordinated with the Massachusetts Highway Department.

5.1.2 Materials

A. Trench Backfill

Placement of backfill material shall include the working of material to achieve suitable moisture content and compaction to the specified density in accordance with Massachusetts Highway Dept. Standard Specifications (Spec.150.60, backfilling for structures and pipes). Imported material must be approved by the Mansfield Engineering Department prior to placement. Material shall be granular fill, gravel, rock, or combinations thereof, free of humus, organic matter, vegetative matter, frozen material, clods, sticks, and debris and containing no stones having a dimension greater than four (6) inches. Sand or pea stone will not be an approved backfill material. No backfill shall be placed on or against structures, pipes, or any other masonry until the Mansfield Engineering Department or its authorized agent has performed a visual inspection. Unacceptable material shall be removed at the direction of the Town Engineer.

B. Crushed Stone

Material for pipe bedding shall be 3/4 inch minus crushed stone, having reasonably even gradation from coarse to fine, in accordance with the Massachusetts Highway Department Standard Specifications for Highways and Bridges specification for Aggregates and related materials M2.010 (Sect. 230.61).

C. Gravel for Trench Backfill

Gravel for trench backfill shall be clean pit run gravel, crushed rock or gravel having a reasonable even gradation from coarse to fine. The maximum size shall be four (6) inches.

D. Bituminous Concrete

Asphaltic concrete shall be hot plant mix, type I-1 material conforming to the requirements of MA Highway Section 420, entitled, "Class I Bituminous Concrete Base Course" of the Standard Specifications of the Massachusetts Highway Dept. Contractor shall replace bituminous concrete in two lifts, binder and wearing course in thickness' as specified by the Department of Public Works Street Opening Regulations, but in no case less than 2.5" binder and 1.5" wearing course.

5.2 General Construction

5.2.1 Clearing the Right of Way

Where clearing of the right of way is necessary, it shall be completed prior to the start of the trenching. Trees and brush shall be cut as near to the surface of the ground as practicable and piled for disposal. Contractor shall remove all organic material, grub stumps and strip loam & subsoil to granular mineral material. The Contractor shall observe all state laws relating to fire permits and local

regulations relating to burning such materials. Under no conditions shall excavated materials be permitted to cover brush or trees prior to clearing and disposal. In accordance with Massachusetts Highway Dept. Standard Specifications (Sect 101).

5.2.2 Pavement Removal and Replacement

All bituminous and concrete pavements, regardless of the thickness, shall be saw-cut where required prior to excavation of trenches. Width of the pavement cut shall be at least six (6) inches greater than the required width of the trench at ground surface on each side. Pavement removed during excavation shall be piled separately from the earth spoil and removed from the site and shall not be used in backfilling the trench. After the trench has been backfilled and compacted according to the design specifications, the Contractor shall bring the trench to a smooth even grade at the proper depth below the existing surface to provide for the required depth of pavement. The Contractor shall saw-cut the existing pavement to a straight line and remove any pavement that has been damaged during work as required by the Director of Public Works and or the Town Engineer. The entire existing paved surface shall be cleaned and the sawn edges prepared with tack before resurfacing is begun. The trench shall be repaired per the specifications set forth in the Street Opening Permit issued by the Mansfield Department of Public Works.

5.2.3 Blasting

Blasting for excavation will be permitted only after securing approval of the Mansfield Fire Department and only when proper precautions are taken for the protection of persons and property. The Contractor at his own expense shall repair any damages caused by the blasting. The Contractor's methods of procedure and blasting shall conform to all applicable State laws and municipal ordinances.

5.2.4 Trench Width

In all cases, trench width shall be confined to dedicated right-of-way for public thoroughfares or within areas for which construction easements have been obtained, unless special arrangements have been made with the affected property owners beforehand and approved by the Engineering Department.

5.2.5 Grade

The bottom of the trench shall be carried to the lines and grades shown on the Plans or as established by the design Engineer, with proper allowance for pipe thickness and for proper bedding.

5.2.6 Shoring, Sheeting, and Boxing of Trenches

Whenever necessary to prevent caving during excavation in gravel, sandy soil, or other unstable material, the trench shall be adequately sheeted and braced. Failure to comply with proper applicable OSHA standards with regard to;

sheeting, shoring, or bracing shall be cause for a Notice of Violation. All sheeting, shoring and bracing of trenches shall conform to those standard requirements.

5.2.7 Location of Excavated Materials

During trench excavation, the Contractor shall locate the excavated material so it will not obstruct a traveled roadway or street; and, unless otherwise approved by the Public Works Superintendent, all streets and roadways shall be kept open to at least one-way traffic, or as directed by the Mansfield Police Department.

5.2.8 Debris

No groundwater, septic water, gravel, stones, etc. shall enter the Sewer during construction. The Registered Drainlayer shall be responsible to protect the Sewers from these occurrences.

5.2.9 Safety

The Registered Drainlayer shall be responsible for the proper excavation and safety measures during construction. All work shall be in accordance with OSHA standards. The Town of Mansfield is not responsible for proper safety standards employed by the Registered Drainlayer and accepts no responsibility for accidents.

5.2.10 Removal of Water

A. The Contractor shall provide and maintain ample means and devices with which to promptly remove and properly dispose of all water, including flow from existing sewer lines, entering the trench excavation during the time the trench is being prepared for the pipe laying, during the laying of the pipe, and inspection, until the backfill above the pipe has been completed accordingly.

B. The Contractor shall be responsible for dewatering the trench. If the Contractor wishes to dewater into the Towns drainage system, the Mansfield Engineering Department must approve any and all means for the transfer, treatment and disposal thereof before any discharge occurs.

C. The Contractor shall dispose of the water and or sewage in accordance with state and local regulations. Precautions against sedimentation control must be maintained at all times.

5.2.11 Trench Backfill Compaction

After the Contractor has backfilled the pipe zone of the trench as required, he shall then backfill the balance of the trench, mechanically compacting each layer to 95% of maximum density in roadways and 90% in all other areas. Where fill is required, use bank-run gravel per M1.03.0 (a six-inch maximum diameter stone size).

5.2.12 Excess Excavated Material

All excess excavated materials shall be hauled and properly disposed of by the Contractor. The Contractor shall make his own arrangements for the disposal of the excavated material.

5.2.13 Rock Excavation

Before proceeding with rock excavation, the Contractor shall have completed the common excavation to such depths that only rock excavation remains. At this time the trench shall be made available to the design Engineer and measurements will be taken to determine the amount of rock excavation remaining. Any redirection of a sewer connection to avoid ledge outcrops must be approved by the Engineering Department.

5.2.14 Controlled Density Fill

Controlled Density Fill (CDF) where required, shall be a mixture of Portland cement, fly ash, aggregates, water and admixtures proportioned to provide a non-segregating, self consolidating, free-flowing and excavatable material that will result in a hardened, dense, non-settling fill. CDF is approved as an alternative to "Gravel for Trench Backfill."

The use of CDF is required for backfill material associated with any construction in paved roadways, or at the discretion of the Mansfield Department of Public Works.

A. Placement
CDF is a heavy material and during placement will exert a high fluid pressure against any pipe, manhole, or other material it contacts. The resultant pressure will tend to cause pipe and manholes to float or shift. CDF shall be placed in such a manner as to prevent flotation or shifting of pipe and manholes. CDF shall not be placed on frozen ground or during a time when the air temperature is 38 ºF or less and falling.

B. No CDF shall be placed under water.

C. Curing
Contractor shall provide steel plates k-36 steel (k-56 recommended) to span trenches or otherwise prevent traffic or construction equipment coming in contact with CDF until the CDF has hardened sufficiently to prevent rutting. Contractor shall provide cold patch on all edges of steel plates used for vehicular transition in any affected area.

5.3 Sewer Pipe Installation

5.3.1 Scope

This item shall include the work necessary for the installation of sewer pipe and fittings of the sizes and classes indicated, including but not limited to furnishing materials, placing crushed gravel pipe base, providing bell holes in the trench bottom; laying and jointing the pipe; installing sewer tees, wyes and laterals; furnishing pipe necessary for physical test; and testing of the line. Ductile iron pipe shall be used when the sewer line is less than three (3) feet below existing finished grade.

5.3.2 Materials

All materials used in new sewer construction must have a useful design life of 50 to 100 years. The use of pipe, couplings, or any other material that does not meet the design life requirement is prohibited.

A. PVC Sewer Pipe

Pipe used for sewers shall be PVC. The pipe shall be of the size and type indicated on the plans and shall conform to the appropriate specifications detailed below. Pipe and fittings used in Building Sewer construction shall be smooth wall inside and out, and must be either: Polyvinyl Chloride ("PVC") and must conform to ASTM D-3034 (SDR 35; or ASTM D-1785-99 (Schedules 40 or 80)). All pipe must have a minimum tensile strength of 34.50 Mpa as defined by ASTM D-1784. SDR rating is the ratio of the outside diameter to the pipe wall thickness.

B. Ductile Iron Pipe

Ductile iron (DI) pipe must meet ASTM A-746-99 (pressure class 350) or AWWA C-151 (pressure class 350) with exterior asphaltic coating per AWWA C-151 and interior asphaltic coating meeting AWWA C-151 or polyethylene lining complying with ASTM D-1248 of nominal 40-mil thickness.

5.3.3 Joints

All pipe joints shall be push-on types with proper gaskets for sealing the Sewer. Where push-on joints are not feasible, rigid slip couplings or mechanical joint couplings shall be used. Except for joining the building plumbing to the lateral sewer, Fernco type joints will only be allowed with prior approval of the Town Engineer. When Fernco joints are used they shall be provided with stainless steel shear bands or encased in concrete to prevent joint settlement and separation.

5.3.4 Preparation of Trench

Crushed gravel base for pipe shall be placed in the trench to a minimum depth of six (6) inches below the invert of the pipe. The base shall be placed and leveled to approximate flow line grade in advance of the pipe laying. Immediately following the placement of each pipe, the crushed gravel pipe base shall be placed to the centerline of the pipe and properly chinked.

5.3.5 Preparation of Sewer Pipe

All pipes and fittings shall be carefully inspected before being laid and no cracked, broken or defective pipe or fittings shall be used in the work. The ends of the pipe shall be cleaned with a brush, washed and thoroughly scrubbed where necessary to remove dirt or other foreign material.

Extreme care shall be exercised to insure that the inside surfaces of the bell are smooth and free from any projections which would interfere with the assembly or water tightness of the joint.

5.3.6 Laying and Jointing Pipe and Fittings

A. Sewer pipe shall be laid in full lengths as manufactured and shall be laid on a constant grade and in a straight alignment from manhole to manhole or clean-out. Wherever possible, pipe shall not be installed with elbows or bends. A manhole shall be located at every change in grade or horizontal alignment, but no more than three hundred (300) feet apart.

B. The Contractor shall layout his own work and be responsible for the execution of the work to such lines and grades to comply with the specifications stated herein.

C. PVC pipe is flexible in nature and may be out of grade and alignment through the middle of a pipe length even though each end is on grade and in alignment as evidenced by a laser beam or grade boards. To prevent the above situation from occurring, the contractor shall check the elevation of the top of each length of PVC pipe laid at each end and at the midpoint. The midpoint elevation shall be within 0.01 foot of the average elevation of the two ends.

5.3.7 Sewer Installation

A. PVC Sewer Pipe shall be installed in accordance with the manufacturers recommended installation procedures.

B. PVC Sewer Pipe shall be connected to concrete manholes by means of an approved coupling with an elastomeric gasket, an approved waterstop or flexible sleeve. Use of Portland Cement grout for connecting PVC Sewer Pipe to manholes will not be permitted, unless previously authorized by the Town Engineer. Pipe laying shall proceed upgrade with the bell ends of bell and spigot pipe pointing in the direction of flow (uphill). Each piece shall be laid true to line and grade and in such a manner as to form a closed concentric joint with the adjoining pipe in order to prevent any sudden offsets in the flowline.

C. Main Sewers
All Sewer mains shall be installed using a laser or other approved means to insure correct pitch and angle. The Registered Drainlayer is responsible for the line and grade of the pipe.

D. The installation of sewer pipe shall commence at the lowest point along the sewer and shall proceed so that the spigot end of the section being laid is placed into the bell end of the pipe already laid. Every precaution shall be taken to prevent foreign materials from entering the pipe while it is being placed in the trench. During laying operations, no debris, tools, clothing or other materials shall be placed in the pipe. The Engineering Department shall inspect any and all piping before backfilling occurs. No de-watering of the trench shall take place into the sewer pipe or any appurtenance.

E. Sewer pipe shall be bedded in ¾ inch crushed stone six inches above and below the pipe and at full width of the trench. The drainlayer shall backfill the sewer line with suitable material, which is free of stones larger than six inches or 50 pounds.

F. Service Connections
The Contractor shall place service lateral Wye branches at the locations indicated on the plans or specified by the Engineering Department. Sewer laterals shall be provided for every home or buildable lot. Final service lateral locations may be determined in the field after consultation with the property owner. The 6-inch side outlet shall be installed at an angle of approximately 45 degrees above the horizontal. After the Wye is in position, special pipe bedding material and select backfill shall be hand-placed and chinked around the Wye to prevent any movement of the next pipe.

G. If installed on private property, the Wye outlet shall be plugged with a 6-inch plug and marked with a standard 2"x4" painted green. Whenever the main sewer is installed in the street right-of-way, the Contractor shall extend the service connection from the Wye branch to the property line of the property to be served, or to the point designated on the approved plan or the Town Engineer. Laterals shall be no deeper than seven feet below grade, unless approved by the Town Engineer. Each lateral shall be marked with a standard 2"x4" painted green, which extends to 1 foot below grade. The lateral shall be bedded in ¾ inch crushed stone. In no case will the Contractor be required to extend the service connection on to private property without first obtaining consent by the property owner. Unless otherwise specified on the plans or directed by the design Engineer, each service connection shall be laid in a separate private trench on a straight line and gradient from the Wye to the end of the service connection at the property line. No service connection shall be laid on a grade of less than two percent, unless otherwise authorized or shown on the approved plans.

H. Upon completion of the sewer, a Registered Professional Engineer shall complete an as built plan and profile drawing. The plan shall show, at a minimum, the location of all sewer lines, manholes, laterals, ties to each lateral, depth of each lateral, and map and lot numbers. The Drainlayer shall be responsible for recording lateral information. If information is

not available at the time of the as built the Drainlayer shall excavate and uncover laterals as necessary.

5.3.8 Testing of Sewer Pipe & Appurtenances

After completion of the sewer main and all laterals, the Drainlayer shall hire an approved independent testing service to conduct low-pressure air leakage tests on all sections of new sewer and negative air pressure tests on all new manholes using ASTM and Town of Mansfield Standards outlined in Section 6 of this document.

Prior to final operation of a sewer main extension or building sewer, the Town Engineer may also require the following additional testing to identify defects and/or sources of infiltration/inflow (I/I):

i. Video camera inspection of all lines in the presence of the Engineering Department.
ii. Smoke testing of all lines in the presence of the Engineering Department.
iii. Deflection testing of all lines in the presence of the Engineering Department.
iv. Site inspection of the Owner's Premises, including the interior of the building

5.4 Manhole and Clean-out Construction

5.4.1 Concrete

Manholes shall be pre-cast concrete with O-ring or bituminous-based gasketed joints or poured-in place concrete type. Other types are allowable subject to the approval of the reviewing agency. Concrete used in the construction of the manhole shall be so proportioned and mixed as to meet a 3,000-psi compression test after 28 days.

5.4.2 Precast Manhole Sections

Precast concrete sections for manholes shall be minimum of 48 inches in interior diameter. Cones shall be eccentric with a wall thickness of a minimum of five (5) inches and reinforcement similar to that of manhole sections. The tops and bottoms of the cones shall be parallel. Any manhole having a depth greater than nine (9) feet shall have an extended base.

5.4.3 Special Fittings

The wyes, tees, and bends used in the construction of the drop manholes assembly and the clean-outs shall be either PVC or ductile iron. The pipe and fittings shall conform to the specifications as set forth in these Specifications. Drop manhole assemblies shall be encased in concrete or as required by the Public Works Superintendent.

5.4.4 Drop Manholes

A drop pipe should be provided for a sewer, with an invert entering a manhole at an elevation of 24 inches (61 cm) or more above the manhole invert. Where the difference in elevation between the incoming sewer and the manhole invert is less than 24 inches (61 cm), the invert shall be filleted to prevent solids deposition. Drop manholes should be constructed with an outside drop connection where appropriate. Outside drop connections shall be encased in concrete. Inside drop connections, where necessary, shall be secured to the interior wall of the manhole and provide access for cleaning. Inside drop manholes will only be allowed if the manhole diameter is 60 inches or greater.

5.4.5 Manhole Frames and Covers

All manhole frames and grates shall be either LeBaron Foundry model LK110 or LC type with a minimum clear opening of 24 inches, or an approved equal meeting the following minimum standards:

> All manhole frames and covers shall be of a size and shape detailed on the plans or approved equal. The castings shall be tough, close-grained, gray iron, free from blowholes, shrinkage and cold shuts. They shall conform to ASTM A 48 - Class 30 and shall be sound, smooth, clean and free from blisters and all defects. All castings shall be planed and ground where necessary to ensure perfectly flat and true surfaces. Covers shall be true and shall seat within the ring at all points. Manhole covers shall have a maximum of two (2) holes.

All Manholes shall have the word "SEWER", cast upon the cover and be American made.

5.4.6 Watertightness

Solid manhole covers shall be used and watertight manhole covers are to be used in areas subject to flooding. Manhole lift holes and grade adjustment rings shall be sealed with a non-shrinking mortar or other material approved by the reviewing agency. Inlet and outlet pipes shall be joined to the manhole with a gasketted flexible watertight connection or other watertight connection arrangement that allows differential settlement of the pipe and the manhole to take place.

5.4.7 Coating

The exterior surfaces of all manholes shall be given two (2) heavy coats of bituminous waterproofing material.

5.4.8 Manhole Steps

Steps for precast manholes shall be of steel reinforced polypropylene plastic, or approved equal. All steps shall be in conformance with ASTM C-478 and shall be aligned vertically. All steps within a manhole shall be of the same design, type and size. Mixing of unmatched steps within the same manhole is not permitted.

Steps shall be placed where there are no incoming or outgoing lines. Loose steps shall be cause for rejection of that manhole cone or section.

5.4.9 Manhole Stubs

Provide plugged manhole stubs for sewer extensions as shown on the plan or as required by the Engineering Department. The intent of the plugged stub is to provide a means by which future sewer lines can be connected to the manhole with a minimum of inconvenience. Construct invert channels to the manhole wall at the plugged stub in accordance with the invert elevation directed by the design Engineer.

5.4.10 Manhole Bench (Table)

A bench shall be provided on each side of any manhole channel wherever practical. The bench should be sloped no less than ½ inch (13 mm) per foot (305 mm) (4 percent) or greater than 1.0 inch per foot. No lateral sewer, service connection, or drop manhole pipe shall discharge onto the surface of the bench.

5.4.11 Manhole Inverts (Flow Channel)

The manhole inverts shall provide a smooth flow-through characteristic. No sharp edges or rough sections that will tend to obstruct the flow of sewerage will be permitted. All cement mortar used in the construction of the inverts shall be toweled smooth. The flow channel through the manholes shall be made to conform in shape and slope to that of the sewers entering and leaving the manholes. The top of the flow channel shall be constructed so that under the peak design conditions the flow will remain in the channel. The channel walls should be formed or shaped to the full height of the crown of the outlet sewer in such a manner to not obstruct maintenance, inspection or flow in the sewers. When curved flow channels are required in manholes, including branch inlets, minimum slopes should be increased to maintain acceptable velocities. A minimum 0.1' drop shall be provided through the manhole.

Inverts shall be constructed of brick and mortar. The brick shall be sound, hard and uniformly burned brick, regular and uniform in shape and size, of compact texture, and satisfactory to the Town Engineer. Designation M32-73, AASHO M91-42, red sewer brick only Grade S.A. Brick shall comply with the ASTM Standard Specification of sewer and manhole brick (made from clay or shale). The mortar shall be composed of Portland cement, hydrated lime and sand in which the volume of sand shall not exceed three (3) times the sum of the volume of cement and lime. The proportions of cement and lime shall be 1:1/4.

5.4.12 Buoyancy

Buoyancy of manholes shall be considered and floatation shall be prevented with appropriate construction where high groundwater conditions are anticipated.

5.5 Grinder Pumps and Sewage Ejectors

5.5.1 In cases where the existing sewer will not drain by gravity to the sewerage system, a pump system shall be employed. A pump system shall consist of a precast pump chamber, with a minimum storage capacity of 24 hours of the design flow. A 0.5 horsepower grinder style pump and a piped connection rated for pressure in excess of 150 PSI shall be utilized.

5.5.2 All low-pressure sewers are to be designed by a Massachusetts Registered Professional Engineer in accordance with TR-16.

5.5.3 The low-pressure sewer line shall be bedded in clean sand.

5.5.4 For systems connecting to a low-pressure sewer main, a curb box type shut off valve shall be provided at the property line.

5.5.5 Force main connections to the Mansfield Sewer System shall be allowed only as approved by the Town Engineer. At no time shall a Sewer Force Main tie directly into any gravity Mansfield Sewer Main. The force main shall connect to a sewer manhole on private property, and then the connection shall flow by gravity to the existing sewer main.

5.5.6 Pumps must be external to the building and situated in a 1,000-gallon pre-cast tank (minimum). Any backup into the building will be the sole responsibility of the Property Owner. The Town of Mansfield is not liable or responsible in any way for damages due to sewage backups served by grinder/ejector pumps, or the force main line itself. The operations, maintenance, repair and replacement of the pump and appurtenances shall be the sole responsibility of the Homeowner. This also includes the force main and/or gravity Sewer from the building to its connection into the Mansfield Sewer main or service lateral.

5.5.7 Wiring and electrical connections should be NEMA rated for the environment in which they are to be placed.

5.5.8 Level sensing devices should be used to detect wastewater levels for initiating pump operation and to detect high water levels. Level sensing devices are recommended over mercury float-type switches. These devices should not be located near flows entering the well.

5.5.9 Inspection of pump system shall be performed by the Engineering Department. Contractor shall provide water and shall run the pump through several cycles. Connection shall be inspected for workmanship and materials, and either be passed or failed at the time of inspection. The Town of Mansfield Building Department shall inspect all wiring.

5.6 Pressure Sewer Systems

Wastewater can be conveyed to the pressure sewer using various approaches, such as septic tank effluent pumping (STEP) or grinder pumps. A pressure main is common to

both systems. In addition, components such as isolation valves, air release values, and cleanouts make up a pressure sewer system.

5.6.1 Layout

The branched configuration of a pressure sewer is similar to that of a conventional gravity sewer system. Looped piping is not permitted. Pipe routing should include long radius sweeps no less than those recommended by the pipe manufacturer. Pressure pipes should be deep enough to prevent freezing.

5.6.2 Pipe Size

Size the diameter of the pressure sewer so that it provides a cleansing velocity based on the average daily flow of the system.

5.6.3 Pipe Material

Use the equivalent of Class 200, SDR 21 PVC piping or greater in pressure sewers to provide the necessary working pressure rating for the system, and to provide durability during installation.

5.6.4 Valves

Curb box shut off valves shall be provided at the property line on each service line. In addition, isolation valves should be considered where system expansion is projected, and at key locations on very long runs.

5.6.5 Air Release Valves

To release air trapped in the pressure lines, site air release valves at high points in the system. Air release valves should be located in a manhole or structure to allow access for repair and maintenance. Consider automatic air release valves to reduce the system's operating and maintenance costs.

Also, place air release manholes at least 14 pipe diameters downstream of the locations where hydraulic jumps occur. Hydraulic "jumps" form in sections where the pipeline intersects with the hydraulic grade line. Air bubbles formed by hydraulic jump conditions are carried downstream with the wastewater flow.

5.6.6 Cleanout Connections

Provide a means for cleaning out the pressure mains at sags and other locations where debris can accumulate and clog the lines. Provide proper valving to conduct required maintenance.

5.7 Wastewater Pumping Stations and Force Mains

All wastewater pumping stations and force mains shall be designed by a professional engineer in accordance with TR-16.

5.8 Trenchless Technology

All sewers installed using trenchless methods must be designed by a Massachusetts Professional Engineer, and must conform to slope, grade, and alignment as specified in these regulations. Any alternate materials used in trenchless technologies must meet the minimum requirements as specified in these regulations for conventional materials. The Town Engineer will review any proposed trenchless technology on a case-by-case basis.

5.8.1 Existing Utilities

In preparation of pipe jacking or directional drilling activities, an as-built showing any and all existing utilities in the area of work must be verified by test pits or by vacuum hole methods. These field locations must be submitted in lieu of any proposed sewer work.

5.8.2 Pipe Jacking

A specialized tunneling method for installing underground pipelines with minimal surface disruption. Primarily used for new sewer construction, it is also used for sewer replacement and relining.

5.8.3 Horizontal Directional Drilling

Horizontal Directional Drilling (HDD) is a trenchless method for installing any number of utilities. It is a multi-stage process consisting of site preparation, and restoration, equipment setup, and drilling a pilot bore along a predetermined path and then pulling the product back through the drilled space. Alignment of the bore is accomplished by a hydraulic jack as the drill bit head is pushed into the ground. The orientation and tracking of the head is determined by an above ground radio detection device, which picks up radio signals generated from a transmitter on the drill itself.

Contractor is responsible for selecting or designing drilling fluids for the site-specific soil and groundwater conditions. Confine free flowing (escaping) slurry or drilling fluids at the ground surface during pull-back or drilling. This can be accomplished by creating sump areas or vacuum operations to prevent damage or hazardous conditions in surrounding areas.

5.8.4 Boring Path Report

Furnish a Bore Path Report to the Engineering Department within seven (7) days of the completion of each bore path. Include the following in the report:

1. Location of project including the Permit Number and when assigned.
2. Name of person collecting the data, including title, position and company name.
3. Investigation site location.
4. Identification of the detection method used.
5. Elevations and offset dimensions as required.

5.8.5 As-Built Trenchless Sewers

Any sewers installed by trenchless methods must meet the required minimum slopes, alignment, and grade as proposed in the original design plans. Any sewers that do not meet the minimum requirements shall be rejected.

6.0 Sewer Testing

6.1 Low Pressure Air Testing

6.1.1 All new sewer mains, and services where required, must successfully pass an air leakage test as described in this section.

6.1.2 At the time of the test, the Registered Drainlayer shall determine the groundwater elevation from observation wells, excavations or other means, all subject to review by the Town Engineer.

6.1.3 For making the low-pressure air test, the testing service shall use equipment specifically designed and manufactured for the purpose of testing sewer pipelines using low-pressure air. The equipment shall be provided with an air regulatory valve or air safety so set that the internal air pressure in the pipeline cannot exceed 8 psig.

6.1.4 The leakage test using low-pressure air shall be made on each manhole-to-manhole section of pipeline and any stubs and stoppers after placement of the backfill.

6.1.5 The mainline pipe shall be tested only after laterals have been extended to the property line but before any connections are made to the building sewer(s). If any connections are made to the building sewers it shall be the responsibility of the Drainlayer to temporarily disconnect or plug the connections.

6.1.6 Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be tested. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.

6.1.7 All air used shall pass through a single control panel.

6.1.8 Low-pressure air shall be introduced into the sealed line until the internal air pressure reaches 4 psig.

6.1.9 At least two (2) minutes shall be allowed for the air pressure to stabilize in the section under test. After the stabilization period, the low-pressure air supply hose shall be quickly disconnected from the control panel. The time required in minutes for the pressure in the section under test to decrease from 4 to 3 psig shall not be less than that shown in the following table.

Pipe Diameter in Inches	Minutes
6	5:40
8	7:36
10	9:26
12	11:20
15	14:10
18	17:00
21	19:50
24	22:40
27	25:30

6.1.10 Should the sections under test fail to meet the requirements, the Registered Drainlayer shall do all work of locating and repairing leaks and retesting as the Town Engineer may require.

6.2 Vacuum Test (Negative Air Pressure)

6.2.1 All manholes, wet wells, valve pits, grease traps, or any other structure or appurtenance other than sewer mains, laterals, and clean-outs, which are connected to the sanitary sewer system must be tested by means of either vacuum or exfiltration testing. Exfiltration testing will only be allowed when in the opinion of the Town Engineer it is not feasible to conduct vacuum testing due to size and configuration of openings or extreme shallow depth of a structure.

6.2.2 All lift holes and pipes entering the manhole are to be plugged. A vacuum will be drawn and the vacuum drop over a specified period of time is used to determine the acceptability of the manhole (ASTM-C1244-93).

6.2.3 All manholes shall be made as tight as possible to prevent infiltration and inflow and to ensure no leaks are present.

6.2.4 The Town Engineer or his designee prior to testing shall inspect all manholes.

6.2.5 Manholes shall be tested using approved testing techniques and equipment described by the American Society for Testing Materials after all connections to the manhole have been made. Backfill is not required for manhole testing.

6.2.6 All manholes shall pass a Negative Air Pressure (Vacuum) Test as detailed below prior to approval by the Town Engineer or his designee.

6.2.7 All lift holes are to be permanently plugged and joints in sections and around entering pipes sealed.

6.2.8 All pipes entering the manhole are to be temporarily plugged taking care to securely brace the pipes and plugs to prevent them from being drawn into the manhole.

6.2.9 All manholes are to be individually tested, and the values obtained are applicable only to the manhole being tested at the time and conditions of testing.

6.2.10 The test head shall be placed on top of the manhole or inside the opening in accordance with the manufacturer's recommendation.

6.2.11 It is the responsibility of the drainlayer to ensure the manhole has a flat surface and testing head is able to make a tight seal.

6.2.12 If manhole cannot be tested due to leakage around testing head, necessary repairs shall be made and the manhole retested. In cases of retesting, the Town Engineer or his designee reserves the right to reschedule or delay the test to conform with his/her schedule.

6.2.13 A vacuum of ten (10) inches of mercury shall be drawn on the manhole, the valve on the vacuum line of the test head closed, and the vacuum pump shut off. The time shall be measured for the vacuum to drop from ten (10) inches of mercury to nine (9) inches.

6.2.14 The manhole shall pass if the time for the vacuum to drop from ten (10) inches to nine (9) inches of mercury meets or exceeds the value indicated in the following table.

Depth of manhole	Time (min)
Less than 10 feet	1
10 to 15 feet	1.5
Greater than 15 feet	2

6.2.15 Depth of a manhole is to be measured from the lowest inside elevation of the manhole to the surface on which the vacuum head is to be placed.

6.2.16 If the manhole fails the initial test, necessary repairs shall be made and the manhole retested. In cases of retesting, the Town Engineer or his designee reserves the right to reschedule or delay the test to conform with his/her schedule.

6.2.17 The Town Engineer or his designee may deem a manhole failed after successful completion of a vacuum test if water is observed in the manhole after completing the test or the level of standing water in a manhole rises after completing the test.

6.3 Exfiltration Testing

6.3.1 Maximum allowable exfiltration for new sanitary sewer sections or manholes is 200 gallons per inch of diameter per mile of pipe per day.

6.3.2 Do not test by this method if temperature of components is below 33 degrees Fahrenheit.

6.3.3 Plug all inlets and outlets.

6.3.4 The manhole or structure shall be completely filled with water to the top, or at a level as specified by the Town Engineer, but not less than 2 feet above ground water level.

6.3.5 The water level shall be clearly marked or measured from a reference point.

6.3.6 Allow water to stand in manhole for one hour, then refill to original water level and begin test.

6.3.7 After one hour, measure the drop in water level. For 48-inch diameter manhole, use measured water level drop to determine equivalent gallons lost per 24 hours from table in Section 6.3.8 (i.e. 2" drop = 376 gal; 2 ¼" drop = 423 gal.). For other manhole sizes, calculate the 24-hour equivalent loss using the formula stated therein.

6.3.8 Exfiltration Rate: The following table may be used to determine exfiltration in gallons per 24 hours by measuring loss that occurs in 1 hour. The table is applicable only for 48-inch diameter manholes.

Loss in Gallons Per 24 Hours for
Drop in Water Level Per Hour in 48" Dia. Manhole

DROP	0"	1"	2"	3"	4"	5"	6"	7"	8"	9"
		188	376	564	752	940	1128	1316	1504	1692
1/4"	47	235	423	611	799	987	1175	1363	1551	1739
1/2"	94	282	470	658	846	1034	1222	1410	1598	1786
3/4"	141	329	517	705	893	1081	1269	1457	1645	1833

For manholes larger than 48" diameter use the following formula.

$G = 0.0816(H)(D^2)$

Where:

G = gallons drop in 24 hours in inches.

D = diameter of manhole in inches.

H = drop in manhole in inches.

6.3.9 The maximum allowable exfiltration (leakage) per 24 hours is 200 Gallons per inch per mile per day, or 0.003 gallons per foot of diameter per foot of depth.

6.3.10 Allowable exfiltration per day (Gallons) = 0.003 x Diameter (FT) x Depth (FT)

6.3.11 Test failure is indicated by water loss greater than maximum allowable exfiltration.

6.4 Force Main Testing

6.4.1 As a minimum, all sewer force mains shall be tested in accordance with the Hydrostatic Testing Requirements of AWWA C600.

6.4.2 All force mains shall be given a hydrostatic test of at least 1.5 times the shutoff head of the connected pumps or 150 psi, whichever is greater. Loss of water pressure during test shall not exceed 5 psi in a 2-hour period.

6.4.3 Where practicable, pipelines shall be tested between line valves or plugs in lengths of not more than 1500 feet.

6.4.4 The pipe shall be slowly filled with water and the specified test pressure shall be applied by means of a pump connected to the pipe. Before applying the specified test pressure, all air shall be expelled from the pipe. If permanent air vents are not located at all high points, the drainlayer shall install corporation cocks at such points so the air can be expelled as the line is filled with water. After all the air has been expelled, the corporation cocks shall be closed and the test pressure applied.

6.4.5 Duration of test shall not be less than two hours.

6.4.6 The test pressure shall not exceed the rated pressure of the valves in the pipeline.

6.4.7 Where leaks are visible at exposed joints and/or evident on the surface where joints are covered, the drainlayer shall repair the joints, retighten the bolts, relay the pipe, or replace the pipe until the leak is eliminated--regardless of total leakage as shown by the hydrostatic test.

6.4.8 All pipe, fittings and other materials found to be defective under test shall be removed and replaced by the Drainlayer.

6.4.9 Lines that fail to meet test requirements shall be repaired and retested as necessary until test requirements are complied with.

6.4.10 No pipe installation will be accepted if the leakage is greater than that determined by the formula:

$$L = \frac{SD\,(P)^{1/2}}{133{,}200}$$

in which L is the allowable leakage, in gallons per hour; S is the length of pipeline tested, in feet; D is the nominal diameter of the pipe, in inches; and P is the average test pressure during the leakage test, in pounds per square inch gauge.

6.5 Deflection Testing

6.5.1 Allowable Deflection Test

Pipe deflection measured not less than ninety days (90) after the backfill has been completed as specified shall not exceed five (5.0) percent. Deflection shall be computed by multiplying the amount of deflection (nominal diameter less minimum diameter when measured) by 100 and dividing by the nominal diameter of the pipe.

6.5.2 Deflection shall be measured with a rigid mandrel (Go/No-Go) device cylindrical in shape and constructed with a minimum of nine or ten evenly spaced arms or prongs. Drawings of the mandrel with complete dimensions shall be submitted to

the Engineer for each diameter of pipe to be tested. The mandrel shall be hand pulled by the drainlayer through all sewer lines.

6.5.3. Any section of sewer not passing the mandrel shall be uncovered at the Drainlayer's expense and the bedding and backfill replaced to prevent excessive deflection. Repaired pipe shall be retested.

7.0 Sewer Easements

7.1 Public Sewers

Public Sewers shall be constructed within existing public rights of way when applicable to the extent physically and legally possible. If a public sewer must be constructed within a private way or across private property, a permanent easement of no less than twenty (20) feet in width, for the construction, maintenance and operation of said public sewer shall be conveyed to the Town by appropriate persons possessing an interest in such private way or property, and accepted at a Town Meeting.

7.2 Private Sewers

7.2.1 If an individual service connection must cross someone else's property, the owner of the property being served by the sewer must obtain a construction and maintenance easement from the owner of the property that is being crossed. A permit will not be issued until the easement has been gained.

7.2.2 No more than one (1) building or residence will be permitted to connect into an existing private sewer easement unless the prior written approval of the Town Engineer has been obtained.

7.2.3 All costs for initial installation, subsequent repair, relocation, change or replacement of Building Sewers shall be at the Owner's expense.

7.3 Rules Regarding Sewer Easements

7.3.1 The Owner shall not place or permit to be placed any trees or other deep-rooted landscaping within the easement or directly over or within ten (10) feet horizontally of the Sewer line. Any trees or landscaping placed within the easements or rights-of-ways are at risk of being damaged or removed by the Town without the obligation of replacement.

7.3.2 Owner shall not place or permit to be placed any permanent or temporary structures, mounding, lighting, fencing, signs, retaining/landscaping/entrance walls, irrigation lines, etc. within the easement or directly over or ten (10) feet horizontally of Building Sewers or any other sewer facility. Any of the above listed items placed within easements or rights-of-ways are at risk of being damaged or removed by the Town without the obligation of replacement.

7.3.3 It shall also be the responsibility of the Owner to insure that all manhole and clean-out top of castings extend to finish grade and are not buried, sodded over, placed in concrete, or obstructed in any way.

7.3.4 The Town may periodically perform field inspections to verify compliance with the abovementioned requirements. If a violation exists then the Owner must immediately remedy the situation.

7.3.5 Bolted and gasketted sewer manhole covers will be required at all off road locations or anywhere deemed necessary by the Town Engineer.

8.0 Protection of Water Supply

8.1 Cross Connections

There shall be no physical connections between a public or private potable water supply system and a sewer or any sewer appurtenance that would permit the passage of wastewater or polluted water into the potable supply. No water pipe should pass through or come into contact with any part of a sewer manhole.

8.2 Relation to Water Main

8.2.1 Horizontal Separation

Whenever possible, sewers shall be installed at least ten (10) feet from any existing or proposed water main. If local conditions prevent a lateral separation of ten (10) feet, the Town Engineer may make an exception on a case-by-case basis when supported by data from the design engineer. Such an exception may allow the sewer to be installed closer than ten (10) feet to a water main, provided that it is laid out in a separate trench with top (crown) of the sewer at least 18 inches below the bottom (invert) of the water main.

8.2.2 Vertical Separation

Whenever sewers must cross water mains, the sewer shall be laid so that the top of the sewer is at least 18 inches below the bottom of the water main. The sewer joints should be equidistant to and located as far away as possible from the water main.

8.2.3 Concrete Encasement

When it is impossible to maintain the required separation the sewer shall be concrete encased ten (10) feet horizontally on either side of the crossing, or continuously where there is less than ten (10) feet of separation. As an alternate, the sewer and water lines may also be constructed of mechanical joint cement lined ductile iron pipe, which shall be tested to 150 psi to assure watertightness.

8.3 Well Areas-Zone II

Any Sewers within one thousand (1,000) feet of a Public Water Supply or fifty (50) feet of a domestic well shall be of watertight construction. At a minimum, schedule 40 PVC pipe with solvent weld joints is to be used.

For all parts of new sewer connections within a designated Zone II, only hard connections will be allowed. No fernco or flexible rubber connections shall be permissible, unless approved by the Mansfield Engineering Department.

8.4 Location of Sewers in Streams

8.4.1 Cover Depth

The top of all sewers entering or crossing streams should be sufficiently below the natural bottom of the streambed to protect the sewer line. In general, the following minimum cover requirements must be met:

- One (1) foot of cover where sewer is located in rock.
- Three (3) feet of cover in other material.
- One (1) foot of cover in paved stream channels.

8.4.2 Alignment

Sewers should only cross streams perpendicular to the flow without a change in grade. Sewer systems shall be designed to minimize the number of stream crossings.

9.0 Validity

All regulations or parts of regulations in conflict herewith are hereby repealed.

The invalidity of any section, clause, sentence or provision of these regulations shall not affect the validity of any other part of these Regulations, which can be given effect without such invalid part or parts.

These Sewer Regulations shall not contravene, nor render ineffective any of the lawfully established rules and regulations of the Massachusetts Department of Environmental Protection.

APPENDIX A

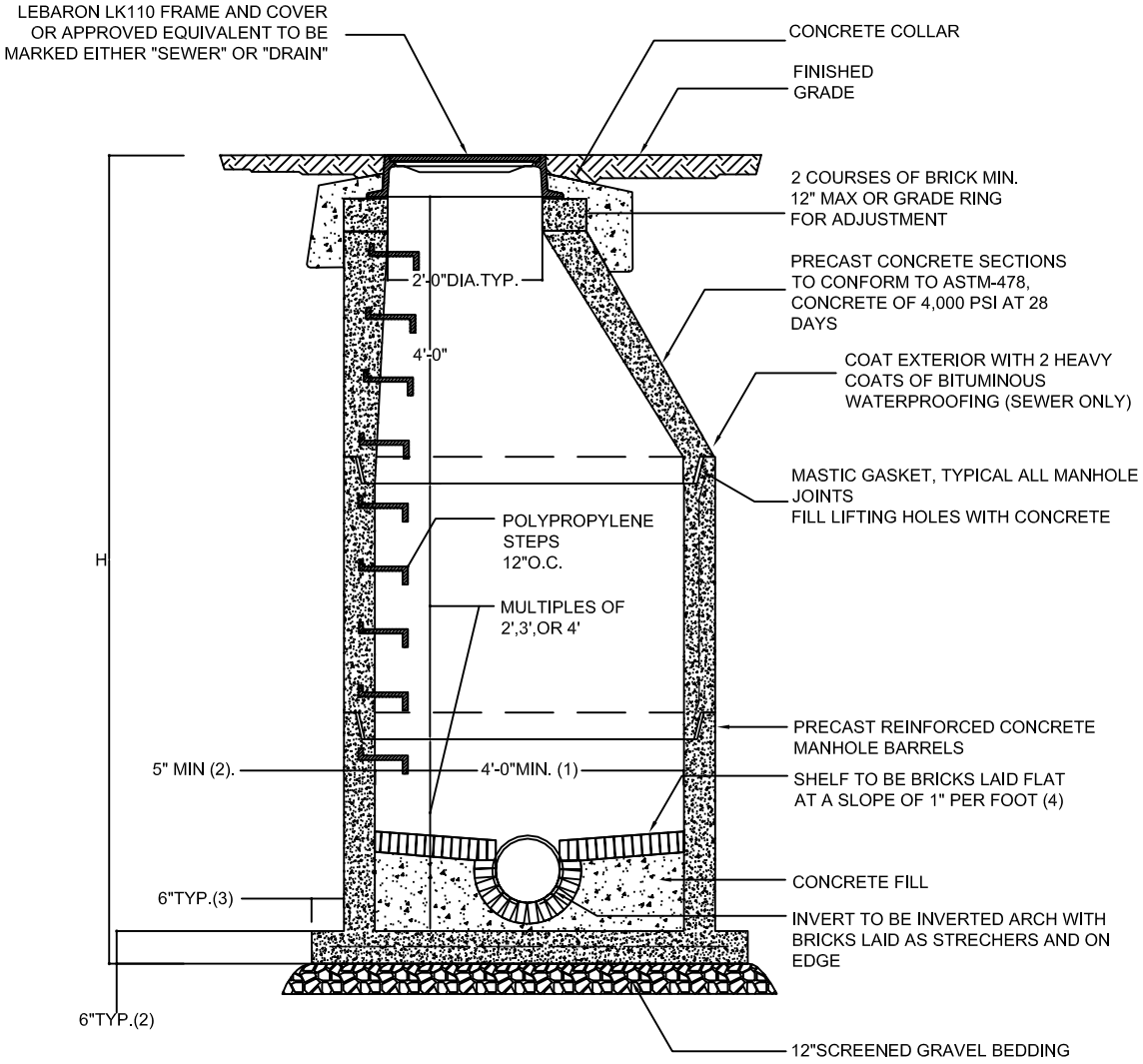
INDEX OF DETAILS:	
TYPICAL MANHOLE DETAIL	02730 001A
TYPICAL MANHOLE DETAIL	02730 001B
PRECAST CHIMNEY DETAIL	02730 002
SEWER PIPE CONNECTION DETAIL	02730 003
SEWER CHIMNEY DETAIL	02730 004
TYPICAL TRENCH DETAIL	02730 005
INSIDE DROP CONNECTION DETAIL	02730 006A
INSIDE DROP CONNECTION DETAIL	02730 006B
TYPICAL OUTSIDE DROP MANHOLE DETAIL	02730 007
FORCE MAIN CLEANOUT DETAIL	02730 008
BUILDING CONNECTION DETAIL	02730 009
SEWER SERVICE CONNECTION DETAIL	02730 011
CHIMNEY DETAIL	02730 012
PIPE TRENCH DAM DETAIL	02730 013
WYE SADDLE DETAIL	02730 014
PVC WYE BRANCH DETAIL	02730 015
CONCRETE ENCASEMENT DETAIL	02730 016
CONCRETE ARCH DETAIL	02730 017
TYPICAL IN-LINE CLEANOUT DETAIL	02730 018
TYPICAL IN-LINE CLEANOUT DETAIL	02730 019

NOTES:

1. ALL CAST IN PLACE CONCRETE TO HAVE A MINIMUM 28 DAY STRENGTH OF 3000 LBS PER SQ. INCH, USING 3/4"MAXIMUM SIZE AGGREGATE.
2. REINFORCING STEEL BARS ARE DEFORMED BARS OF BILLET STEEL ASTM A615 GRADE 60.
3. WELDED WIRE FABRIC CONFORMS TO ASTM A185.
4. LEBARON CAST IRON FRAME AND COVER , TYPE LK 110 OR APPROVED EQUIVALENT.
COVERS TO BE MARKED EITHER "SEWER" OR "DRAIN".
5. DESIGN LIVE LOAD - HS 20 - 44.
6. MINIMUM COVER FOR REINFORCING IN WALLS OR SLABS POURED AGAINST EARTH SHALL BE 3 INCHES. ALL OTHERS SHALL BE 2 INCHES UNLESS OTHERWISE NOTED.
7. USE 2'-0" LENGTHS OF PIPE STUBS AT ALL MANHOLES FOR VC OR AC PIPE. USE 4'-0" MAX. LENGTHS OF PIPE STUBS AT ALL MANHOLES FOR RC, DI OR PVC.
8. THESE MANHOLE DETAILS TO BE USED FOR BOTH SANITARY SEWER AND STORM DRAIN MANHOLES.
9. ALL MANHOLES SHALL BE CONSTRUCTED OF REINFORCED CONCRETE. SHOP DRAWINGS SUBMITTALS SHALL SHOW ALL REINFORCING DETAILS.

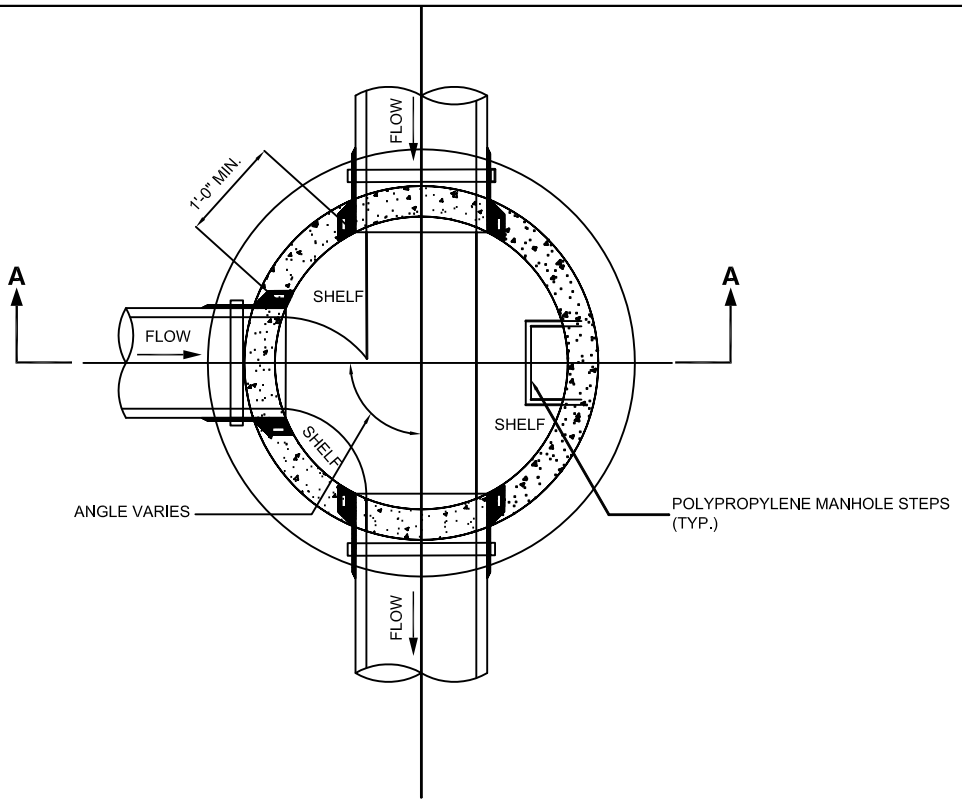
NOTES:

1. 5'-0"DIAMETER FOR ALL MANHOLE DEPTHS GREATER THAN 20 FEET, INSIDE DROPS, OR WHEN ORDERED BY THE ENGINEER.
2. 6" MIN. WALL THICKNESS AND 7 INCH MIN. BASE THICKNESS WITH 5'-0" DIAMETER MANHOLES.
3. 6 INCH LIP OPTIONAL UNLESS OTHERWISE NOTED.
4. CONCRETE INVERT AND SHELF MAY BE SUBSTITUTED IN STORM DRAIN MANHOLES.

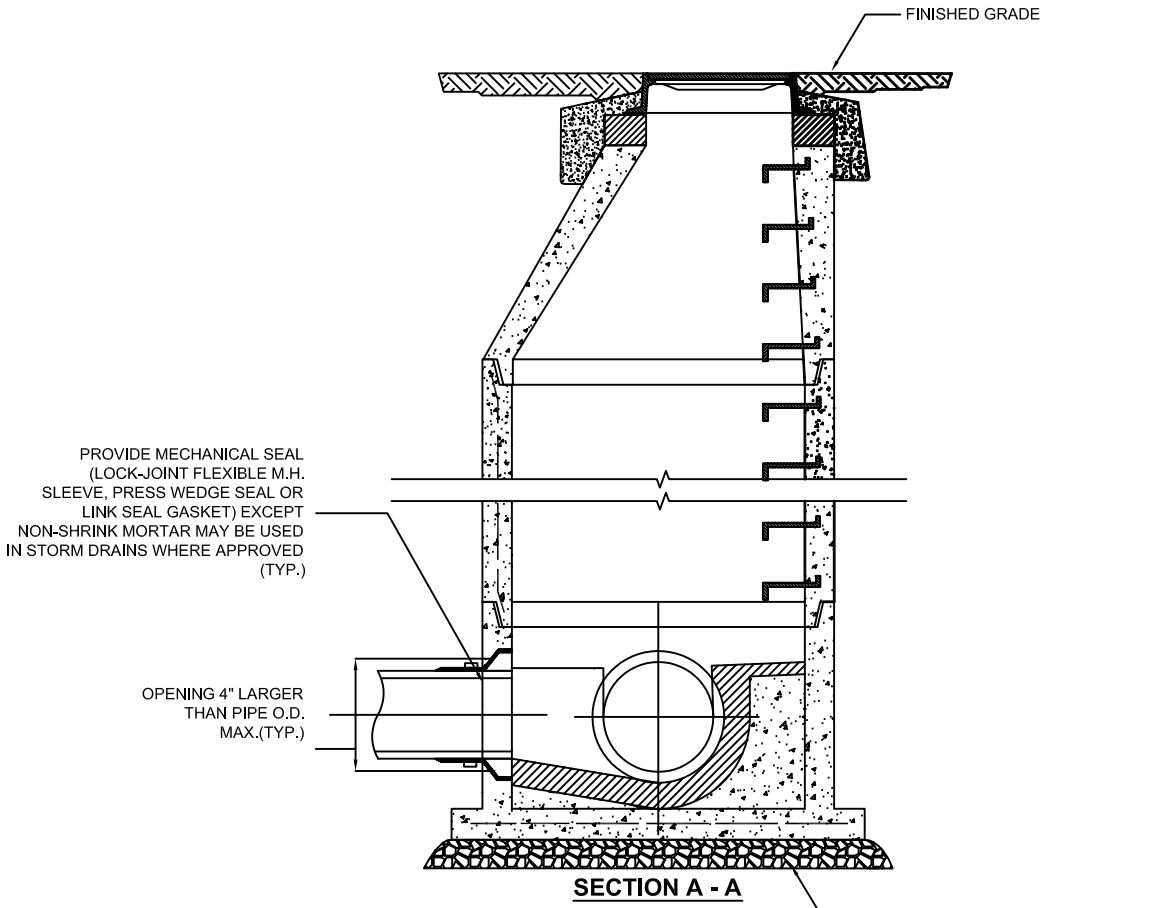


TYPICAL MANHOLE DETAIL

02730 001A



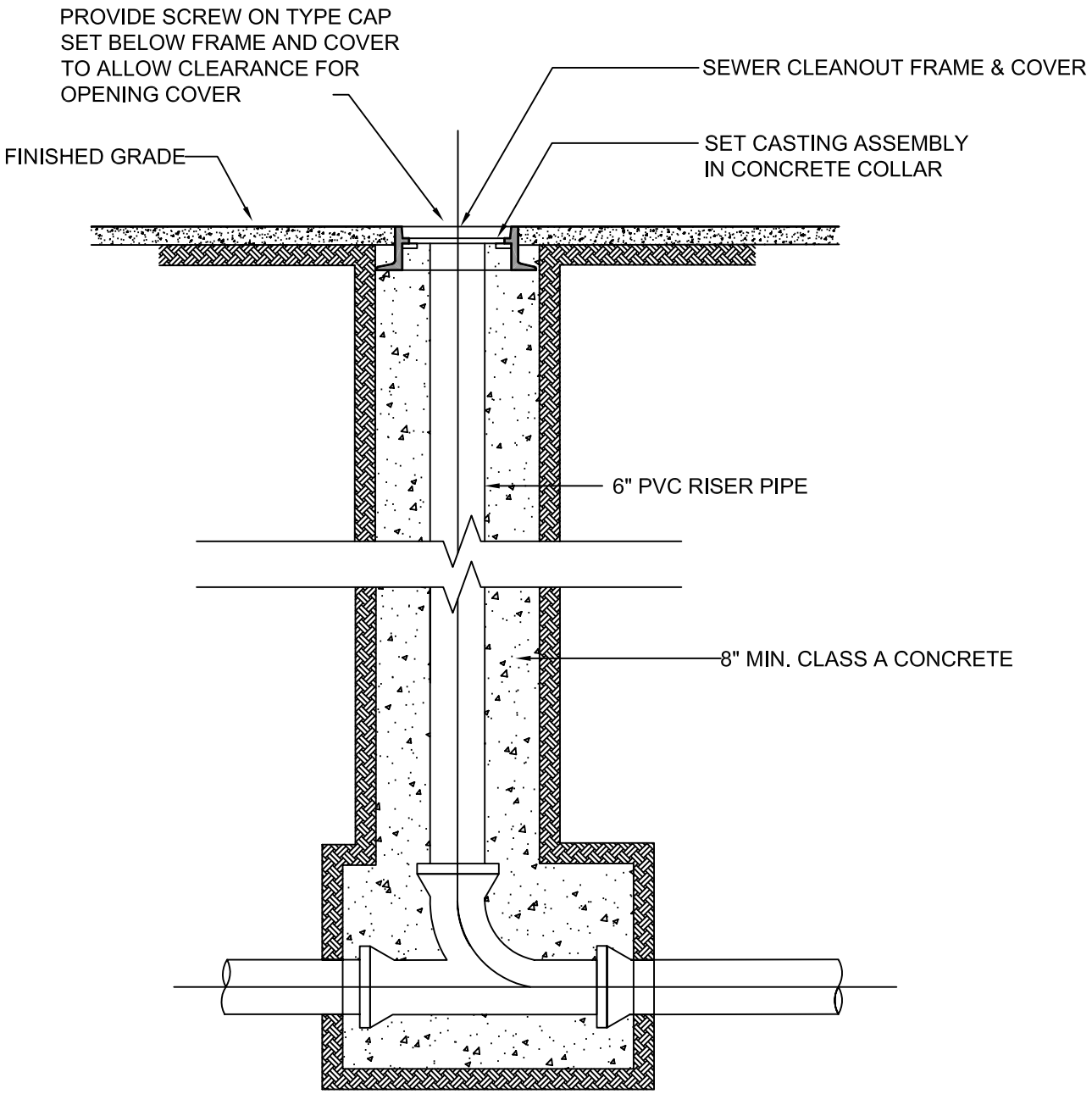
PLAN



SECTION A - A

TYPICAL MANHOLE DETAIL

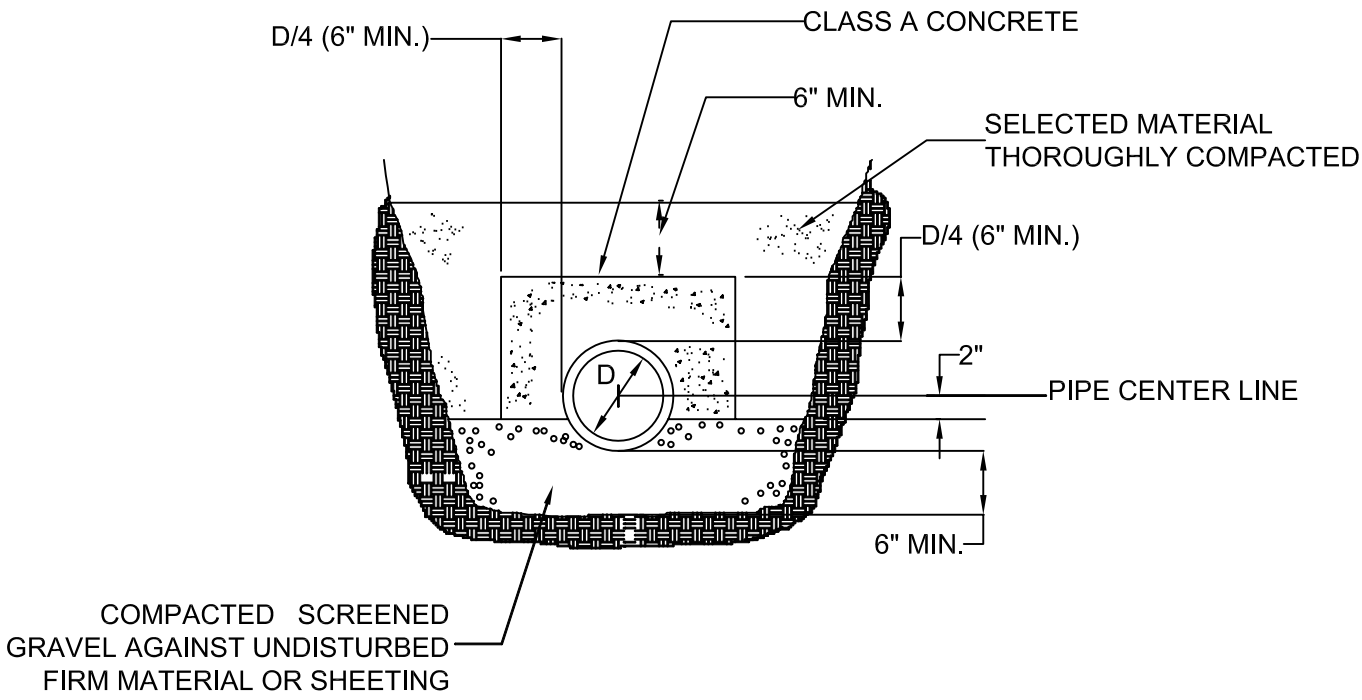
02730 001B



TYPICAL IN LINE CLEANOUT DETAIL
LOCATED IN PAVEMENT OR TRAVELED WAY

NOT TO SCALE

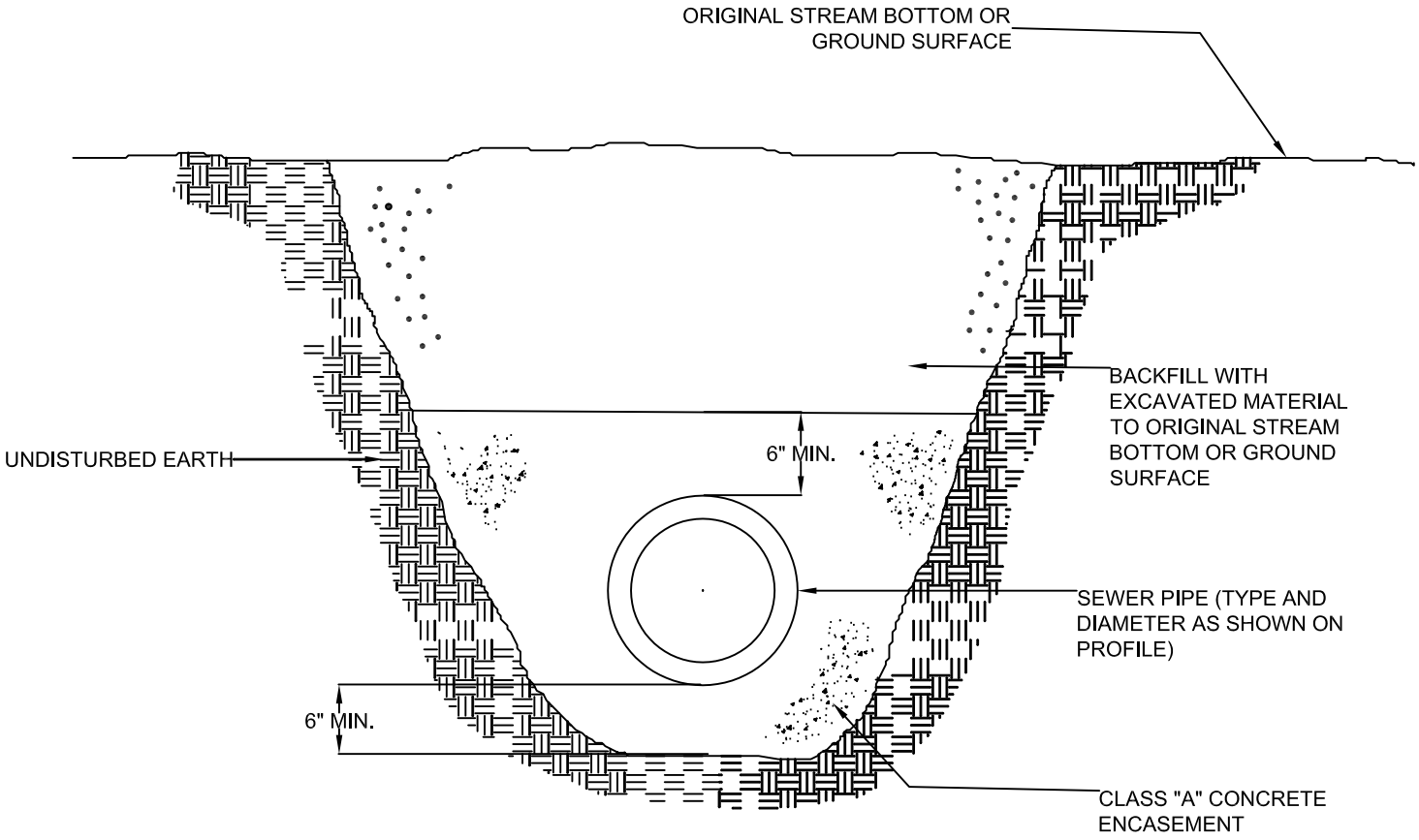
02730 018



CONCRETE ARCH DETAIL

NOT TO SCALE

02730 017



NOTES:

1. THE PIPE SHALL BE PROPERLY SECURED TO PREVENT DISPLACEMENT DURING THE PLACING OF CONCRETE ENCASEMENT

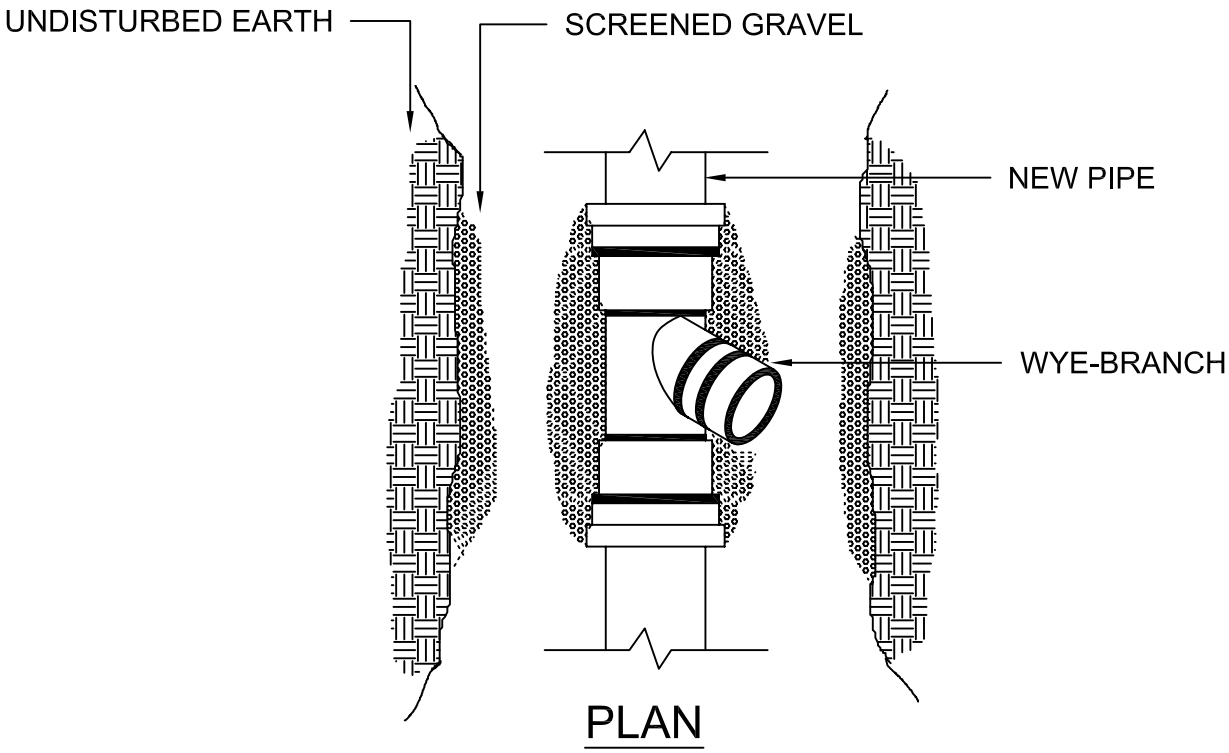
2. LIMIT OF CONCRETE ENCASEMENT SHALL BE SHOWN ON THE SEWER PROFILE OR AS DIRECTED

3. CONCRETE ENCASEMENT SHALL EXTEND A MINIMUM OF 10' ON EITHER SIDE OF A PIPE CROSSING

CONCRETE ENCASEMENT DETAIL

NOT TO SCALE

02730 016



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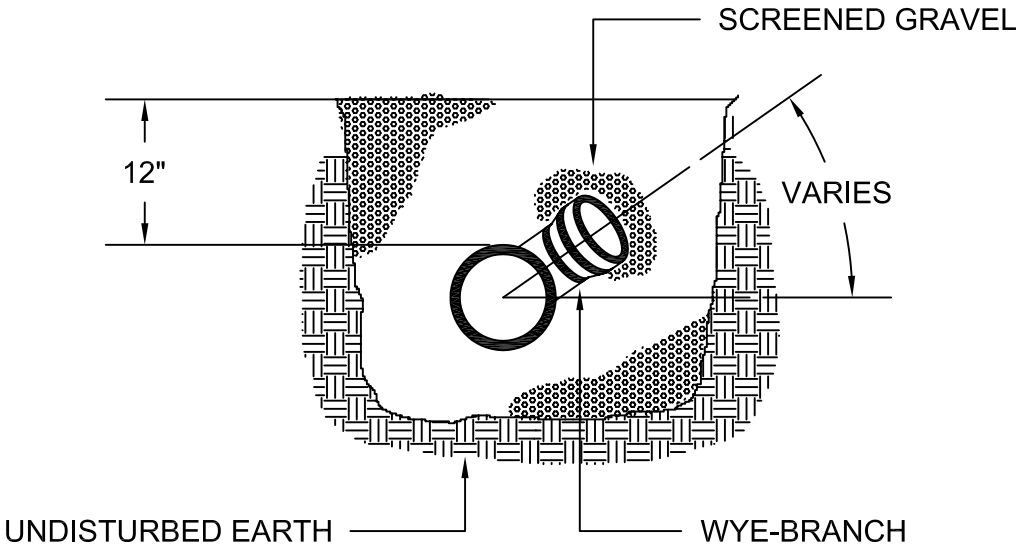
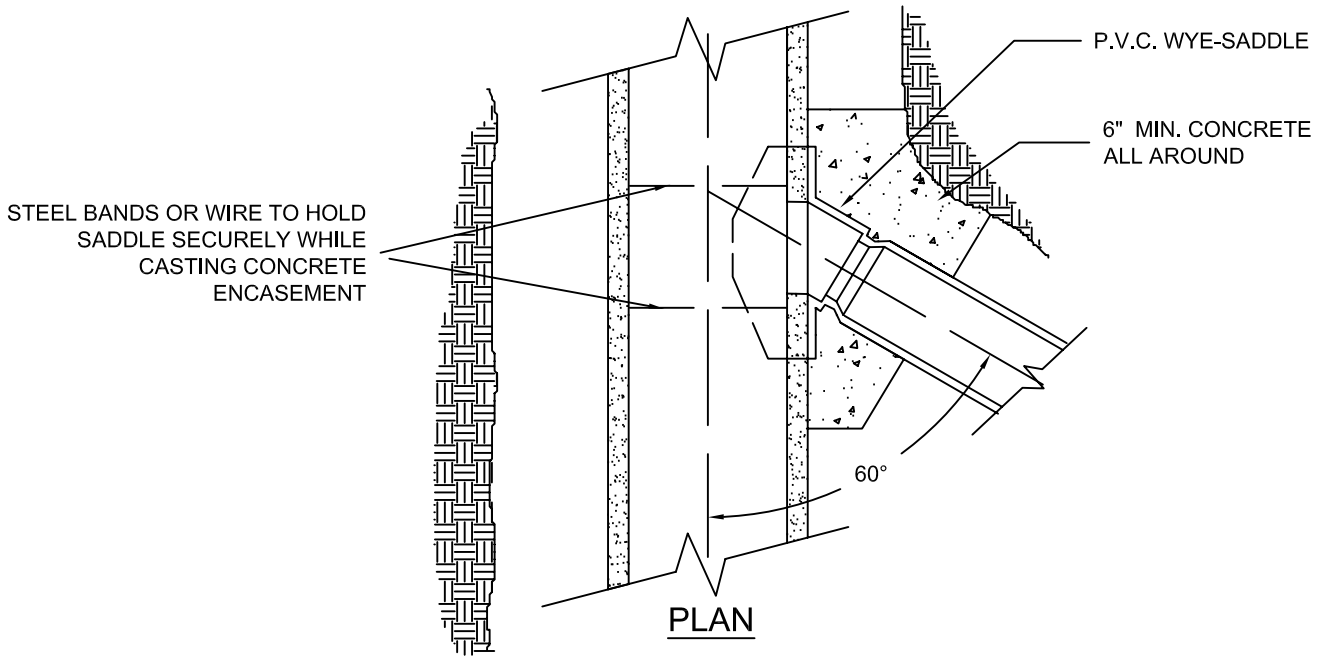


SECTION

P.V.C. WYE-BRANCH DETAIL

NOT TO SCALE

02730 015



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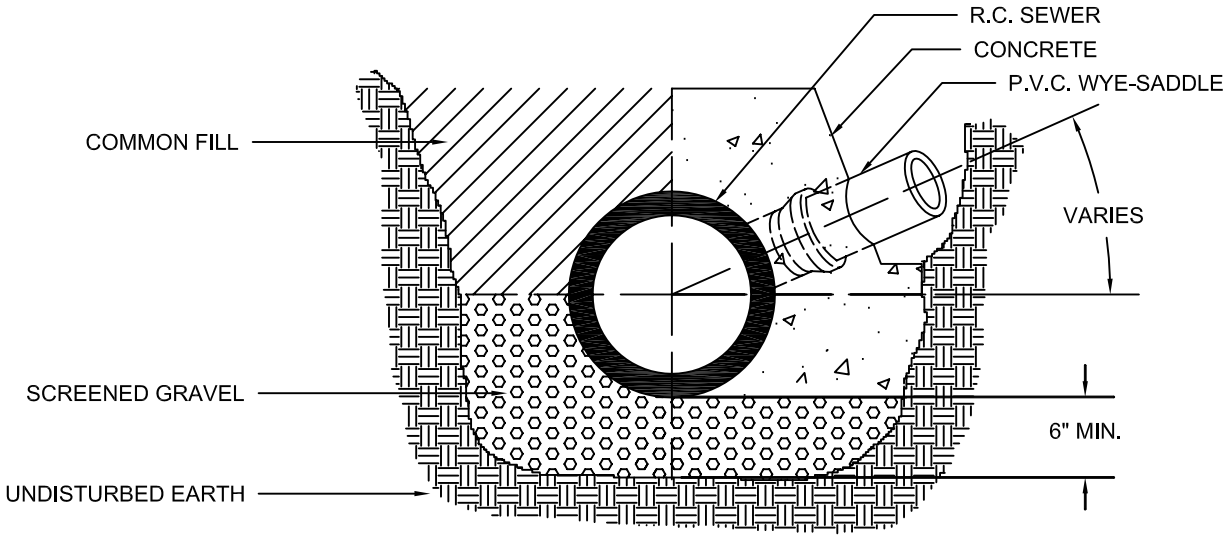
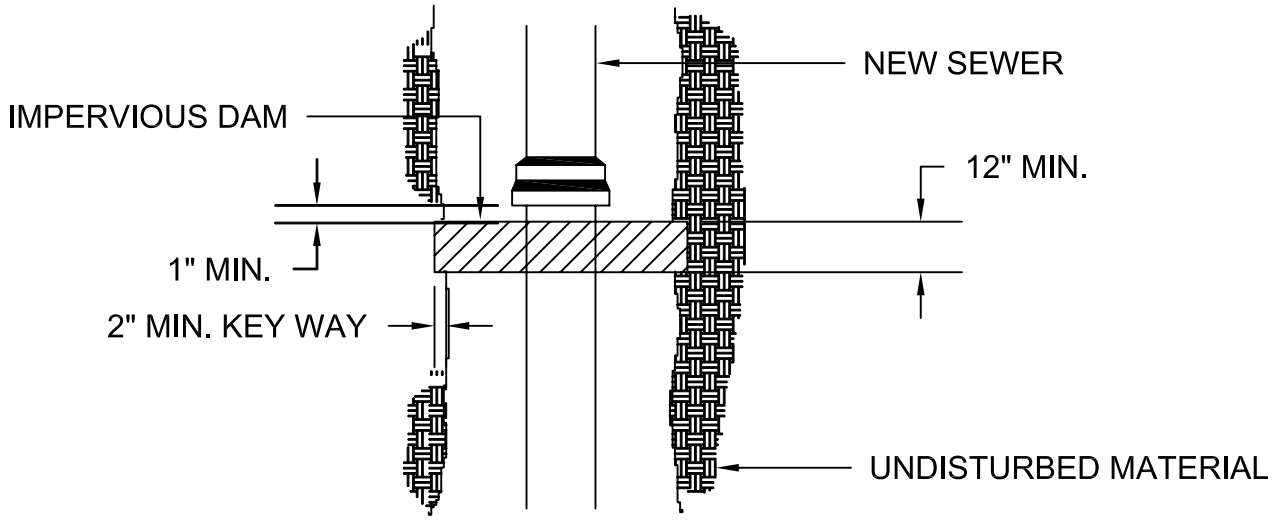


SECTION

WYE-SADDLE DETAIL
FOR R.C. PIPE SERVICE CONNECTION

NOT TO SCALE

02730 014



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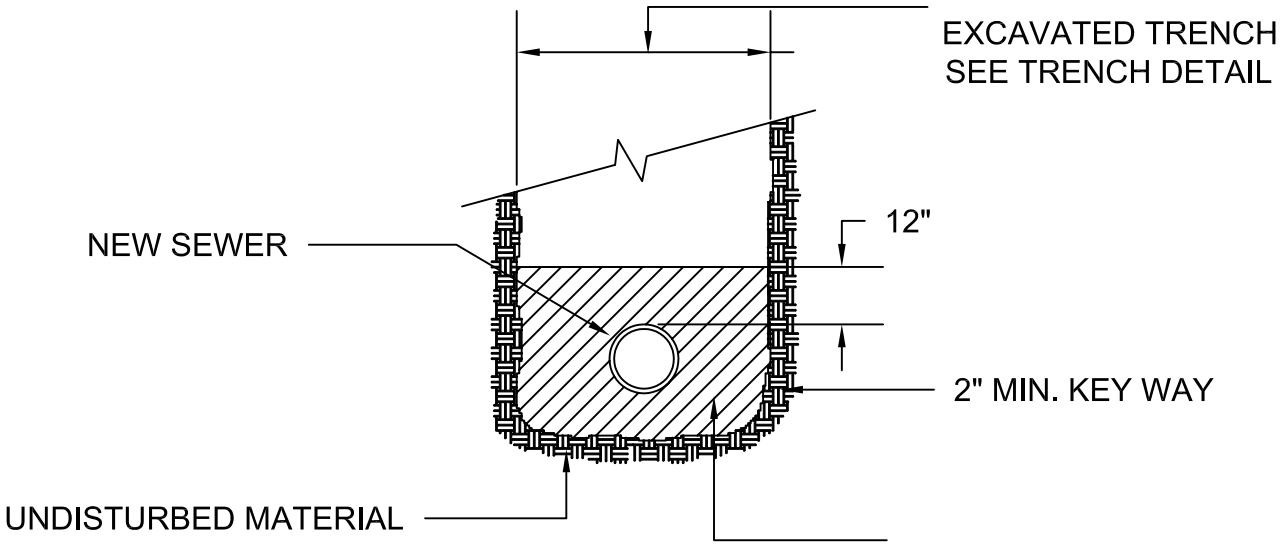


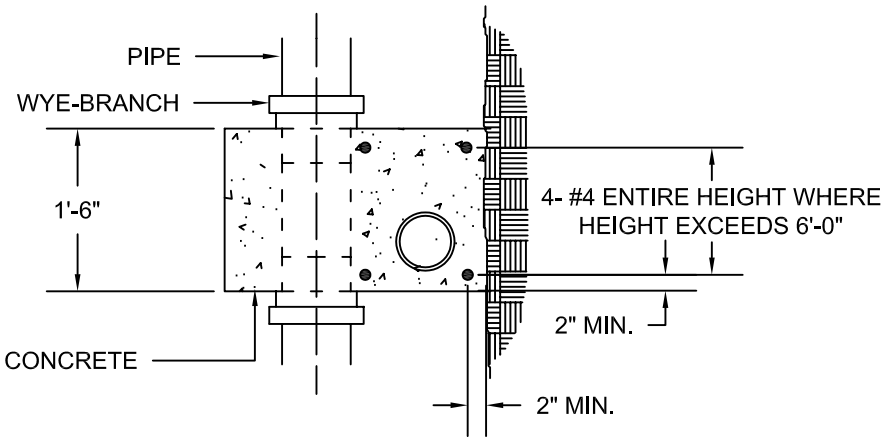
SECTION

IMPERVIOUS DAM AS SPECIFIED
CLAY DAM FOR P.V.C. PIPE
CONCRETE DAM FOR DI
AND RC PIPE

PIPE TRENCH DAM DETAIL

NOT TO SCALE

02730 013



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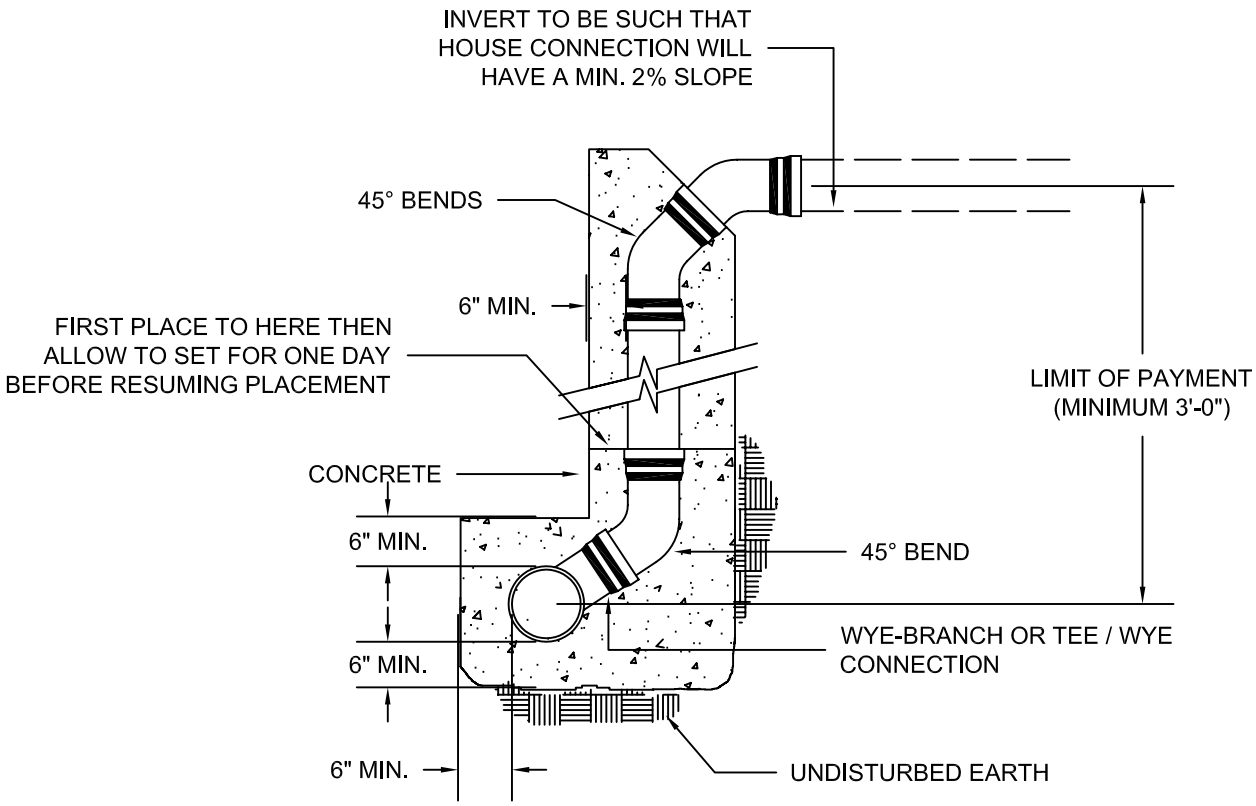


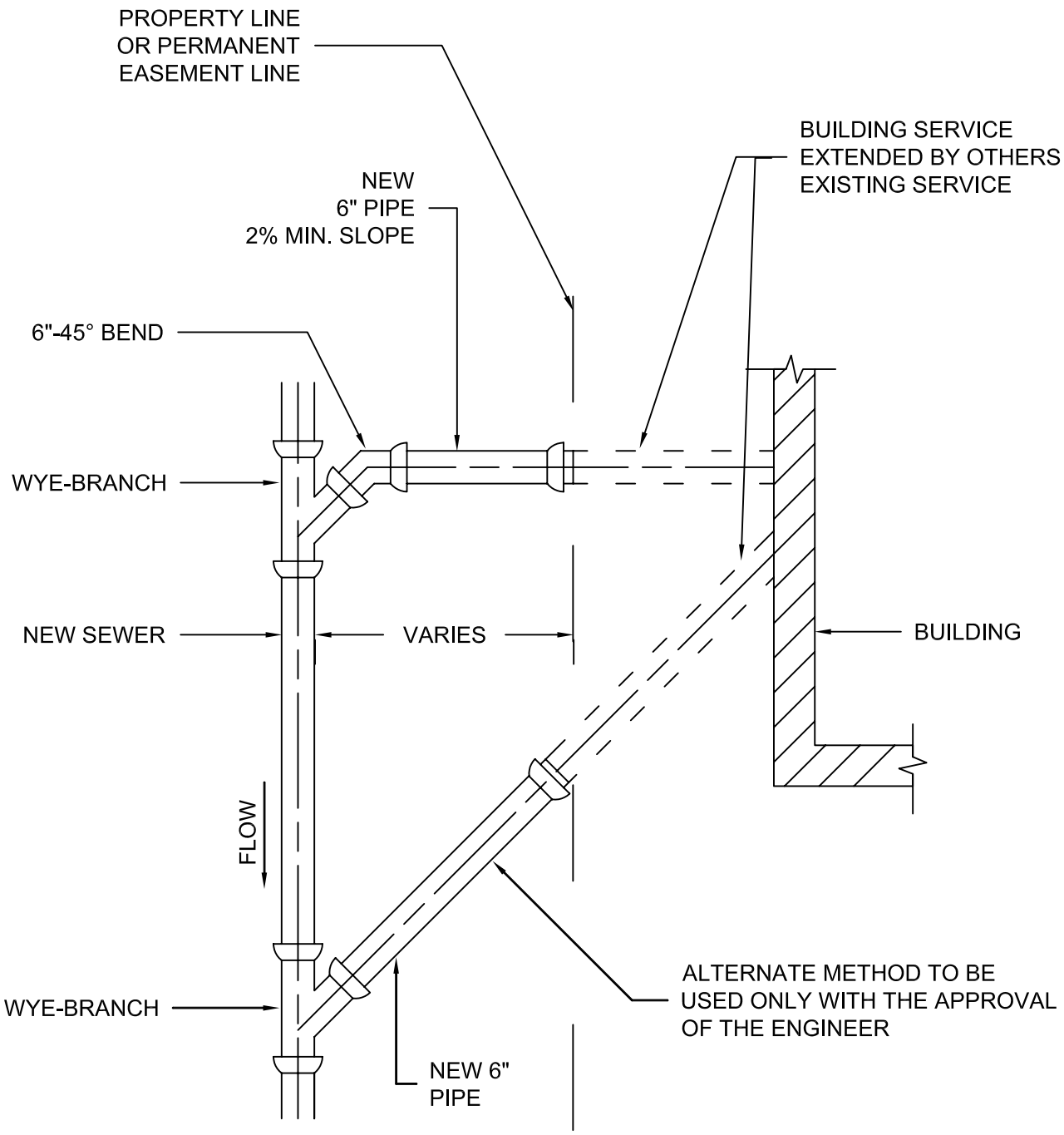
SECTION

NOTE: ALTERNATIVE DI CHIMNEY MAY BE SUBSTITUTED.

CHIMNEY DETAIL

NOT TO SCALE

02730 012

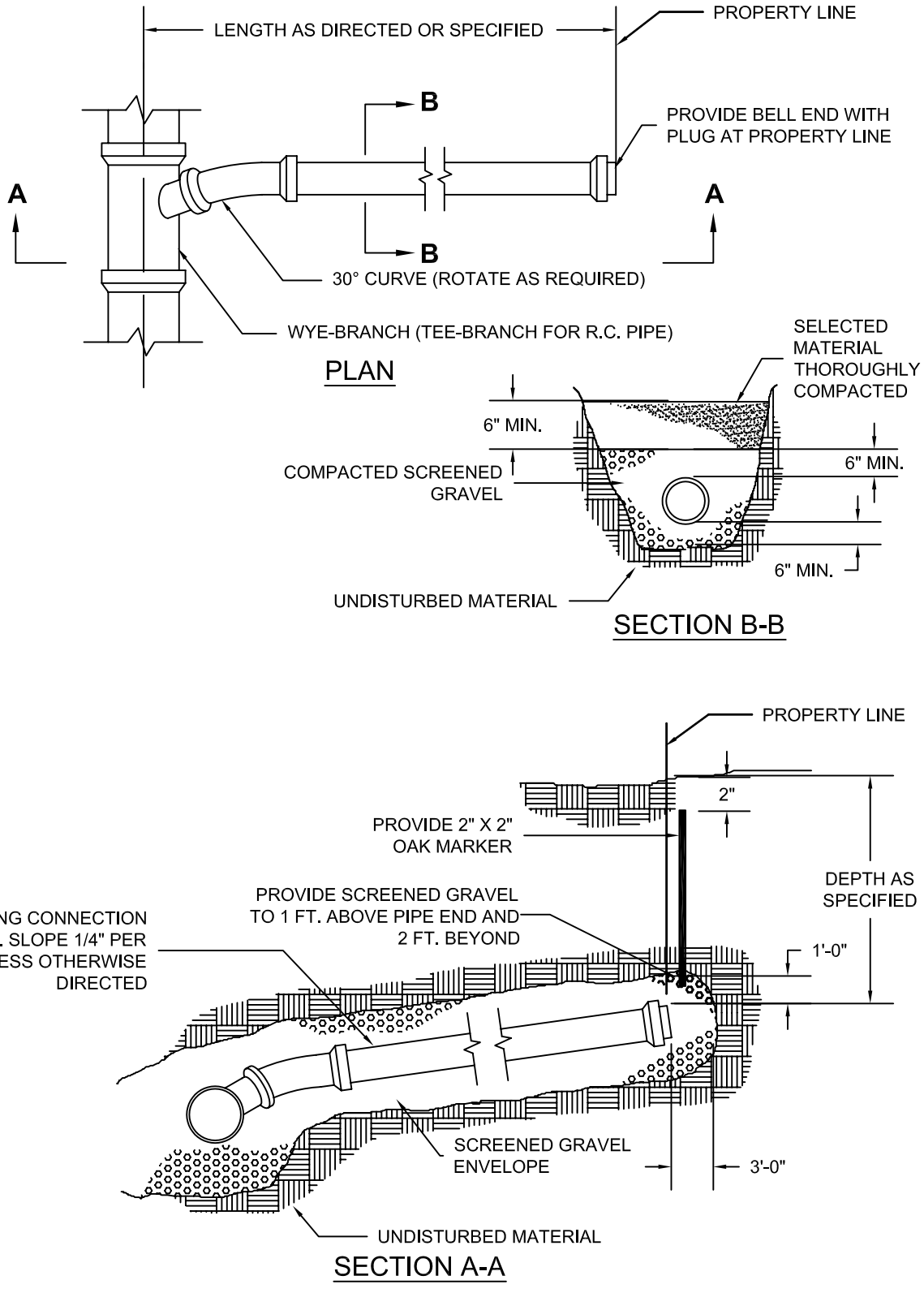


PLAN

SEWER SERVICE CONNECTION DETAIL

NOT TO SCALE

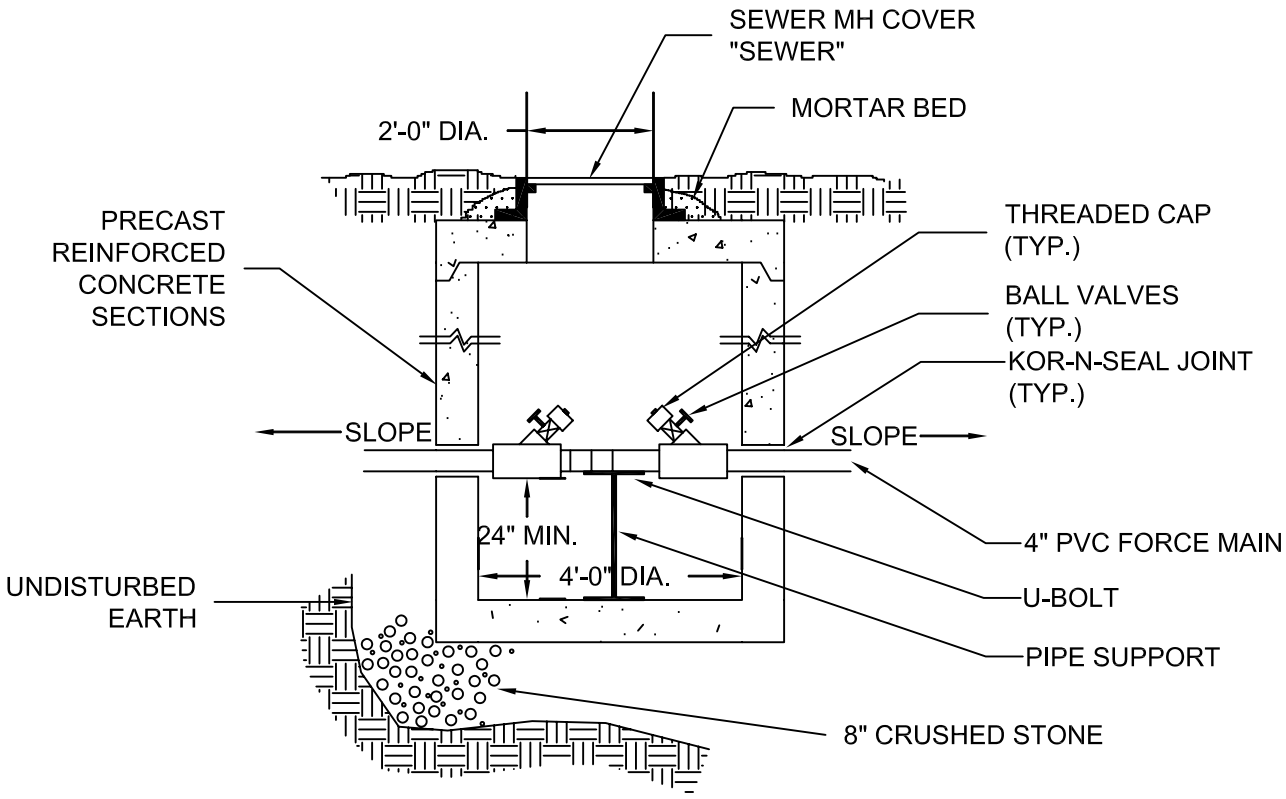
02730 011



BUILDING CONNECTION DETAIL

NOT TO SCALE

02730 009



SECTION

NOTES:

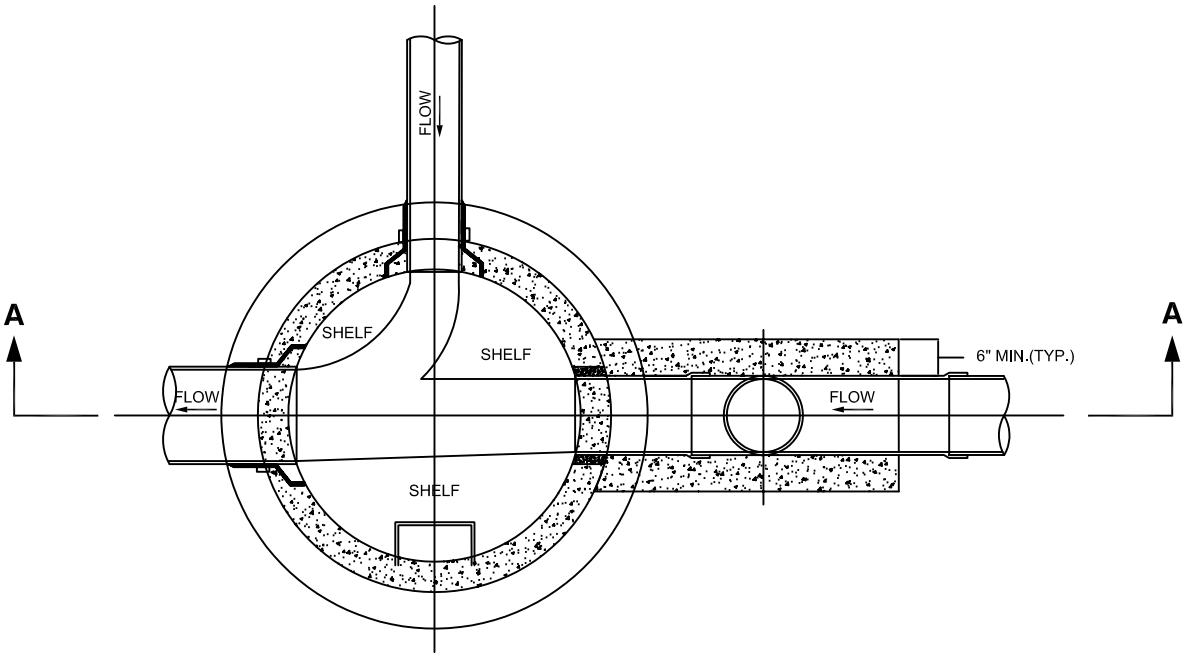
1.) PROVIDE MANHOLE STEPS
1' - 0" O.C.

2.) CONTRACTOR SHALL CONFIRM ELEVATION AND ALIGNMENT OF PROPOSED FORCE MAIN AND GROUND SURFACE AT EACH MANHOLE PRIOR TO ORDERING SECTION

FORCE MAIN CLEANOUT MANHOLE DETAIL

NOT TO SCALE

02730 008



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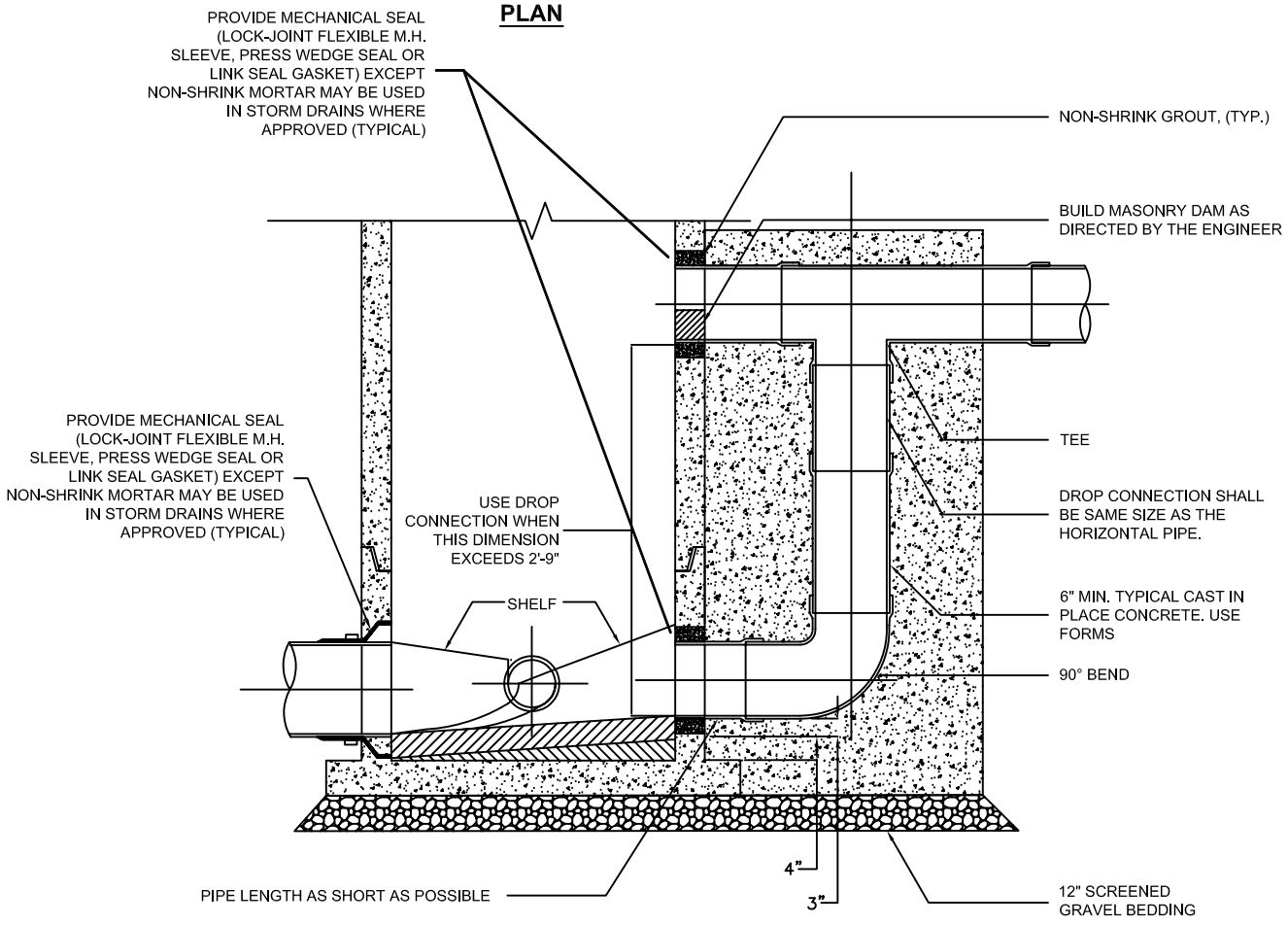
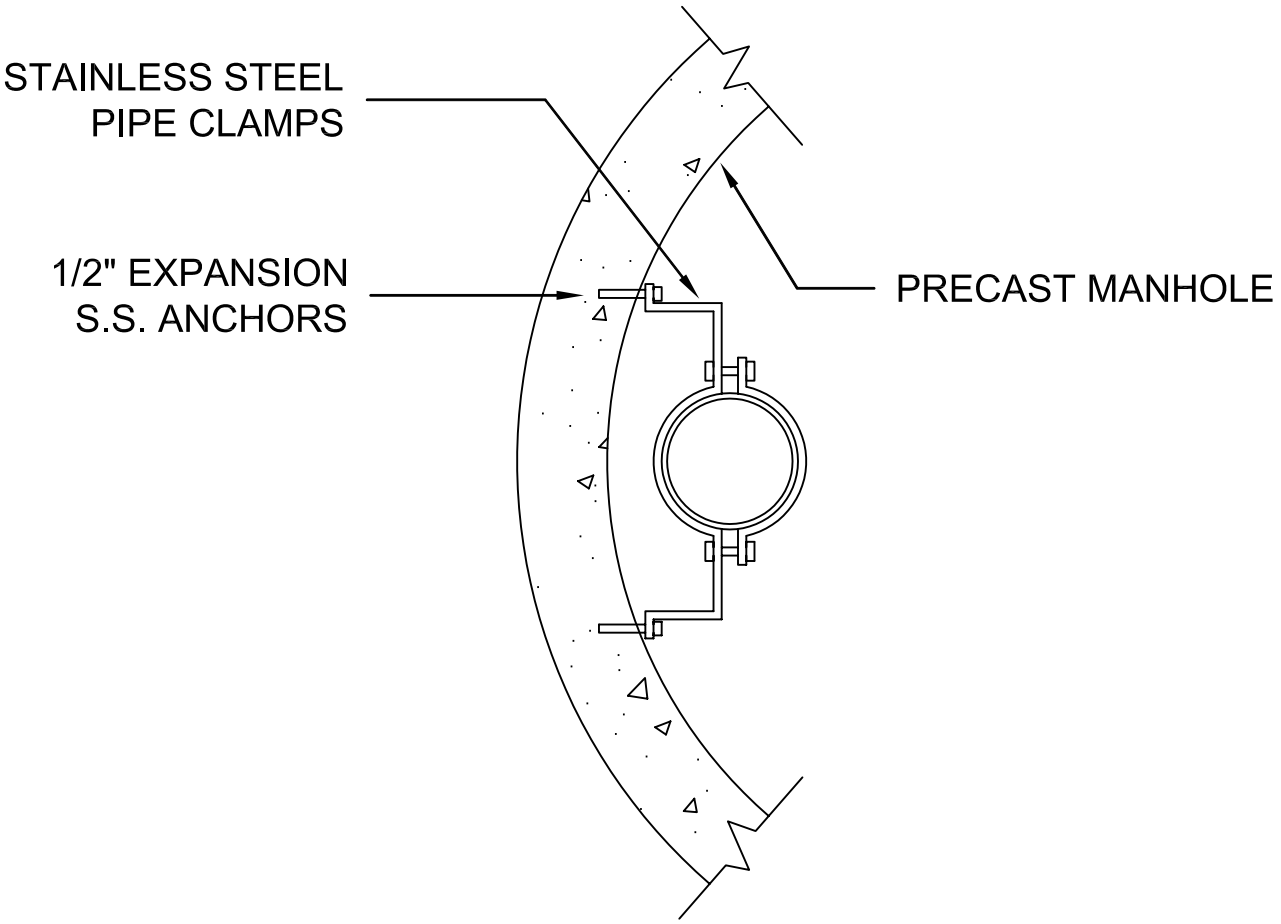


SECTION A - A

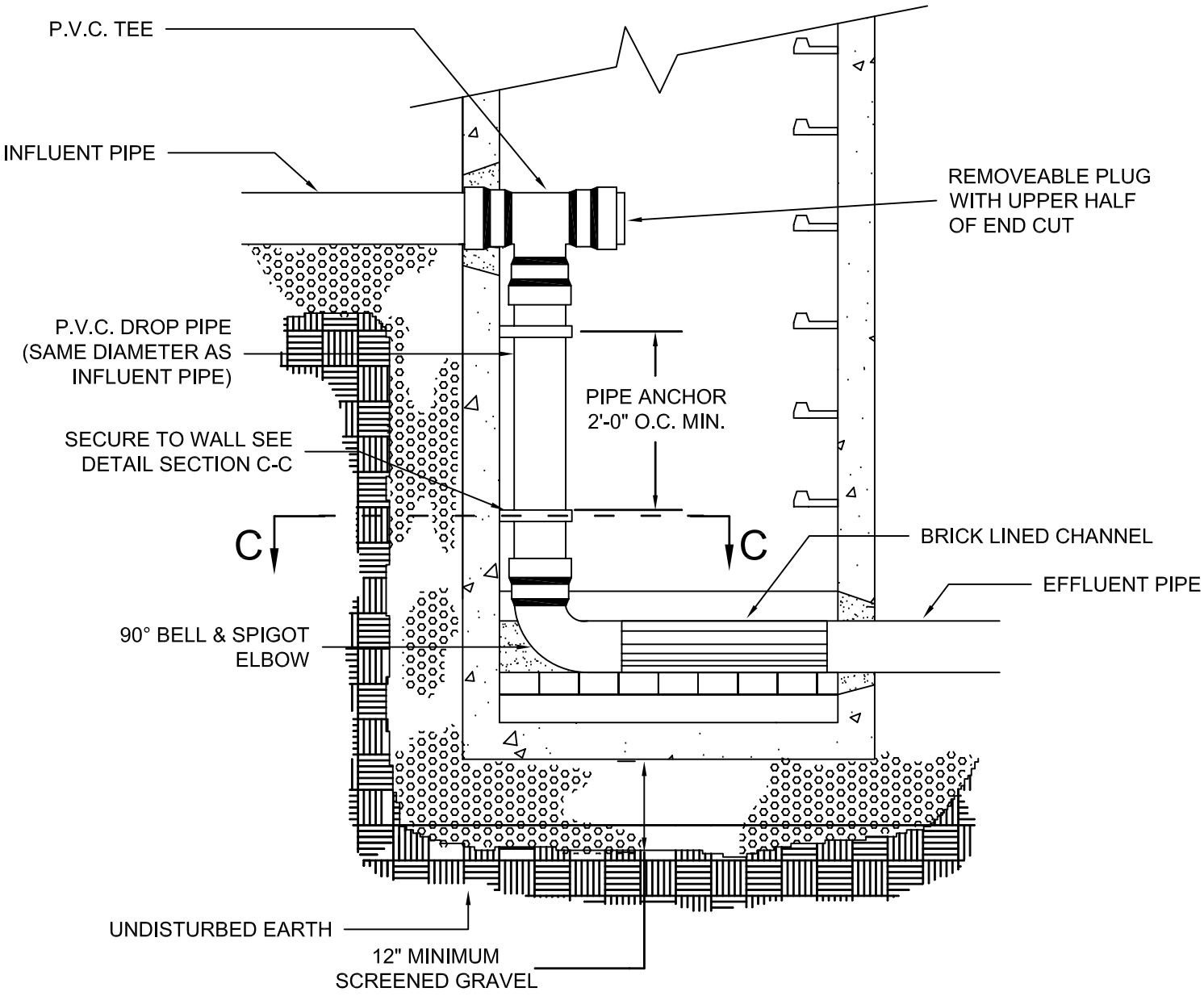
TYPICAL OUTSIDE DROP MANHOLE DETAIL

02730 007



SECTION C-C (P.V.C. DROP CONNECTION)

NOT TO SCALE
02730 006B



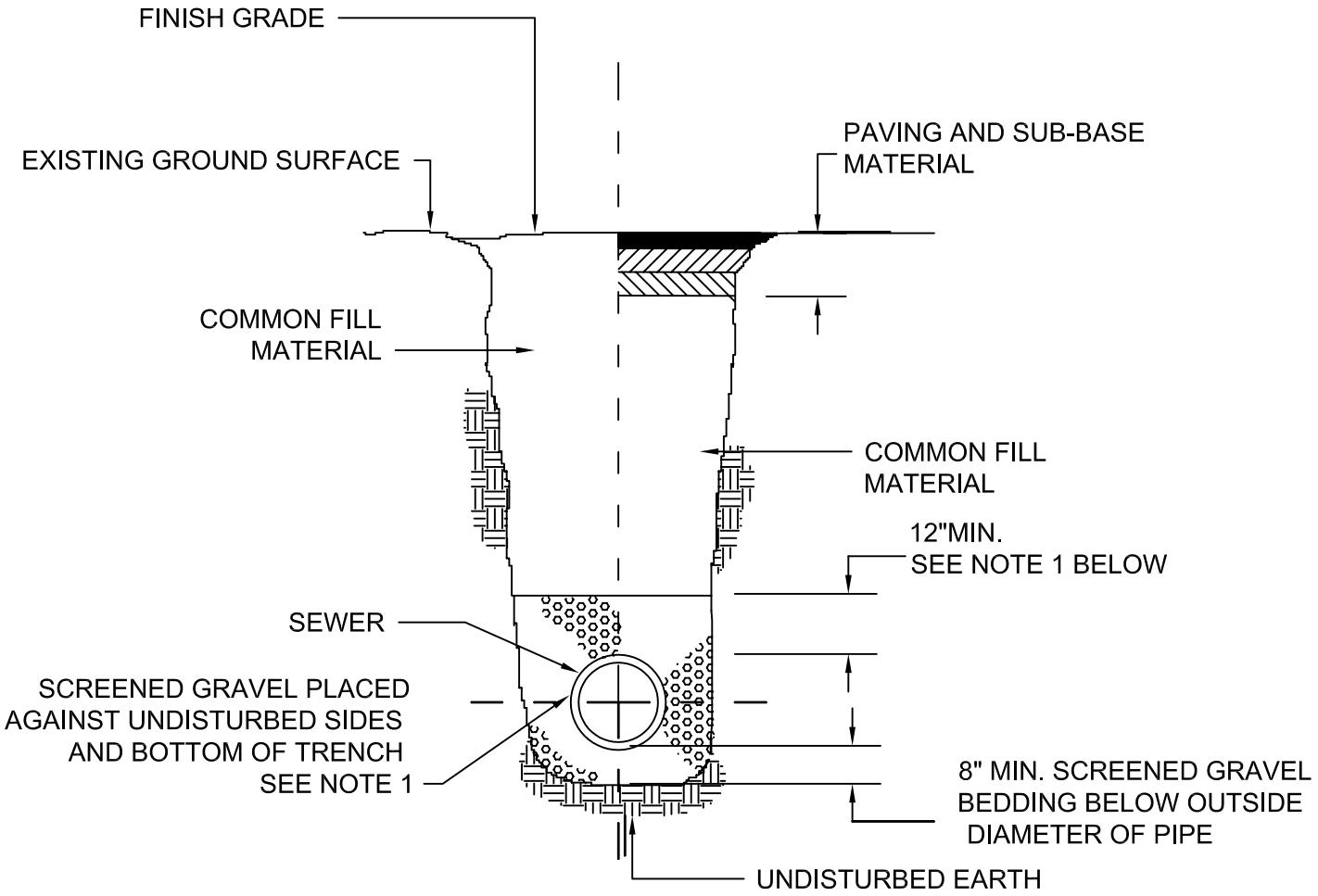
NOTE: MINIMUM 5'-0" DIAMETER MANHOLES SHALL
BE USED AT ALL DROP MANHOLE CONNECTIONS

INSIDE DROP CONNECTION

NOT TO SCALE
02730 006A

NOTES:

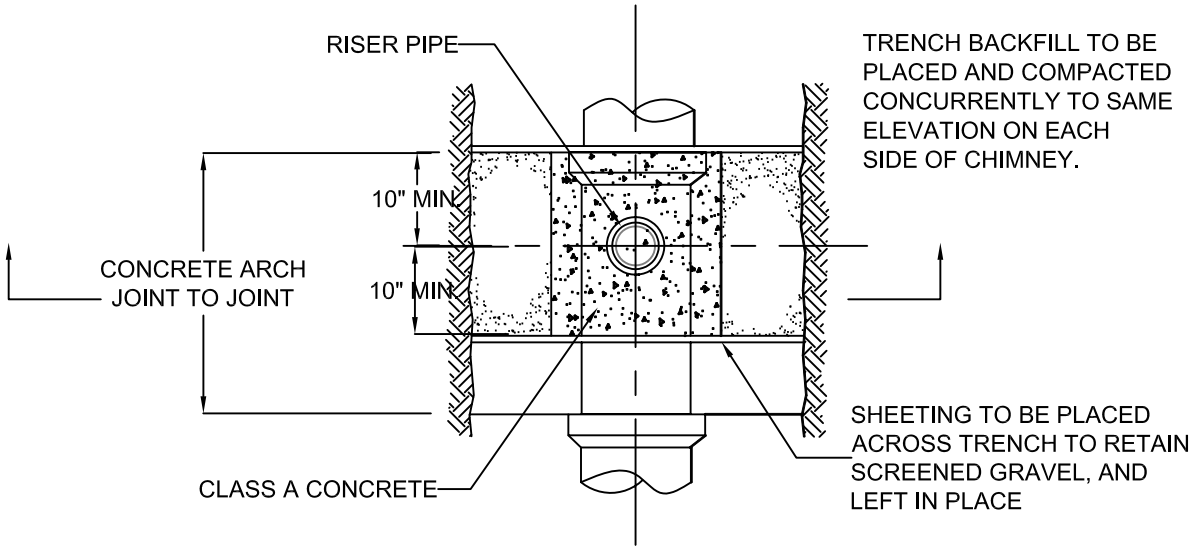
1 FOR PIPES OTHER THAN P.V.C., SELECTED COMMON FILL MAY BE USED FROM MID-DIAMETER OF PIPE TO 12" ABOVE TOP OF PIPE



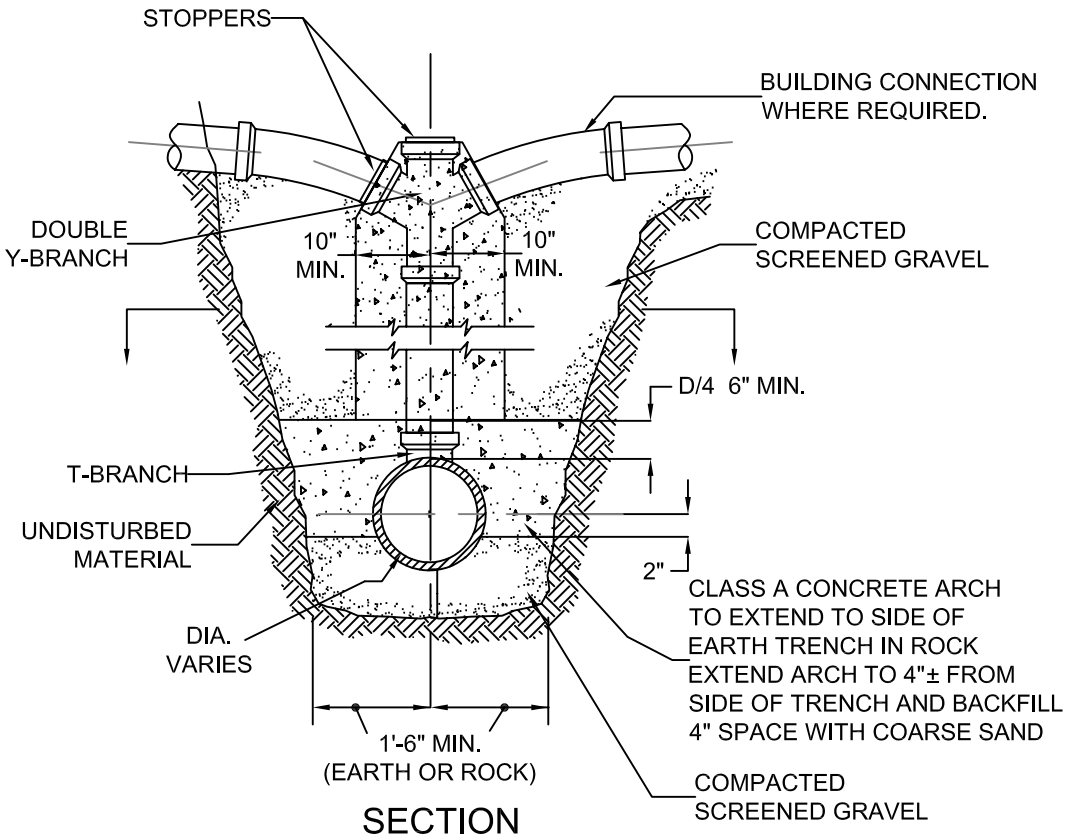
TYPICAL TRENCH DETAIL

NOT TO SCALE

02730 005



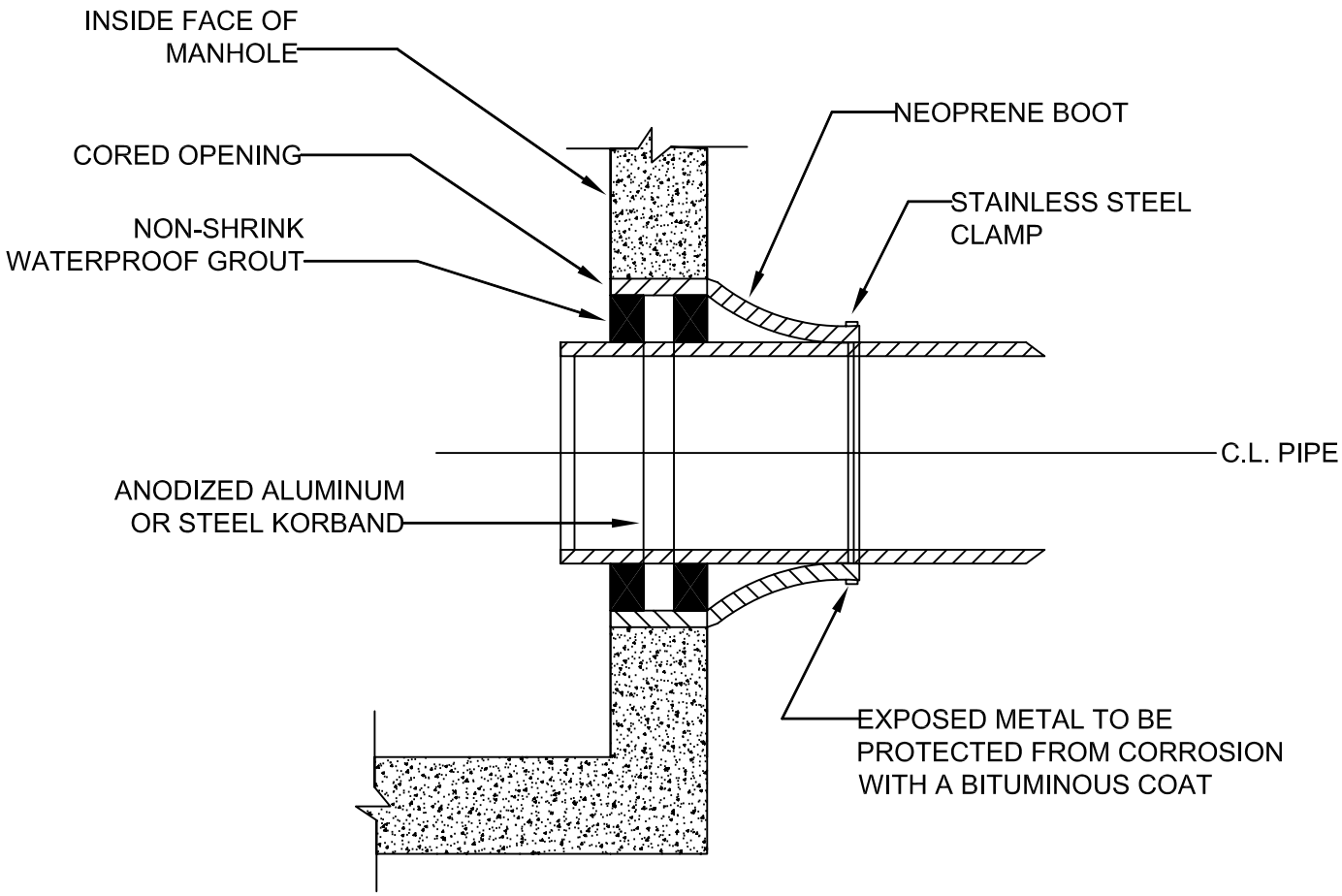
SECTIONAL PLAN



SECTION

SEWER CHIMNEY
(FOR P.V.C. PIPE)

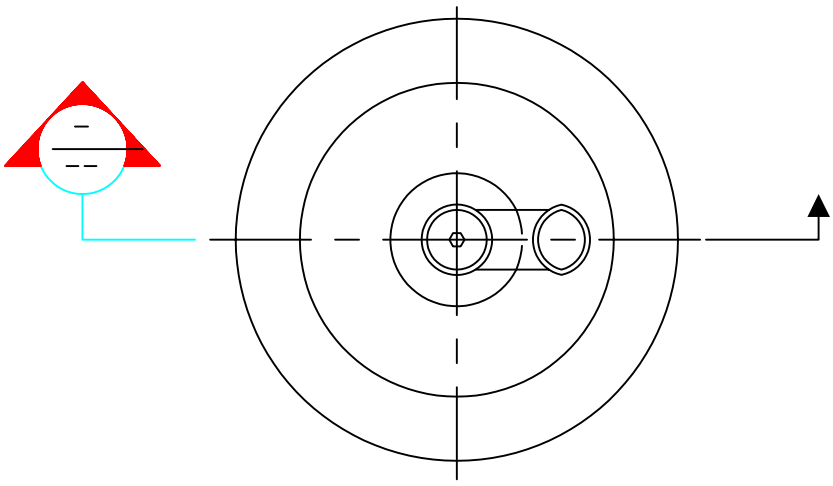
NOT TO SCALE
02730 004



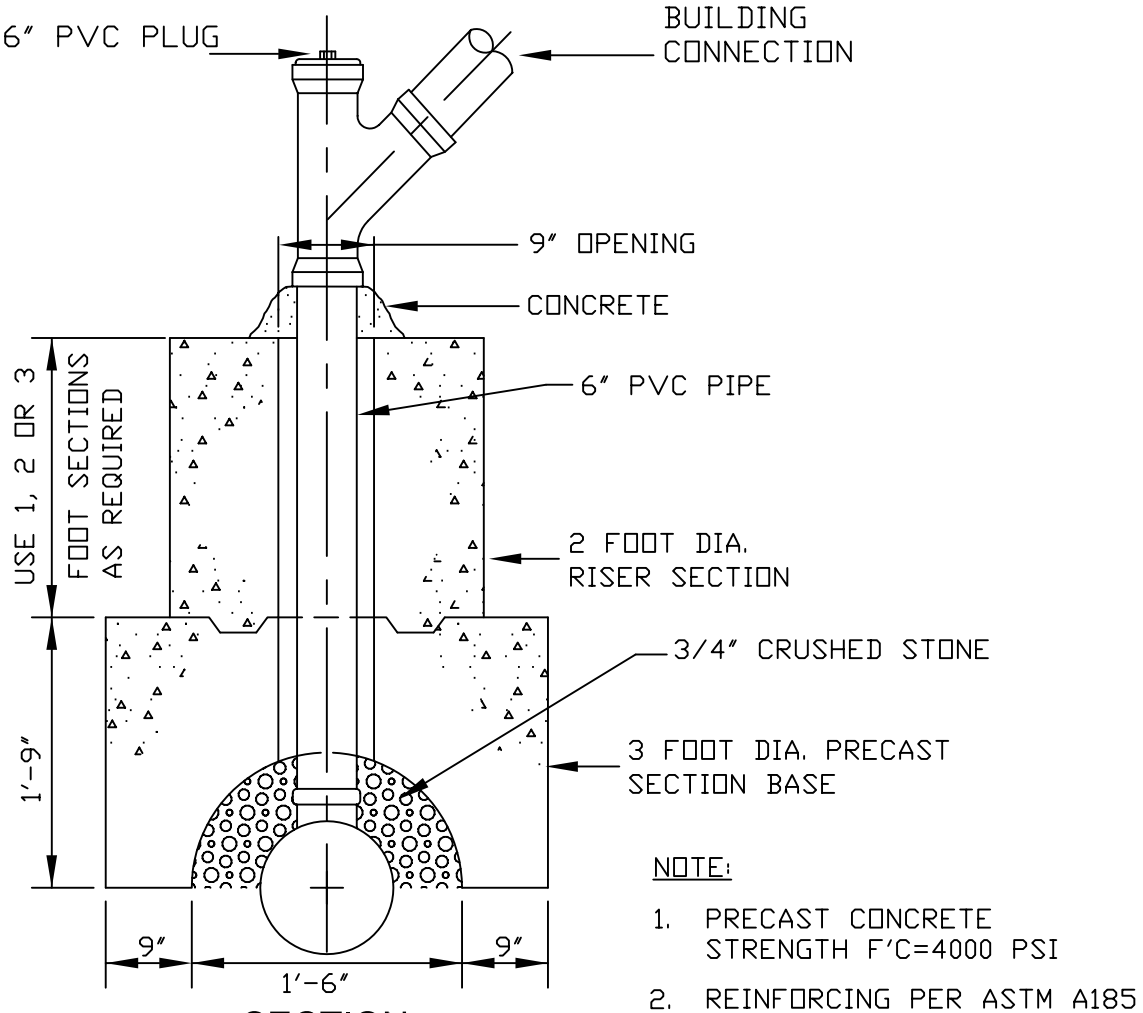
SEWER PIPE CONNECTION DETAIL

NOT TO SCALE

02730 003



PLAN VIEW (CONCRETE OMITTED)



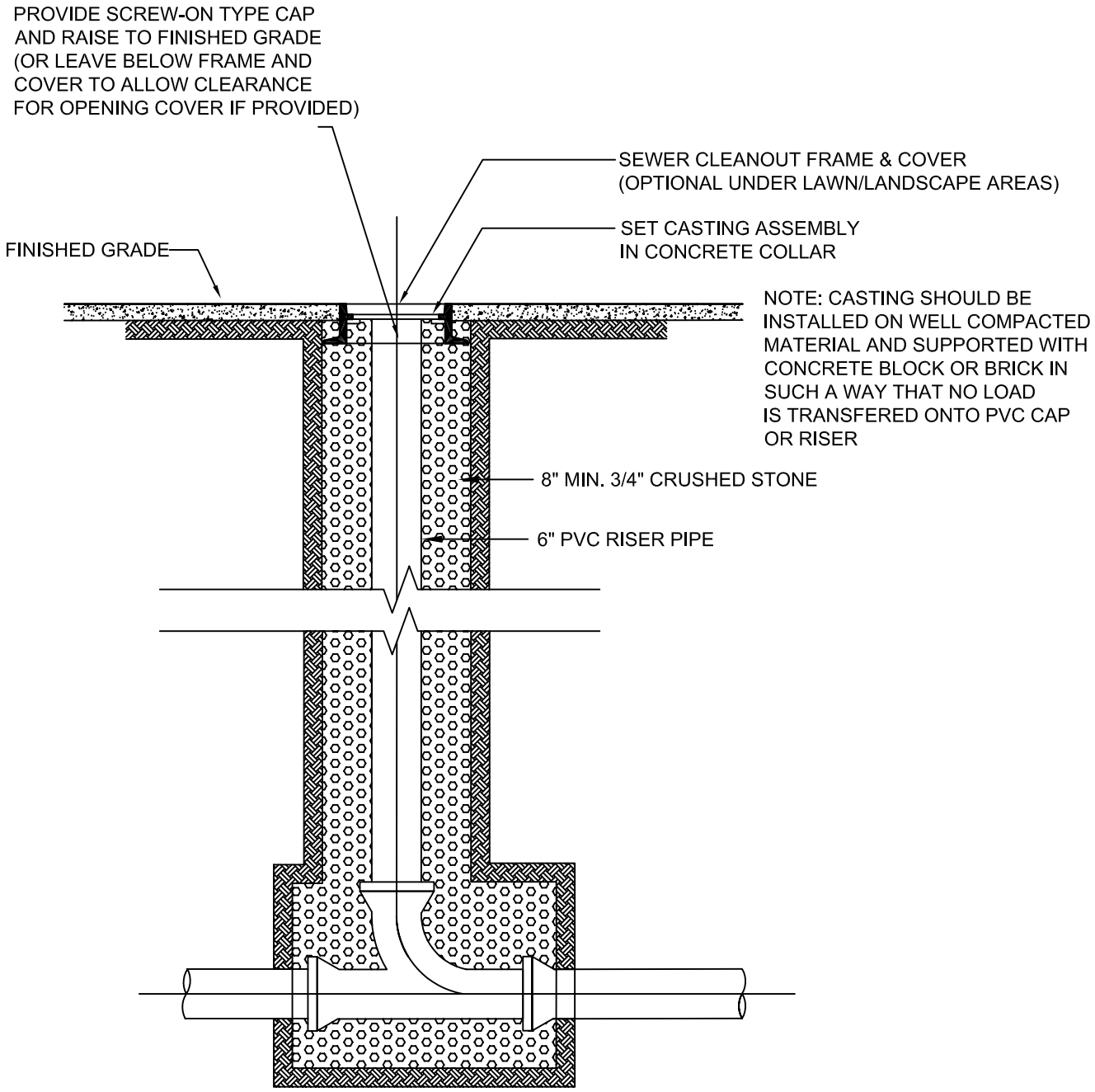
SECTION

NOTE:

1. PRECAST CONCRETE STRENGTH F′C=4000 PSI
2. REINFORCING PER ASTM A185
3. LIVE LOAD AASHTO HS20-44

PRECAST CHIMNEY FOR 8-12" SEWER MAIN

02730 002



TYPICAL IN LINE CLEANOUT DETAIL

NOT TO SCALE

02730 019

APPLICATION FOR DRAINLAYER'S LICENSE
TOWN OF MANSFIELD
MANSFIELD, MASSACHUSETTS 02048

OFFICE USE ONLY:

LICENSE NUMBER: _____

APPLICATION RECEIVED: _____

ENGINEERING APPROVAL: _____

BY: _____

SELECTMEN APPROVAL: _____

Application Type: ☐ New License ☐ License Renewal If Renewal, list previous License # _____

Name of Corporation: _____

Contact Person: _____

Mailing Address: _____

_____

Street Address: _____

_____

Phone: _____

FAX: _____

24-Hour Phone: _____

The Following items must be attached:

- A copy of Valid Heavy Equipment Operators License
- Insurance Certificate (Town must be listed as additionally insured)
- Performance Bond (USE ATTACHED FORM)
- Three (3) references who are familiar with your work with telephone numbers (NOT REQUIRED FOR RENEWALS)
- License fee of $250.00

THE UNDERSIGNED HEREBY ACKNOWLEDGES RECEIPT AND UNDERSTANDING OF THE DRAINLAYER'S REGULATIONS, AND THAT HE/SHE HAS READ THE ENTIRE DOCUMENT.

Signature: _____ Date: _____

Bond Number: _____

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, _____ (an individual, partnership, corporation or company) duly organized under the Laws of the State of Massachusetts, and having a usual place of business at:

_____ as Principal, and

_____ a corporation duly organized under the Laws of

the State of _____and duly authorized to do business in the Commonwealth of

Massachusetts, and having a usual place of business at _____ as Surety, are holden and stand firmly bond and obligated unto the Town of Mansfield, Massachusetts, as obligee, in the sum of **Five Thousand Dollars and no/cents ($5,000.00)** lawful money of the United States of America, to and for the true payments whereof we bind ourselves and, each of us, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal, by means of a written AGREEMENT (Drainlayer's License and Sewer Design and Construction Regulations, adopted, 3/2/2005) shall install drains and sewers in the Town of Mansfield in accordance with the regulations.

Whenever the Company shall be, and declared by the Town to be in default under the Sewer Design and Construction Regulations or Drainlayer's License Regulations shall promptly remedy the default or complete the drain and sewer work.

No right of action shall accrue on the Bond to or for the use of any persons other than the Town named herein or the heirs, executors, administrators, successors and assigns of the Town.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this day _____of _____.

	Principal: _____	Surety: _____	
(SEAL)	By: _____	By: _____	(SEAL)
	Title: _____	Title: _____	

IMPORTANT

Surety Companies executing BONDS must appear on the U.S. Treasury Department's most current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts and be authorized to transact business in the State of Massachusetts.

The attention of the Surety Companies and Company executing this Performance Bond is directed to the fact that said Bond shall remain in full effect for a period of three (3) years from the effective date of the issuance of a Drainlayer's License.

TOWN OF MANSFIELD

WATER REGULATIONS

AND

FEE SCHEDULE POLICY

December 2005

TOWN OF MANSFIELD

WATER REGULATIONS AND FEE SCHEDULE

December 2005

The following regulations are part of the contract with every person who takes water, and govern the relations between the Water Operations Division and its consumers. The Water Operations Division is operated within the American Water Works (AWWA) Standards and the Commonwealth of Massachusetts Department of Environmental Protection (DEP) regulations and guidelines, the more stringent shall apply.

Approved by the Town of Mansfield Water and Sewer Commissioners on

December 14, 2005.

TABLE OF CONTENTS

ARTICLE 1 DEFINITIONS

ARTICLE 2 GENERAL PROVISIONS

ARTICLE 3 CHARGES

ARTICLE 4 METERS

ARTICLE 5 SERVICE PIPE AND FIXTURES

ARTICLE 6 REQUIREMENTS AND SPECIFICATIONS FOR WATER MAINS

ARTICLE 7 RATES

APPENDIX A FEE SCHEDULE

APPENDIX B LICENSED WATER INSTALLER REGULATIONS

ARTICLE 1

DEFINITIONS

1. Consumer

The term "Consumer" shall mean the individual, firm or corporation listed as the owner of the property, whose name the Water Department has on its books as the party who has applied for water service or any individual, firm, or corporation who, in fact, uses the water service of the Town of Mansfield.

2. Main

The "main" is the supply pipe laid in the street, from which house connections are made.

3. Service

A "service" is the pipe running from the main in the street to include the shut off, usually inside the cellar wall.

4. Charges/Fees

Designated amounts charged for the services and/or materials rendered.

5. Division

The Town of Mansfield Department of Public Works, Water Operations Division.

ARTICLE 2

GENERAL PROVISIONS

1. Application for Water Service

All applications for introduction of town water to private premises shall be made at the office of the Department of Public Works (DPW) Office, 6 Park Row, Mansfield, MA by the owner of the property or by the person to be charged therefore, or by their authorized agent. A plan showing the proposed service, main and/or fire line must be filed with the application. The application must be made upon the blank form furnished by the DPW. All charges must be paid in full before final approval of the application. Tapping and installation charges for other service applications will be set by the Division after reviewing the specifications and layout of the service application.

A new application and plan must be submitted if any deviations from the plan occur. The revised plans must be approved by the Division.

Customers applying for new or additional services who have an outstanding or overdue balance will be required to make full payment of all outstanding balances prior to receiving any new or additional service.

Multiple parties applying for service and wishing to be on record as being mutually responsible for billing payments requires all parties to sign the application, together with unique identification numbers for each party.

2. Responsibility for Charges

Consumers of water will be charged with and held responsible for all water passing through their water meter until such time as they shall notify the Division at its office in writing that they no longer desire the use of water and in case of the sale of the property such notice shall give the name of the new owner. All outstanding balances shall be the responsibility of the new property owner.

Failure to pay water bills past the due date, may subject any and all property owners for the full amount of the charge and termination of service.

3. Status of New Owners

New owners of buildings shall have no right to the use of water until notification of change of ownership has been submitted to the DPW office.

4. Town to Have Free Access to Premises

Owners or occupants of any commercial, industrial or residential premises served by Mansfield's water system shall, upon presentation by Division personnel of their credentials, authorize entry to their premises without a warrant for the purpose of inspecting and surveying their water system for new installations or cross connections or to remove, repair or replace any water meter at any time the Division deems necessary. When such access is refused, the Water Division shall then notify the property owner by

certified mail the time and date when the water will be turned off and it will not be turned on until such access has been allowed and fees have been paid for shutting off and turning on the water.

5. No Alterations

No alterations shall be made in any of the pipes, fixtures, or meter reading devices inserted by the Town of Mansfield, except by its agents.

6. Conditions Under Which Service Is Furnished

The Town does not guarantee constant pressure nor uninterrupted service, nor does it assure the consumer either a full volume of water or the required pressure per square inch necessary to effectually operate hydraulic elevators, sprinkler systems or other appliances, the same being subject to all the variable conditions that may take place in the use of water from the Town mains.

7. No Liability for Interruption of Service

No Consumer shall be entitled to damages, or to have payment refunded, for any interruption of supply occasioned either by accident to any portion of the works, or by shutting off for the purpose of additions or repairs to the works, or by the stoppage or shortage of supply due to causes beyond the control of the Division, such as excessive drought, excessive use of and waste of water by other consumers, or by leaks or defects in the pipes or appliances owned by him or her or other consumers.

8. No Liability for Discolored Water

The Town will not be responsible for damages or staining of any fixture, appliance, clothes, etc. caused by discolored water resulting from the opening or closing of any gate valve, the use of any hydrant, or the breaking of any pipe, or any other situation that may result in a discoloration of the water.

9. No Liability for Consumer's Pipes

The Town assumes no liability for conditions which exist in consumer's pipes and cause trouble coincident or following the repairs of any main pipe, service pipe, meter or other appliance belonging to the Division.

10. No Liability for Damaged Appliances, etc.

The Division reserves the right at any time, without notice, to shut off the water in the mains for purposes of making repairs, extensions or for other necessary purposes. Persons having boilers or other appliances on their premises depending on the pressure in the pipes to keep them supplied with water are hereby CAUTIONED against danger from these sources, and are required to provide, at their own expenses, suitable safety appliances to protect themselves against such danger. In any event, it is expressly stipulated that the Department will not be liable for any damage resulting from water having been cut off, either through accident or necessity.

11. No Liability for Shutting Off Water Without Notice

When it becomes necessary to shut off the water from any section of the Town because of an accident or for the purpose of making changes or repairs, the Division will endeavor to give timely notice to as many of the consumers affected thereby as time and the character of the repairs or the accident will permit, and will, so far as practicable, use its best efforts to prevent inconvenience and damage arising from any such cause but failure to give such notice will not render the Division responsible or liable for any damages that may result from the shutting off of the water or any coincident conditions.

12. Violations of Regulations

Any violations of these regulations may result in the shutting off of the water to the violator's premises. When the water has been shut off for violations of rules, nonpayment of charges or other offense, it will not be turned on again until the Division is satisfied that there will be no further cause of complaint and a service charge (See Fee Schedule) has been paid to cover the cost of shutting off and turning on the water.

13. Other Water Supplies Prohibited

No other water supplies shall be allowed to be connected to the Town of Mansfield water supply system at any time. Any violations of these conditions will result in the immediate termination from the Town of Mansfield's water supply system and will be fined in accordance with the Fee Schedule.

14. Licensed Water Installer

All work performed on the Town of Mansfield water supply system by someone other than a Division employee, shall be performed by a current Licensed Water Installer.

15. Placing of Lien

Failure to pay water bills within sixty (60) days of billing subjects any and all properties for the full amount of the charge.

ARTICLE 3

CHARGES

1. Date of Consumer's Liability to Pay

All applicants for a new water service will be charged the service charge from the date the water is turned on, whether the water is used or not.

All bills shall be payable upon receipt.

Any bill outstanding after the due date shall be subject to forfeiture of the discount and shall be responsible for accrued interest.

Any bill outstanding after the due date shall be considered to be "overdue," and subject to the following procedures:

- Any bill outstanding after one day shall receive a past due notice, except when the outstanding bill is less than five (5) dollars.
- Any bill outstanding after 60 days will receive a final notice and will be subject to termination of service.

Arrangement for paying delinquent bills will be done by the Billing Supervisor. The payment agreement shall be as follows:

- One third of the outstanding bill shall be paid up front.
- The remainder of the bill shall be apportioned over period not to exceed 12 months. Current bills must be paid when due during this period. The Consumer is also responsible for paying any interest accrued during this period.
- Anyone deviating from the payment plan will be subject to termination.

Unique circumstances will be reviewed by the Billing Supervisor, DPW Director and Water Operations Manager.

2. More Than One Party on a Service

In existing cases where two or more users are supplied with water from the same service pipe, if any one of the parties fails to pay water charges when due, or to comply with any rule of the Division, the Division has the right to turn off the water from the whole service until such charges are paid, or the rules strictly complied with.

3. Collections of Miscellaneous Water Charges

All bills for miscellaneous charges will be subject to the same conditions of payment as outlined above in Paragraph 1.

4. Charge for Turning On or Off Water

A charge will be made for turning on or shutting off water in accordance with the Fee Schedule.

5. No Business with Delinquents

No person who owes an overdue bill for water charges shall be entitled to the further use of water at the same or any other premises until such water charges are paid in full, together with any additional costs incurred. Such costs shall include incurred interest.

6. Adjustments on Bills

All claims for adjustment of water bills shall be made in writing to the Billing Supervisor within thirty days (30) after the billing date on monthly or quarterly bills. All adjustments will be based on the rates in effect for the period in question.

7. All Metered Water to Be Paid For

All water passing through the consumer's water meter must be paid for, whether used or wasted.

8. When Meter is Out of Order

If a meter is out of order or fails to register, the Consumer will be charged at the average daily consumption as shown by the meter when in order, for the corresponding period of two years preceding.

9. No Right to Furnish Water to Other Premises

A Consumer will not be permitted to supply the premises of another person with water, except in special emergencies, and then only with the approval of the Division.

10. Final Billings

Consumers must contact the Division to set up a meter reading for final billing for the property transfer. All customers requesting termination of service will be required to supply a forwarding address. A signature card must be completed by the new property owner and returned to the Department of Public Works Office. Final bills must be picked up in the Department of Public Works Office.

11. Capital Charges

Capital charges are assessed based on the size of the meter in accordance with the Fee Schedule. Each meter, except meters for fire sprinklers, will be assessed a capital charge. Capital charges will be assessed for any new customer, dwelling unit, or commercial/industrial connection.

A credit will be made for the capital charges previously assessed to the property.

12. Special Readings

Special water meter readings, such as readings taken for pool fillings, will be billed in accordance with the Fee Schedule.

13. Water Meter Readings

Water meter readings for the purpose of billing shall be performed by Division personnel. The inside meter reading shall govern any discrepancies between the inside meter reading and the outside reading.

ARTICLE 4

METERS

1. Meter Installation

The Town of Mansfield shall supply and maintain meters up to and including one (1) inch. All meters larger than one (1) inch shall be purchased and maintained by the customer. Approved stop valves shall be installed near the inlet and the outlet of the meter by the Consumer, at his expense, to permit removal of the meter. Prior to a meter being installed on a new service a copy of the plumbing permit must be submitted to the Division with the application for a new service.

2. Consumers to Pay for Meter Repairs

All repairs or damages to meters from freezing, hot water, or external causes shall be charged to the Consumer in accordance with the Fee Schedule. No sale or other transfer of title of property in the Town of Mansfield shall prevent the Division in the collection of any balance due for meter repairs.

3. The Size of Meters Specified By Water Department

The proper size, type and kind of water meter required for any given service shall be specified by the Division.

4. Meter Not To Be Removed

All meters shall be set by an employee of the Division, and shall not be moved or disturbed except by the same. Anyone, other than an employee of the Division, tampering with a meter will be fined in accordance with the Fee Schedule.

5. Meter Pits

Meter pits are not allowed.

6. Town's Right to Change Meters

If, in the opinion of the Division, a meter does not fit the conditions of the service installation, the Division has the right to change such meter. Such change shall be made in accordance with the current regulations and paid for by the Consumer in accordance with the Fee Schedule.

7. Maintaining Meters

The Division will have the right to remove, repair, test for accuracy, or replace any meter at any time it deems necessary. For meters larger than one (1) inch, the Division will have the right to remove, repair, test for accuracy or replace any meter at any time it deems necessary. All costs associated with the meter replacement shall be the responsibility of the customer. All meter installations on services which cannot be shut

off for meter repairs shall be equipped with a metered by-pass at the expense of the Consumer.

8. Access To The Meter

It shall be the duty of all Consumers to see that meters on service connections wherever located shall be readily accessible at all time to the Division. Failure to remove any obstruction which prevents access to the meter within three (3) days after being notified by the Division will cause the water to be shut-off from the premises and it will not be turned on until all obstructions are removed, and all regulations complied with and all expense paid.

9. Testing Meters by Request

The accuracy of the meter on any premises will be tested by the Division, utilizing an outside firm, upon written request of the owner, who shall pay in advance a fee (see Fee Schedule) to cover the cost of the test. If, on such test the meter is found to register over two (2) percent more water than actually passes through it, the meter will be replaced and the fee will be refunded and the water bill for only the current period will be adjusted in accordance with the result of the test; if, however, it appears that the person was charged or has paid for less water than he should have been charge with or should have paid for, he shall forthwith, be charged with the proper additional amount and shall pay the same, together with the expense of the examination and test, to the Town.

10. Notice of Excessive Use of Water

The Division will endeavor to notify consumers of excessive use of water at the periodic readings of meter, but failure to send such notification or inability to read the meter from any cause shall form no basis for allowance on an abnormal water bill.

11. Meters on Private Wells

Any property owner with a private well that discharges to the Town of Mansfield's sewer system must have a Division approved water meter with a remote radio reading device installed at the owner's expense on the private well system for the purposes of sewer use billing.

ARTICLE 5

SERVICE PIPES AND FIXTURES

1. Responsibility of Consumers

Consumers must keep their water pipes and fixtures in good repair and protected from frost at their own expense, and they will be held responsible for any damage resulting from their failure to do so. They shall prevent any waste of water. If a water service is frozen and if requested by the Consumer, the Division will thaw the frozen service and charge the Owner in accordance with the Fee Schedule. The Division assumes no liability for any damages that result from thawing the frozen service.

2. All Service Pipes To Be Inspected

All new service pipes must be inspected by the Division before covering the pipe. All pipe and trench shall meet the approval of the Division. Permit allows for one inspection. All additional inspections will be charged at the existing rates per the Fee Schedule.

3. Part of Service Pipe Furnished by the Water Department

Service pipes will be laid from the water main to and including the curb stop. The Division will not be held responsible for damage to private property.

4. Right to Repair Service Pipes

All service pipes between the street line and the cellar wall may be repaired or re-laid by the Division when it deems it necessary for the protection of the supply or the giving of satisfactory water service and the cost and fees of the same charged to the Consumer.

5. Charges for Repair

The pipe from the curb stop to the building, including the service connection, is the property of the consumer, and all repairs to the same must be made at his expense.

6. Materials On Private Premises

Unless an emergency exists, no materials shall be supplied to the consumer. All fitting supplied by the Division to the consumer shall be billed to the consumer.

7. Irregular Service

Services for other than permanent structures, or which are used only a part of the year may, at the option of the Division, be put in at the expense of the Consumer.

8. One Service to Each Premise

Multifamily/condominiums with a single service must have separate meters for each dwelling unit, except for duplexes, which require separate services and meters for each dwelling unit. Capital charges shall be paid for each meter.

9. Requests for Turning On or Shutting Off Water

Requests for turning on or shutting off a water service shall be made 24 hours in advance, except in case of an emergency. Consumers shall be charged for each such service. Only Division personnel shall open or close curb stops. Requests for turning on or shutting off water, other than at normal working hours, shall be billed at the overtime rate. Anyone who opens or closes a curb stop will be fined in accordance with the Fee Schedule for each occurrence.

10. Winter Installations

No new services and mains can be installed between December 1st and March 30th without the permission of the Division.

11. Service Pipe Trenches

Service pipes shall not be placed within five (5) feet of other utilities except under special conditions and with the approval of the Division. The Division will not be responsible for damage to other utilities laid within five (5) feet of a water service pipe.

12. Standby Fire Protection

The Division will furnish standby fire protection service in accordance with rates and charges specified in the Fee Schedule. All equipment for this purpose shall be installed entirely at the expense of the consumer and with the approval of the Division. Such pipes must not be used for the supplying of water of any other purposes and must be so arranged that easy inspection can be made by the Division. Whenever it is considered necessary for the protection of the water supply and in the interest of the Town of Mansfield, the Division shall have the right to require the installation of meters, alarms, or other accessories, the installation and upkeep of such equipment, to be at the consumer's expense. All cross connection regulations must be complied with.

13. Testing Fire System

No water shall be taken or used through private fire systems for the purpose of testing, unless the Division issues a permit. Such test must be conducted under the supervision of the Division and will be assessed a fee in accordance with the Fee Schedule. Unauthorized testing will be subject to a fine in accordance with the Fee Schedule.

14. Right to Restrict the Use Of Water

The Division has the right to restrict the use of water.

15. Operation of Fire Hydrants

The operation of fire hydrants, town and private, is restricted only to members of the Fire Department and to employees of the Division. All hydrant use, except for Fire Department or Division purposes shall be metered and fitted with an approved backflow prevention device. All meters and backflow prevention devices shall be installed and removed by the Division. A rental fee will be charge in accordance with the Fee Schedule. Persons who use the fire hydrant without written permission shall be fined as per the Fee Schedule.

Persons renting hydrant meters shall be responsible for paying for any damages to the meter or for any property damage.

16. Backflow Preventers

If the installation of an approved backflow preventor(s) on the property side of a meter of any Consumer is considered necessary by the plumbing code such approved device(s) shall be immediately installed by and at the expense of the Consumer. Said preventor(s) shall be installed, surveyed and tested in accordance with the Drinking Water Regulations of Massachusetts, 310 CMR 22.22. All tests and surveys performed by the Division shall be charged as set forth in Fee Schedule.

Failure to install an approved backflow preventor will result in the termination of the service and all charges to terminate the service will be in accordance with the Fee Schedule.

17. Installation of New Mains By Developer or Subdivider

The size of all mains installed by a subdivider or developer shall be determined by the Division and installed by a Licensed Water Installer under the supervision of the Division. The contractor shall reimburse the Town for the cost of the supervision in accordance with the Fee Schedule. All mains installed in subdivisions shall be maintained by the subdivider until the road(s) is accepted by the Town.

18. Razed Buildings

The property owner must obtain a permit prior to terminating service. If a building is being razed and if the existing building service does not meet the current water regulations, it is the responsibility of the property owner to terminate the service at the connection to the water main by closing the corporation stop, disconnecting no less than 2 feet of pipe and capping the corporation stop prior to the building being razed. Work must be inspected by the Division and all costs must be paid for by the property owner in accordance with the Fee Schedule. The water meter must also be replaced and the cost of the new meter will be charged to the new property owner.

19. Frozen Services

If a service needs to be thawed out on the property side, the Consumer must take the necessary corrective actions to increase the depth of bury and/or provide insulation to prevent future frozen services.

20. Looped Mains

All water mains longer than 300 feet are required to be looped. The diameter of the looped main shall be equal to the size of the main and the pipe it is connected to or as determined by the Division. Any water main less than 300 feet must have a fire hydrant installed at the end of the main.

21. Fire Hydrants

Location of fire hydrants shall be in accordance with AWWA standards and DEP guidelines and as approved by the Division. If for any reason the original location of the fire hydrant changes a new plan must be submitted to and approved by the Division.

22. Hydrant Flow Testing

Hydrant flow testing shall only be performed between the hours of 9:00 AM and 12 Noon, or as approved by the Division. The tester must supply all test results to the Division within 30 days. The tester is responsible for any property damage which occurs as a result of the testing. Hydrant flow testing equipment shall be supplied by the tester. Fees will be assessed for hydrant flow testing in accordance with the Fee Schedule.

23. Service Pipe Size

The minimum service pipe size shall be 1 inches in diameter for services up to 200 feet in length and 2 inches in diameter for services up to 400 feet in length. For services over 400 feet in length the minimum diameter shall be 8 inches with a fire hydrant installed at the end of the service.

ARTICLE 6

REQUIREMENTS AND SPECIFICATIONS FOR WATER MAINS

1. General

All materials shall be North American made.

All materials and procedures shall conform to AWWA standards, DEP guidelines and Town of Mansfield regulations. The most stringent of the three shall apply.

2. Pipe and fittings.

All pipe shall conform in design and manufactured to the latest issue of AWWA Standard C151, "Ductile-Iron Pipe, Centrifugally Cast, For Water or Other Liquids." Pipe shall have a pressure class of 350.

All fittings shall be ductile iron and conform in design and manufactured to the latest issue of AWWA Standard C110, "Ductile-Iron and Gray-Iron Fittings," 3-Inch Through 48-Inch For Water and Other Liquids.

All pipe and fittings shall have a double cement-mortar lining inside and a bituminous seal coat applied both inside and outside to conform to AWWA C104, "Cement-Mortar Lining For Ductile-Iron Pipe and Fittings For Water."

Push-on and mechanical joints are permitted and shall conform in design and manufactured to the latest issue of AWWA Standard C111, "Rubber-Gasket Joint For Ductile-Iron Pressure Pipe and Fittings."

3. Valves

All valves shall conform in design and manufactured to the latest issue of AWWA Standard C509, "Resilient-Seated Gate Valves For Water Supply." Acceptable valves are Mueller or approved equal.

All valves shall have a two-inch operating nut, mechanical joint hubs (except for wet taps), and open in a counter clockwise direction. If shallow depth of bury or other conditions of service require that the valve be installed in a horizontal position, a nut-operated bevel gear shall be fitted to the valve for service operation through a valve box.

4. Hydrants

Hydrants shall conform in design and manufacture to the latest issue of AWWA Standard C502, "Dry Barrel Fire Hydrants." Acceptable hydrants are Kennedy K81 and Mueller A423.

Hydrants shall be compression type, i.e., the main valve shall open against and close with water pressure. Hydrants shall be of the dry top design with "O" ring seals to ensure that the operating threads will be protected from water entry. Dry top design is to include a

factory-lubricated operating mechanism that allows supplemental lubricant to be added in the field without the removal of the top section. The downward travel of the main rod and valve assembly to the full open position shall be controlled by a travel stop device located in the upper stem section of the rod or have a positive stop in the base of the hydrant shoe. The drain mechanism shall be an integral part of the valve assembly. All internal parts shall be removable through the top of the hydrant when the bonnet has been removed.

Hydrants shall comply with the following:

(1) Main valve opening: 5.25 inches.

(2) Outlets:

(a) Hose connections: two to 2.50 inches.

(b) Steamer connection: one to 4.50 inches.

(3) Shoe: six-inch mechanical joint (range 6.90 to 7.10 outside diameter).

(4) Direction of opening: counterclockwise (open left).

(5) Height (bury line to operating nut): 28.75 inches minimum.

(6) Model: traffic (breakaway design).

(7) Color: Safety red body, Safety yellow bonnet and caps.

All hydrants shall have a permanently mounted marking device approved by the Division.

4. Cover over pipe

Pipe shall have five feet of cover measured to finish grade of the street. Pipe to be hand-covered one foot with sand or stone free gravel and compacted and tamped around pipe to give good support and protection.

In case of any excavations in swamp or when unsuitable material is encountered, the Contractor shall replace the same with a good material to provide proper support and alignment of the pipe line. In some cases, the contractor shall use crushed stone for good bedding. Trench backfill shall be suitable material taken from the excavation, approved common borrow or gravel hauled in. No mud, frozen earth, stones larger than eight inches or other objectionable material is to be used for refilling.

5. Ledge

All ledge shall be removed to a width two feet greater than the diameter of the pipe and one foot below the underside of the pipe. A bed of sand shall be placed in the trench prior to laying pipe.

6. Blasting

All blasting shall be completed within a distance of 50 feet from any water service or water main.

7. Excavation within public ways

A street opening permit shall be obtained from the Department of Public Works before any excavation can begin within any town-accepted street. The work shall be performed in accordance with permit.

8. Service pipes

The service pipe shall be at least one-inch in diameter.

No sweat fittings or unions shall be allowed between the curb stop and the meter regardless of the meter location. Where the service length is 100 feet or greater, the size of the service pipe shall be subject to approval by the Division. One union shall be allowed for 2 inch diameter service pipe.

Plastic service pipes shall be copper tubing size with a 200 psi working pressure. The pipe shall be grounded at both ends with 12 gauge solid copper wire and with stainless steel inserts at all connections.

9. AWWA Brass

Preferred manufacturer shall be Mueller, Ford or Red Hed

Connection style – Compression

Corporations shall be ball type with CC threads.

Curb stops must have a drain and shall be Open Left

10. Curb and Gate Boxes

Curb boxes shall be 94 E Buffalo style slide type.

Gate Boxes shall be 3 piece slide type with “Water” stamped on top.

11. Testing

Before acceptance by the Division, the pipe shall be pressure-tested and chlorinated in accordance with "Installation of Ductile-Iron Water Mains and Appurtenances," AWWA Designation C651, latest edition.

No one shall pressure-test or chlorinate an installation without notifying the Division at least 48 hours prior. An employee of the Division must be present for the duration of the pressure test and chlorination to witness and sign the results. All pressure-test reports shall consist of the actual distance of pipe by size, number of valves and hydrants shall be sent to the Division. The water for disinfection and flushing shall be furnished by the town.

Samples of water taken after the disinfection of the water pipes shall be delivered by Division to a testing laboratory approved by the Commonwealth of Massachusetts. All costs associated with the pressure testing, chlorination and sampling shall be in accordance with the Fee Schedule.

ARTICLE 7

RATES

1. Water Rates

Water rates shall be as noted in the current Rate Sheet.

2. Senior Citizen Special Provision

Customers who reside at a single family home and are older than 62 years of age and owner of record shall never forfeit their 10% discount, irrespective of the date they submit payment to the Town.

3. Discount

All water and sewer bills shall be credited with a 10% discount if paid by the due date. Each consumer is entitled to one past due consideration before losing their 10% discount.

4. Interest

All water and sewer bills shall be charge 14% interest per annum 30 days from the bill date.

APPENDIX A

FEE SCHEDULE

1. SERVICES

Install new service - Complete cost of new service based on labor and materials expended. Will vary depending upon length and location of service and if controlled density fill (CDF), bituminous pavement, police details, etc are required.

The applicant shall be responsible for obtaining a street cut permit and payment of a police detail. Installations within a State Highway layout may require additional work and materials, where the costs shall be paid for by the applicant.

2. METERS

Install new 5/8" x 3/4" meter, existing service -	$195.00
Install new 1" meter, existing service -	$245.00
Radio reading devices, supplied and installed -	$105.00

3. INSPECTIONS & TESTING

BACKFLOW DEVICES

Property survey, per property -	$60.00
Device testing, per test -	$60.00
Application fee per new device added to the system	$80.00

4. OTHER SERVICES

Hydrant flow testing per test	$75.00
Flushing new main (per 1000 linear feet of main)	$85.00
Water flushed to waste shall be metered and billed at current rates	
Pressure testing/chlorination	$130.00
Sample new main including transportation & Lab fee, per sample	$100.00
Service inspection, per visit	$50.00
Main pipe inspection per 100 feet, per visit	$50.00
Meter testing (including removal & reinstallation)	$65.00
Meter test below accuracy standards	N/C

Thawing frozen service at anytime

1st call: Cost of labor plus equipment charges
2nd call: $100.00 plus labor and equipment charges
3rd call: $300.00 plus labor and equipment charges

Opening and closing water main valves	$250.00

If the Division is required to use any police details except for Division use, the charges will be billed directly to the party the detail is required for.

LABOR

Straight time per hour, per man	$40.00
Overtime per hours, per man, min 4 hours, except Sundays and Holidays	$60.00
Overtime per hour, per man min 4 hours Sundays and Holidays	$75.00
Backhoe w/Operator, straight time, per hour	$100.00
Backhoe w/Operator, overtime, per hour	$175.00
Turn on water service regular hours, per visit	$50.00
Turn off water service regular hours, per visit	$50.00
Meter reading (finals-property transfer, pool fillings, other special readings)	$50.00

5. MISCELLANEOUS

CAPITAL CHARGES - As approved by the Water and Sewer Commissioners

OTHER

Hydrant meter rental (per day)	$50.00
Hydrant meter rental (per week)	$150.00

(not including consumption, billed separately)
Persons renting hydrant meters shall be responsible to pay for any damages to the meter

Private fire system testing, per test	$75.00

FINES

Unauthorized use of hydrants, valves, illegal connections, or any other violation of these Water Regulations, per violation $500.00
plus any costs incurred by the Division pertaining to the violations

Unauthorized testing of fire system per violation	$250.00

APPENDIX B

LICENSED WATER INSTALLER REGULATIONS

1.0 Applicability

1.1 The Town of Mansfield Board of Selectmen requires all contractors in the business of installing water lines to be licensed with the Town. The Board of Selectmen has designated the DPW Director to administer the licensing program as described by the following regulations.

2.0 Water Installer's License

2.1 Issuance of a Water Installer's License

Anyone installing a water line or appurtenance on land in the Town of Mansfield shall be licensed pursuant to these regulations. Licenses shall be obtained from the Board of Selectmen through the DPW Director or his designee at the Mansfield Town Hall, Six Park Row, Mansfield, Massachusetts, 02048, telephone number (508) 261-7330. The license shall be in the name of the entity or an individual. A Water Installer's license application is included in Attachment A, Page 4.

2.2 Application

A license application shall not be considered complete unless a valid State of Massachusetts Heavy Equipment Operators License, Certificate(s) of Insurance, Performance Bond, references, and the appropriate fee accompany it. The entity or individual shall complete the license application and submit it to the DPW Director, who will present the completed application to the Board of Selectmen for approval within twenty-one (21) days. The Town shall maintain an up-to-date list of Licensed Water Installers, which shall be provided to residents and others requesting the same.

2.2.1 Insurance

The licensed Water Installer shall file an insurance certificate(s) listing the Town as the additionally insured and stating that the Town shall be notified thirty (30) days prior to cancellation annually with the Town of Mansfield for the appropriate insurance coverage shown below:

a. Worker's Compensation Insurance for the protection of all employees in accordance with applicable state law.

b. Contractor's Liability with limits of $1,000,000.00.

c. Automotive liability on and off public highways, owned vehicles, hired vehicles, and non-ownership liability with a limit of $1,000,000.00.

Liability insurance shall cover property damage insurance, blasting and explosion, underground damage to utilities, and collapse.

2.2.2 License Term

Beginning July 1, 2005, the license term for a Water Installer shall be July 1, 2005 to December 31, 2006. Beginning January 1, 2007 the license term for a Water Installer shall be January 1st to December 31st.

2.2.3 License Fees

Licensed Water Installers shall pay an annual license fee of $250.00 to the Town of Mansfield at the time of application or renewal. All licenses regardless of the date of application date shall expire on December 31st of that year (except for licenses granter between July 1, 2005 and December 31, 2005, which shall expire December 31, 2006.)

2.2.4 Performance Bond

A performance bond in the sum of $5,000 that shall remain in full effect for a period of three years from the effective date of the license and shall be required each year of licensure. The performance bond shall be prepared on the attached form included in Attachment B of these regulations.

Upon renewal of a license, or in subsequent years application the Water Installer shall either submit a new bond which shall remain in full force for a period of three years from the date of application or renewal, or extend the length of the current bond on file, by means of a certificate of rider so that the expiration date of the current bond will be changed to be in full effect for a period of three years from the date of application or renewal.

2.2.5 References

The Water Installer shall submit a list of at least three references that are familiar with the past work and experience of the Water Installer. The list shall include the name, organization, contact number(s), and brief description of the type of work performed for each reference. Other municipal references are preferred.

2.3 Notice of Violation

The Town will issue a "Notice of Violation" whenever it determines that:

- A contractor is performing work without proper licensure.
- A contractor is in non-compliance with the Rules and Regulations set forth by the Department of Public Safety.
- Construction is proceeding in a manner that jeopardizes public safety.
- Construction is occurring in violation of these Standards and/or any other applicable approved specification or details.

- Water construction is proceeding without a valid permit.
- There is evidence of any cross-connection with a sewer line.
- Work is taking place in a right-of-way without a proper police detail, subject to the Town of Mansfield Police Chief's approval.
- Work is taking place in the right-of-way without proper permits and/or notifications.
- There is damage to the roadway, public property, or utilities resulting from the work.
- There are debris and/or soils in the roadway resulting from the work.
- Work is not complete, including necessary testing and as-built documentation.

Any person found to be in violation of any provision of these Regulations, shall be served by the Town with written notice stating the nature of the violation, and provided with a reasonable time limit for the satisfactory correction thereof. The offender shall, within the period of time stated in such notice, permanently cease and correct all violations.

The Board of Selectmen shall enforce these regulations.

2.4 Fines

The Board of Selectmen may impose a **$250.00** fine per day against any Water Installer who violates the requirements contained herein until the violation is rectified following the acceptance of the DPW Director. The licensed Water Installer may appeal the fine to the Board of Selectmen. The appeal must be made in writing within 10 business days of issuance.

Any person violating any of the provisions of these Regulations shall become liable to the Town for any expense, loss or damage occasioned the Town by reason of such violations.

2.5 Terminations and Suspension of License

The Board of Selectmen may terminate or suspend any Water Installer's license upon due notice and after a public hearing for violating any of the specifications contained herein including the expiration of bonds and/or insurance. There shall not be any rebate on the annual fee upon termination. Termination will be for just cause including shoddy workmanship, performing work without a permit, incomplete work, any violation of this regulation, not completing proper as-built plans, and other just causes. The contractor may apply for reinstatement, but the Town retains the right to not reissue the license or only reissue it in the future at its discretion.

2.6 License Application/Renewal Forms

The Application for Water Installer's License can be found in Attachment A Page 4 of these regulations. The DPW Director may issue a negative recommendation to the Board of Selectmen for previous violations, negative references, or lack of relevant experience.

Also, the Town of Mansfield may withhold approval of any licenses and/or permits for outstanding taxes or fees.

APPLICATION FOR
WATER INSTALLER'S LICENSE
TOWN OF MANSFIELD
SIX PARK ROW, MANSFIED, MA 02048

OFFICE USE ONLY:

LICENSE NUMBER: _____

APPLICATION RECEIVED: _____

DPW APPROVAL: _____

BY: _____

SELECTMEN APPROVAL: _____

Application Type: □ New License □ License Renewal If Renewal, list previous License # _____

Name of Corporation: _____

Contact Person: _____

Mailing Address: _____

_____

Street Address: _____

_____

Phone: _____

FAX: _____

24-Hour Phone: _____

The Following items must be attached:

- A copy of Valid Heavy Equipment Operators License
- Insurance Certificate (Town must be listed as additionally insured)
- Performance Bond (USE ATTACHED FORM)
- Three (3) references who are familiar with your work with telephone numbers (NOT REQUIRED FOR RENEWALS)
- Application fee ($250 – full year, $125 – half year)

THE UNDERSIGNED HEREBY ACKNOWLEDGES RECEIPT AND UNDERSTANDING OF THE WATER INSTALLER'S REGULATIONS, AND THAT HE/SHE HAS READ THE ENTIRE DOCUMENT.

Signature: _____ Date: _____

Bond Number: _____

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, _____ (an individual, partnership, corporation or company) duly organized under the Laws of the State of Massachusetts, and having a usual place of business at:

_____ as Principal, and

_____ a corporation duly organized under the Laws of

the State of _____and duly authorized to do business in the Commonwealth of Massachusetts, and

having a usual place of business at _____ as Surety, are holden and stand firmly bond and obligated unto the Town of Mansfield, Massachusetts, as obligee, in the sum of **Five Thousand Dollars and no/cents ($5,000.00)** lawful money of the United States of America, to and for the true payments whereof we bind ourselves and, each of us, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal, by means of a written AGREEMENT (Water Installer's License and Water Regulations, adopted, MM/DD/YYYY) shall install water work in the Town of Mansfield in accordance with the regulations.

Whenever the Company shall be, and declared by the Town to be in default under the Water Regulations or Water Installer's License Regulations shall promptly remedy the default or complete the water work.

No right of action shall accrue on the Bond to or for the use of any persons other than the Town named herein or the heirs, executors, administrators, successors and assigns of the Town.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this day _____of _____.

Principal:	_____	Surety:	_____
(SEAL) By:	_____	By:	_____ (SEAL)
Title:	_____	Title:	_____

IMPORTANT

Surety Companies executing BONDS must appear on the U.S. Treasury Department's most current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts and be authorized to transact business in the State of Massachusetts.

The attention of the Surety Companies and Company executing this Performance Bond is directed to the fact that said Bond shall remain in full effect for a period of three (3) years from the effective date of the issuance of a Water Installer's License.

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DOCUMENT A00892

BORING LOGS AND TEST PIT DATA

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Northern Drill Service, Inc.	Client: BETA				Boring #
33 Talbot Road, Northborough, MA 01532	Project: Rt-106, Mansfield, MA				B1-1
TEL 508-393-6900 FAX 508-393-6901	Location: Mansfield, MA				Page 1 OF 1

File #:		Casing/Auge	SAMPLER	CORE BARREL
Date Started: 5-20-2025 9:05 AM	TYPE	HWT	S/S	NV2
Date Completed: 5-20-2025 12:10 PM	SIZE	4"	2"	1-7/8"
Driller: Jonathan Bierholm	HAMMER	140	140	
Site Rep.:	FALL	30"	30"	

Northing: 2836496.656	Elevation: 177.45
Easting: 728439.1576	Ground Water level: 7' 1"

SAMPLE							
No.	**Depth**	**Pen. In.**	**Rec. In.**	**Blows/6"**	**N Value**	**Strata Change**	**SAMPLE DESCRIPTION**
							Asphalt Thickness: N/A
S-1	0-2'			Grab Sample			S-1: Brown, fine sand and 5" to 14" nested boulders, some fine to medium gravel, trace coarse sand.
S-2	2'-4'			Grab Sample			S-2: Brown, fine sand and 3" to 12" nested boulders, some fine to medium gravel, trace coarse sand. Location was vactored to 47"
S-3	4'-6'	24"	13"	13-28-26-21	54		S-3: Very dense, tan, fine to medium sand, some fine to medium gravel, coarse gravel.
						Boulder	Boulder 7.2'-8.5'
S-4	9'-11'	24"	10"	22-25-18-22	43		S-4: Dense, brown, fine silty sand and fine to medium gravel, some coarse gravel, trace coarse sand.
S-5	14'-16'	24"	9"	15-13-9-7	22		S-5: Medium dense, gray, fine silty sand, some fine to medium gravel, trace coarse sand.
S-6	19'-21'	24"	12"	12-24-17-20	41		S-6: Dense, gray, fine sand, some coarse sand, trace fine gravel, trace silt.
S-7	24'-26'	24"	11"	16-17-25-21	42		S-7: Dense, gray, fine sand, some silty fine sand, trace coarse sand, trace fine gravel.
							Bottom of Exploration = 26'

Cohesionless Density Blows/ft: 6-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense
0-5 Very Loose

Northern Drill Service, Inc.	Client: Beta	Boring #
33 Talbot Road, Northborough, MA 01532	Project: Rt-106, Mansfield, MA	B1-2
TEL 508-393-6900 FAX 508-393-6901	Location: Mansfield MA	Page 1 OF 1

File #:		Casing/Auge	SAMPLER	CORE BARREL
Date Started: 5-14-2025 12:15 PM	TYPE	HW	S/S	NV2
Date Completed: 5-15-2025 11:00AM	SIZE	4"	2"	1-7/8"
Driller: Tyler Kennedy	HAMMER	140	140	
Site Rep.:	FALL	30"	30"	

Northing: 2836602.0311	Elevation: 177.28
Easting: 728544.0153	Ground Water level: 7'

SAMPLE							
No.	**Depth**	**Pen. In.**	**Rec. In.**	**Blows/6"**	**N Value**	**Strata Change**	**SAMPLE DESCRIPTION**
							Asphalt Thickness: 18"
S-1	0'-2'			Grab Sample			S-1: Brown,fine sand, some fine to medium gravel, 3"-9" boulders nested throughout.
S-2	2'-4'			Grab Sample			S-2: Brown, coarse sand and fine to medium gravel. Some fine sand, 3"-12" boulders nested throughout.
							Pre-cleared to 5.5'
S-3	4'-6'	24"	7"	3-2-3-13	5		S-3: Disturbed to 5.5', loose, brown, fine to medium sand, some coarse sand and fine to medium gravel, trace coarse gravel.
							Boulder from 7'-7.5'
S-4	9'-11'	24"	12"	20-13-11-7	24		S-4: Medium dense, tan, fine silty sand, some fine to medium gravel, trace coarse sand, trace coarse gravel.
S-5	14'-16'	24"	8"	17-22-15-14	37		S-5: Dense, gray, coarse sand and fine to medium gravel, some coarse gravel, trace fine sand.
S-6	19'-21'	24"	12"	8-7-9-10	16		S-6: Medium dense, gray, fine to medium sand, some fine to coarse gravel, trace silty fine sand.
S-7	24'-26'	24"	10"	11-11-9-12	20		S-7: Medium dense, gray, silty fine sand, some fine to medium gravel, trace coarse gravel.
							Bottom of Exploration = 26'

Cohesionless Density Blows/ft: 6-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense
0-5 Very Loose

Northern Drill Service, Inc.	Client: Beta				Boring #
33 Talbot Road, Northborough, MA 01532	Project: Rt-106, Mansfield, MA				B1-3
TEL 508-393-6900 FAX 508-393-6901	Location: Mansfield MA				Page 1 OF 1
File #:		Casing/Auge	SAMPLER	CORE BARREL	
Date Started: 5-16-2025 10:45 AM	TYPE		HW	S/S	NV2
Date Completed: 5-16-2025 2:30 PM	SIZE		4"	2"	1-7/8"
Driller: Tyler Kennedy	HAMMER		140	140	
Site Rep.:	FALL		30"	30"	
Northing: 2836447.2542	Elevation:	172.59			
Easting: 728699.2950	Ground Water level:		5'9"		

SAMPLE							
No.	**Depth**	**Pen. In.**	**Rec. In.**	**Blows/6"**	**N Value**	**Strata Change**	**SAMPLE DESCRIPTION**
							Asphalt Thickness: N/A
S-1	0'-2'			Grab Sample			S-1: Brown, fine sand, some fine to medium gravel, trace coarse sand, 2"-8" boulders nested throughout.
S-2	2'-4'			Grab Sample			S-2: Brown, fine to coarse sand, some fine to medium gravel, trace coarse gravel. 2"-8" boulders nested throughout.
							Vactored to 5'5"
S-3	4'-6'	24"	6"	5-6-12-25	18		S-3: Medium dense, brown, fine to coarse gravel, some coarse sand, trace fine gravel, trace fine sand.
						boulder	Boulder from 6.5'-7'
S-4	9'-11'	24"	7"	15-13-12-13	25		S-4: Medium dense, tan, fine to medium sand, some fine to coarse gravel, trace fine silty sand.
S-5	14'-16'	24"	6"	5-3-10-13	13		S-5: Medium dense, gray, silty fine sand, some coarse sand, some fine to medium gravel, trace coarse gravel.
S-6	19'-21'	24"	8"	19-18-13-12	31		S-6: Dense, gray, fine sand and fine to coarse gravel, some silty fine sand, trace coarse sand.
S-7	24'-26'	24"	9"	15-13-8-11	21		S-7: Medium dense, gray, coarse and and fine to coarse gravel, some fine sand, trace silty fine sand.
							Bottom of Exploration = 26'

Cohesionless Density Blows/ft: 6-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense
0-5 Very Loose

Northern Drill Service, Inc.	Client: Beta				Boring #
33 Talbot Road, Northborough, MA 01532	Project:				B1-4
TEL 508-393-6900 FAX 508-393-6901	Location: Mansfield MA				Page 1 OF 1
File #:		Casing/Auge	SAMPLER	CORE BARREL	
Date Started: 5-19-2025 9:00 AM	TYPE		HWT/ NW	S/S	NV2
Date Completed: 5-19-25 2:30 PM	SIZE		4"/3"	2"	1-7/8"
Driller: Jonathan Beirholm	HAMMER		140	140	
Site Rep.:	FALL		30"	30"	
Northing: 2836615.6869	Elevation:	178.28			
Easting: 728421.9690	Ground Water level:		7' 8"		

SAMPLE						Strata	
No.	**Depth**	**Pen. In.**	**Rec. In.**	**Blows/6"**	**N Value**	**Change**	**SAMPLE DESCRIPTION**
							Asphalt Thickness: 8"
S-1	8"-2'			Grab Sample			S-1: Brown, fine sand, some fine to coarse gravel, trace coarse sand, 2"-6" boulders nested throughout.
S-2	2'-4'			Grab Sample			S-2: Brown, fine sand, some fine to coarse gravel, trace coarse sand, some 2"-10' boulders nested throughout. Pre-cleared location to 5'
S-3	4'-6'	24"	9"	4-4-3-2	7		S-3: Disturbed sample, loose, brown, fine sand and fine to coarse gravel, some silty fine sand, trace coarse sand.
						boulder	Boulder 9.2'-13.1'
S-4	9'-11'	3"	1"	100/3"			S-4: Very dense, brown, coarse gravel, some coarse sand, trace fine sand. Refusal at 9'3" on boulder 9.2' to 13.1'
S-5	14'-16'	24"	12"	21-26-27-19	53		S-5: Very dense, gray, coarse sand and gravel, some fine sand, trace silty fine sand.
S-6	19'-21'	24"	14"	25-29-18-12	47		S-6: Dense, gray, fine silty sand, some fine to coarse gravel, trace coarse sand.
S-7	24'-26'	24"	12"	20-27-26-31	53		S-7: Very dense, gray, fine silty sand, some fine to coarse gravel, trace coarse sand. Location was moved 5' North of original location due to utilities and traffic management safety concerns. Bottom of Exploration = 26'

Cohesionless Density Blows/ft: 6-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense
0-5 Very Loose

Northern Drill Service, Inc.	Client: Beta				Boring #
33 Talbot Road, Northborough, MA 01532	Project: Rt-106, Mansfield, MA				B1-5
TEL 508-393-6900 FAX 508-393-6901	Location: Mansfield Ma				Page 1 OF 1
File #:		Casing/Auge	SAMPLER	CORE BARREL	
Date Started: 5-14-2025 9:10 AM	TYPE		HW	S/S	NV2
Date Completed: 5-14-2025 11:45 AM	SIZE		4"	2"	1-7/8"
Driller: Tyler Kennedy	HAMMER		140	140	
Site Rep.:	FALL		30"	30"	
Northing: 2836456.2516	Elevation:	175.88			
Easting: 728594.2488	Ground Water level:		7' 2"		

SAMPLE						Strata	
No.	**Depth**	**Pen. In.**	**Rec. In.**	**Blows/6"**	**N Value**	**Change**	**SAMPLE DESCRIPTION**
							Asphalt Thickness: 2"
S-1	2"-2'			Grab Sample			S-1: Brown, fine sand, some fire to coarse gravel, some coarse sand, 2"- 12" boulders nested throughout.
S-2	2'-42"			Grab Sample			S-2: Brown, fine silty sand and fine to coarse gravel, some coarse sand, trace organics. 2"-12" boulders nested throughout.
							Vactor refusal 42"
S-3	4'-6'	24"	6"	6-5-6-6	11		S-3: Medium dense, fine silty sand and fine to coarse gravel, trace wood, trace organics.
S-4	9'-11'	24"	11"	23-17-12-14	29		S-4: Medium dense, tan, coarse sand, some fine to coarse gravel, trace fine sand.
S-5	14'-16'	24"	7"	13-13-10-5	23		S-5: Medium dense, tan, coarse gravel, some fine sand, trace silty fine sand.
						Boulder	Boulder from 18'-18.5'
S-6	19'-21'	24"	9"	13-10-11-14	21		S-6: Medium dense, gray, fine to coarse gravel and coarse sand, some fine sand, trace silt.
S-7	24'-26'	24"	8"	10-11-25-26	36		S-7: Dense, gray, fine sand, some fine to coarse gravel, some silty fine sand, trace coarse sand.
							Moved approx. 3' East due to large rock obstruction at 3' while vactoring.
							Bottom of Exploration = 26'

Cohesionless Density Blows/ft: 6-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense
0-5 Very Loose

Northern Drill Service, Inc.	Client: Beta				Boring #
33 Talbot Road, Northborough, MA 01532	Project: Rt-106, Mansfield, MA				B1-6
TEL 508-393-6900 FAX 508-393-6901	Location: Mansfield MA				Page 1 OF 1
File #:		Casing/Auge	SAMPLER	CORE BARREL	
Date Started: 5-20-2025 12:45PM	TYPE		HWT/NW	S/S	NV2
Date Completed: 5-21-2025 9:45 AM	SIZE		4"/3"	2"	1-7/8"
Driller: Jonathan Beirholm	HAMMER		140	140	
Site Rep.:	FALL		30"	30"	
Northing: 2836602.4978	Elevation:	174.16			
Easting: 728585.8719	Ground Water level:		6' 8"		

SAMPLE							
No.	**Depth**	**Pen. In.**	**Rec. In.**	**Blows/6"**	**N Value**	**Strata Change**	**SAMPLE DESCRIPTION**
							Asphalt Thickness: N/A
S-1	0'-2'			Grab Sample			S-1: Brown, fine sand, some fine to coarse gravel, trace coarse sand. 3"-10" boulders nested throughout.
S-2	2'-4'			Grab Sample			S-2: Brown., fine sand and gravel, some coarse gravel, trace course sand, trace organics roots.
							Pre- Cleared to 5.5'
S-3	4'-6'	24"	17"	5-3-3-2	6		S-3: Distrubed sample, black, fine sand, organics.
S-4	9'-11'	24"	4"	5-8-9-27	17		S-4: Medium dense, tan, coarse sand and fine to coarse gravel, trace fine sand.
						Boulder	Boulder 11'-13.6'
S-5	14'-16'	24"	6"	18-17-12-16	29		S-5: Medium dense, gray, fine to coarse gravel and coarse sand, some fine sand, trace silt.
						Boulder	Boulder 17'-18.5'
S-6	19'-21'	24"	3"	11-13-13-9	26		S-6: Medium dense, gray, fine to coarse gravel, some coarse sand, trace fine sand.
						Boulder	Boulder 21.5'-23'
S-7	24'-26'	24"	4"	20-14-17-19	31		S-7: Dense, gray, silty fine sand, some fine gravel.
							Bottom of Exploration = 26"

Cohesionless Density Blows/ft: 6-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense
0-5 Very Loose

Northern Drill Service, Inc.	Client: Beta				Boring #
33 Talbot Road, Northborough, MA 01532	Project: Rt-106, Mansfield, MA				B2-1
TEL 508-393-6900 FAX 508-393-6901	Location: Mansfield MA				Page 1 OF 1
File #:		Casing/Auge	SAMPLER	CORE BARREL	
Date Started: 5-28-2025 9:00 AM	TYPE	HW	S/S	NV2	
Date Completed: 5-28-2025 1:30 PM	SIZE	4"	2"	1-7/8"	
Driller: James Fleming	HAMMER	140'	140		
Site Rep.:	FALL	30"	30"		
Northing: 2836195.2140	Elevation:	170.68			
Easting: 729771.3381	Ground Water level:	5'			

SAMPLE						Strata	
No.	**Depth**	**Pen. In.**	**Rec. In.**	**Blows/6"**	**N Value**	**Change**	**SAMPLE DESCRIPTION**
							Asphalt Thickness: 8"
S-1	8"-2'			Grab Sample			S-1: Brown, fine sand, some fine to coarse gravel, trace coarse sand. 4"-8" nested in top 1'-3'.
S-2	2'-4'			Grab Sample			S-2: Brown, fine sand, trace fine gravel.
							Pre-cleared to 5'5"
S-3	4'-6'	24"	10"	6-11-22-31	33		S-3: Disturbed sample, brown, fine sand, trace fine gravel.
						7'	6" Boulder
S-4	9'-11'	24"	9"	12-33-30-42	63		S-4: Very dense, brown, silty fine sand, some coarse sand, trace fine to coarse gravel.
						13'	6" Boulder
S-5	14'-16'	5"	2"	100/5"			S-5: Very dense, gray, fine to coarse gravel, some silty fine sand.
						14.5'	Boulder 14.5'- 18'
						18'	Glacial till
S-6	19'-21'	20"	11"	30-54-80-100/2"			S-6: Very dense, dark gray, fine sand, some fine to coarse gravel, glacial till.
S-7	24'-26'	12"	7"	46-120/6"			S-7: Very dense, dark gray, silty fine sand, some fine to coarse gravel, glacial till.
							Bottom of Exploration = 25'

Cohesionless Density Blows/ft: 6-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense
0-5 Very Loose

Northern Drill Service, Inc.	Client: Beta				Boring #
33 Talbot Road, Northborough, MA 01532	Project: Rt-106, Mansfield, MA				B2-2
TEL 508-393-6900 FAX 508-393-6901	Location: Mansfield MA				Page 1 OF 1
File #:		Casing/Auge	SAMPLER	CORE BARREL	
Date Started: 5-22-2025 8:30 AM	TYPE		HW	S/S	NV2
Date Completed: 5-22-2025 1:00 PM	SIZE		4"	2"	1-7/8"
Driller: James Fleming	HAMMER		140'	140	
Site Rep.:	FALL		30"	30"	
Northing: 2836182.5106	Elevation:	171.22			
Easting: 729730.6502	Ground Water level:		12'		

SAMPLE							
No.	**Depth**	**Pen. In.**	**Rec. In.**	**Blows/6"**	**N Value**	**Strata Change**	**SAMPLE DESCRIPTION**
							Asphalt Thickness: 2.5"
S-1	2.5"-2'			Grab Sample			S-1: Brown, fine sand and fine to coarse gravel, some coarse sand, 2"-12" boulders nested throughout.
S-2	2'-4'			Grab Sample			S-2: Brown, fine sand, some fine to coarse gravel, trace coarse sand, 2"-12" boulders nested throughout.
							Pre-cleared to 5'9"
S-3	4'-6'	24"	8"	18-20-11-20	31		S-3: Disturbed sample, tan, fine sand and fine to coarse gravel, some coarse sand.
S-4	9'-11'	24"	10"	20-41-50-45	91		S-4: Very dense, brown, fine and coarse sand, some fine gravel, trace coarse gravel, trace silt.
S-5	14'-16'	11"	4"	75-100/5"	100		S-5: Very dense, gray, fine sand, some fine gravel, glacial till.
S-6	19'-21'	1"	4"	32-100/1"	100		S-6: Very dense, gray, fine sand, some fine gravel, trace coarse gravel, glaical till.
S-7	24'-26'	5"	3"	100/5"	100		S-7: Very dense, gray, silty fine sand, some fine to coarse gravel, glacial till.
							Bottom of Exploration = 24'5"

Cohesionless Density Blows/ft: 6-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense
0-5 Very Loose

Northern Drill Service, Inc.	Client: Beta				Boring #
33 Talbot Road, Northborough, MA 01532	Project: Rt-106, Mansfield, MA				B2-3
TEL 508-393-6900 FAX 508-393-6901	Location: Mansfield MA				Page 1 OF 1

File #:		Casing/Auge	SAMPLER	CORE BARREL
Date Started: 5-20-2025 12:45 PM	TYPE	HW	S/S	NV2
Date Completed: 5-21-2025 2:00 PM	SIZE	4"	2"	1-7/8"
Driller: James Fleming	HAMMER	140	140	
Site Rep.:	FALL	30"	30"	
Northing: 2836287.3228	Elevation:	173.29		
Easting: 729641.6902	Ground Water level:	18'		

SAMPLE							
No.	**Depth**	**Pen. In.**	**Rec. In.**	**Blows/6"**	**N Value**	**Strata Change**	**SAMPLE DESCRIPTION**
							Asphalt Thickness: N/A
S-1	0'-2'			Grab Sample			S-1: Brown, fine sand, some coarse sand, some fine gravel, trace coarse gravel. 2"-12" nested boulders throughout.
S-2	2'-4'			Grab Sample		36"-42" dense re-worked till layer	S-2: Brown, fine sand, some coarse sand, some fine to coarse gravel. 2"-12" boulders nested throughout. vactored to 55"
S-3	4'-6'	24"	10"	18-22-90-100	112		S-3: Disturbed sample, brown, fine sand, some fine to coarse gravel, trace coarse sand.
S-4	9'-11'	24"	8"	19-37-54-60	91		S-4: Very dense, gray, silty fine sand, some fine gravel, trace coarse gravel.
S-5	14'-16'	4"	4"	100/4"			S-5: Very dense, gray, coarse sand and gravel, some silty fine sand, trace fine gravel.
S-6	19'-21'	1"	NR	100/1"			S-6: Very dense, no recovery.
S-7	24'-26'	5"	1"	100/5"			S-7: Very dense, gray, fine silty sand, some fine gravel, trace coarse gravel.
							Bottom of Exploration = 24'-5"

Cohesionless Density Blows/ft: 6-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense
0-5 Very Loose

Northern Drill Service, Inc.	Client: Beta	Boring #
33 Talbot Road, Northborough, MA 01532	Project: Rt-106, Mansfield, MA	B2-4
TEL 508-393-6900 FAX 508-393-6901	Location: Mansfiled MA	Page 1 OF 1

File #:		Casing/Auge	SAMPLER	CORE BARREL
Date Started: 5-19-2025 12:45PM	TYPE	HW	S/S	NV2
Date Completed: 5-20-2025 11:00AM	SIZE	4"	2"	1-7/8"
Driller: James Fleming	HAMMER	140	140	
Site Rep.:	FALL	30"	30"	
Northing: 2836279.7254	Elevation:	172.39		
Easting: 729676.9133	Ground Water level:	8'4"		

SAMPLE						Strata	
No.	**Depth**	**Pen. In.**	**Rec. In.**	**Blows/6"**	**N Value**	**Change**	**SAMPLE DESCRIPTION**
							Asphalt Thickness: N/A
S-1	0'-2'			Grab sample			S-1: Brown, fine sand, some fine to coarse gravel, trace coarse sand. 6"-12"boulders nested throughout.
S-2	2'-4'			Grab Sample			S-2: Brown, fine sand, some coarse sand, some fine to coarse gravel. 6"-12" boulders nested from 0-4.5'.
							Vactored to 4'5"
S-3	4'-6'	24"	8"	8-20-40-100	60		S-3: Very dense, brown, fine sand, some fine to coarse gravel, trace coarse sand.
						Boulder	Cored Boulder 6'-9'
S-4	9'-11'	24"	10"	10-95-21-26	116	Glacial till	S-4: Very dense, gray, silty fine sand, some fine to coarse gravel, glacial till.
S-5	14'-16'	24"	7"	21-32-62-44	95		S-5: Very dense, gray, silty fine sand, some fine gravel. Glacial till.
S-6	19'-21'	24"	12"	26-31-37-40	68		S-6: Very dense, dark gray, silty fine sand, some fine gravel. Glacial till.
S-7	24'-26'	23"	5"	28-39-41-100/5	80		S-7: Very dense, black, silty fine sand, trace fine gravel. Glacial till.
							Moved 3' north west of painted location to allow room for drill set up.
							Bottom of Exploration = 25'-11"

Cohesionless Density Blows/ft: 6-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense
0-5 Very Loose

Northern Drill Service, Inc.	Client: Beta				Boring #
33 Talbot Road, Northborough, MA 01532	Project: Rt-106, Mansfield, MA				B2-5
TEL 508-393-6900 FAX 508-393-6901	Location: Mansfield MA				Page 1 OF 1
File #:		Casing/Auge	SAMPLER	CORE BARREL	
Date Started: 5-21-2025 11:45 AM	TYPE		HWT/NW	S/S	NV2
Date Completed: 5-22-2025 11:00 AM	SIZE		4"/3"	2"	1-7/8"
Driller: Jonathan Beirholm	HAMMER		140	140	
Site Rep.:	FALL		30"	30"	
Northing: 2836282.3591	Elevation:	171.45			
Easting: 729744.1327	Ground Water level:		7' 9"		

SAMPLE							
No.	**Depth**	**Pen. In.**	**Rec. In.**	**Blows/6"**	**N Value**	**Strata Change**	**SAMPLE DESCRIPTION**
							Asphalt Thickness: N/A
S-1	0'-2'			Grab Sample			S-1: Red-Brown, silty fine sand, trace fine to coarse gravel.
S-2	2'-4'			Grab Sample			S-2: Brown, coarse sand some fine to coarse gravel, trace fine sand.
						Boulders	Stacked Boulders 4.5'-7.5'
S-3	4'-6'	24"	7"	4-1-3-8	4		S-3: Loose, tan coarse sand and fine to coarse gravel, some silty fine sand.
						Boulders	Stacked Boulders: 8'-11.5'
S-4	9'-11'	2"	2"	100/2"			S-4: Very dense, gray, silty fine sand and coarse gravel, trace coarse sand.
S-5	14'-16'	16"	10"	26-29-100/4"		Glacial till 14'	S-5: Very dense, tan, silty fine sand, trace fine gravel, glacial till.
						Boulder	Boulder 15.5'-18'
S-6	19'-21'	9"	9"	53-100/3"			S-6: Very dense, gray, silty fine sand, some fine to coarse gravel, glacial till.
						Boulder	Boulder 20'-22.3'
S-7	24'-26'	20"	8"	57-65-79-100/2"	144		S-7: Very dense, gray, silty fine sand, some fine to coarse gravel, glacial till.
							Bottom of Exploration = 25'-8"

Cohesionless Density Blows/ft: 6-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense
0-5 Very Loose

Northern Drill Service, Inc.	Client: Beta				Boring #
33 Talbot Road, Northborough, MA 01532	Project: Rt-106, Mansfield, MA				B3-1
TEL 508-393-6900 FAX 508-393-6901	Location: Mansfield MA				Page 1 OF 1
File #:		Casing/Auge	SAMPLER	CORE BARREL	
Date Started: 5-19-2025 9:00 AM	TYPE	HW	S/S	NV2	
Date Completed: 5-19-2025 12:30 PM	SIZE	4"	2"	1-7/8"	
Driller: James Fleming	HAMMER	140	140		
Site Rep.:	FALL	30"	30"		
Northing: 28363990.2044	Elevation:	168.68			
Easting: 729082.7645	Ground Water level:	3'-9"			

SAMPLE							
No.	**Depth**	**Pen. In.**	**Rec. In.**	**Blows/6"**	**N Value**	**Strata Change**	**SAMPLE DESCRIPTION**
							Asphalt Thickness: 4"
S-1	0'-2'			Grab Sample			S-1: Brown, fine sand, some fine to coarse gravel, trace coarse sand.
S-2	2'-4'			Grab Sample			S-2: Brown, coarse sand and fine to coarse gravel, some silty fine sand. 2"-8" boulders from 2'-4' vactored 3'-9" water encountered
S-3	4'-6'	24"	5"	5-2-3-10	5	4'-5' 5'-6'	S-3: 4'-5'- Loose, brown, fine silty sand, some wood, organics. 5'-6'- Loose, tan, fine to coarse gravel, some coarse sand, trace fine sand.
						Boulder	Boulder 8.5'-9'
S-4	9'-11'	24"	10"	34-35-36-33	71		S-4: Very dense, gray, coarse sand and gravel, some fine sand, trace fine gravel, trace silty fine sand.
S-5	14'-16'	24"	12"	26-30-20-10	50		S-5: Very dense, gray, course gravel, some fine gravel, trace fine to coarse sand.
S-6	19'-21'	24"	8"	12-12-20-12	32		S-6: Dense, gray, silty fine sand, some fine to coarse gravel, trace coarse sand. No recovery with 2" spoon, used 3" spoon to obtain sample.
S-7	24'-26'	24"	9"	58-30-10-31	40		S-7: Dense, gray, silty fine sand, some fine gravel, trace coarse gravel.
							Moved approx 5' NW, closer to edge of road to avoid two water lines in the roadway.
							Bottom of Exploration = 26'

Cohesionless Density Blows/ft: 6-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense
0-5 Very Loose

Northern Drill Service, Inc.	Client: Beta				Boring #
33 Talbot Road, Northborough, MA 01532	Project: Rt-106, Mansfield, MA				B3-2
TEL 508-393-6900 FAX 508-393-6901	Location: Mansfield MA				Page 1 OF 1

File #:		Casing/Auge	SAMPLER	CORE BARREL
Date Started: 5-15-2025 11:30AM	TYPE	HW	S/S	NV2
Date Completed: 5-16-2025 10:15 AM	SIZE	4"	2"	1-7/8"
Driller: Tyler Kennedy	HAMMER	140	140	
Site Rep.:	FALL	30"	30"	
Northing: 2836274.6614	Elevation:	174.1		
Easting: 729499.1843	Ground Water level:	6'-7"		

SAMPLE							
No.	**Depth**	**Pen. In.**	**Rec. In.**	**Blows/6"**	**N Value**	**Strata Change**	**SAMPLE DESCRIPTION**
							Asphalt Thickness: 4"
S-1	0'-2'			Grab Sample			S-1: Brown, fine sand, trace coarse gravel, 4"-8" boulders nested throughout.
S-2	2'-4'			Grab Sample			S-2: Brown, fine sand, some fine to coarse gravel. Dense layer 3' to 4'2".
							Vactor to 4'2"
S-3	4'-6'	15"	5"	16-88-100/3"			S-3: Very dense, tan, fine sand, some fine gravel, trace coarse gravel.
						Boulder	Boulder 5'3"-5'9"
S-4	9'-11'	24"	8"	11-10-5-6	15		S-4: Medium dense, gray, silty fine sand, some fine to course gravel.
S-5	14'-16'	16"	12"	38-52-100/4"			S-5: Very dense, gray, silty fine sand, some fine to coarse gravel, glacial till.
						15'4"-17'6"	Button bit weathered rock 15'4" - 17'6". Cored 18.5'-23.5'
C-1	18.5'-23.5'	60"	55.5"		RQD=23%	18.5'	C-1: Sandstone RQD= 23%
						21'	4" sand seam at 21'
							Moved approx 7' south to edge of roadway to maintain two lanes of travel per MassDOT TMP.
							Bottom of Exploration = 23.5'

Cohesionless Density Blows/ft: 6-10 Loose 10-30 Medium-Dense 30-50 Dense 50+ Very Dense
0-5 Very Loose

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MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		1	10
PROJECT FILE NO.	608944		

UTILITY ENGINEERING TITLE SHEET

UTILITY ENGINEERING PLAN SET

CHAUNCY STREET (ROUTE 106)
ROUTE 140 TO COPELAND DRIVE

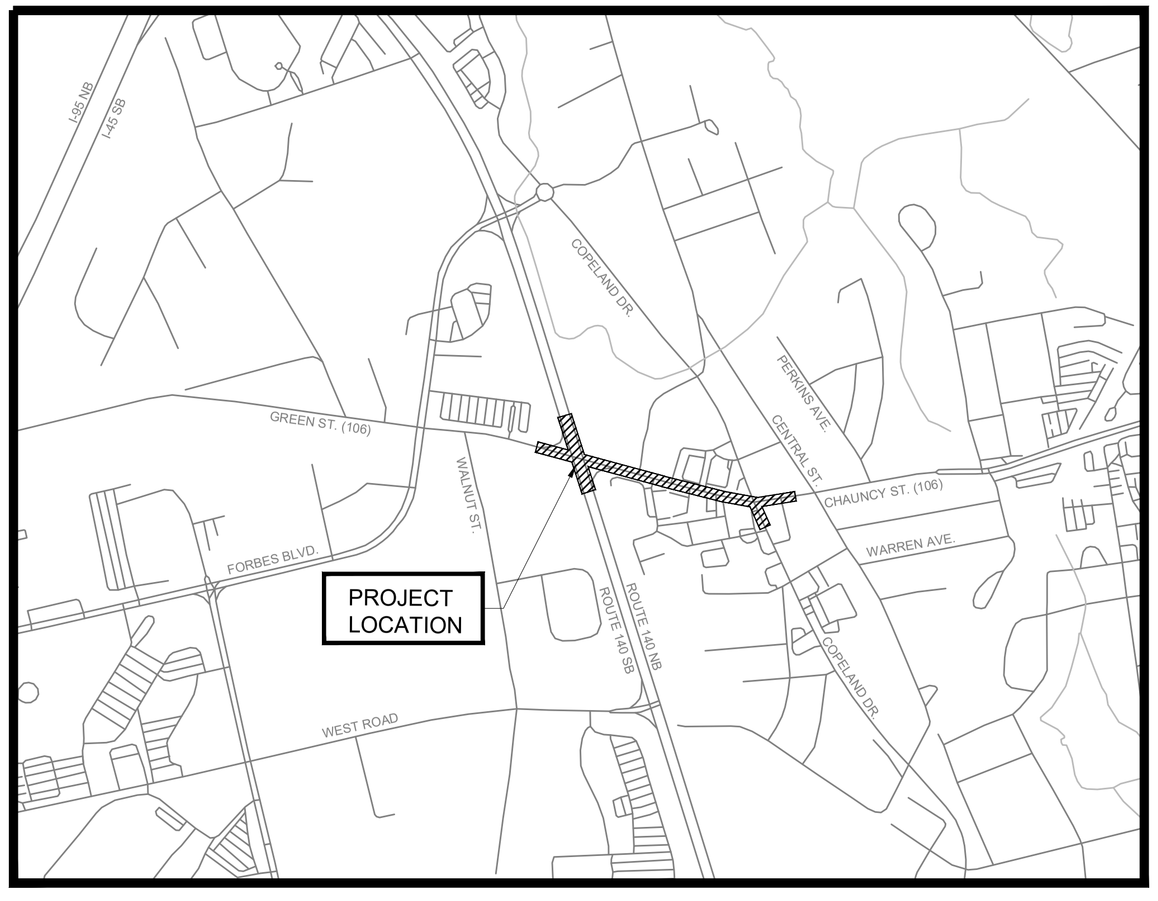
IN THE TOWN OF

MANSFIELD

BRISTOL COUNTY

FEDERAL AID PROJECT NO.

100% SUBMITTAL



0 750 1500 2250 3000

SCALE: 1" = 750'

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET & INDEX
2	UTILITY ENGINEERING LEGEND
3	UTILITY ENGINEERING NOTES
4-7	UTILITY ENGINEERING PLANS
8-10	VACUUM EXCAVATION LOGS

JAMES FITZPATRICK NOONE
COMMONWEALTH OF MASSACHUSETTS
CIVIL
No. 37911
REGISTERED PROFESSIONAL ENGINEER
6/27/25

massDOT Massachusetts Department of Transportation Highway Division

PREPARED BY: OVERLAND ENGINEERING

REVISIONS		
REV.	COMMENTS	DATE

SCALE: NA FEET TO THE INCH

FILE NAME: 608944_SH.dwg
FIELD BOOK. NO: 6271
DISTRICT 5 UTILITY ENGINEER: CL
FIELD CHIEF: JFN PARS. NO:

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
UTILITY ENGINEERING PLAN
CHAUNCY STREET (ROUTE 106)
IN THE TOWN OF
MANSFIELD
100% SUBMITTAL
608944

DATE: 6/27/25 SHEET 1 OF 10

Proposal No. 613052-131228
608944_SH.DWG Plotted on 27-Jun-2025 1:19 PM
A00892 - 17

UTILITY ENGINEERING ABBREVIATIONS

AATR	ABANDONED ACCORDING TO RECORD	IP	IRON PIPE
ABAND	ABANDONED	LB	LEACHING BASIN
ACP	ASBESTOS CONCRETE PIPE	LP	LOW PRESSURE
AUX	AUXILIARY	MAG	MAG NAIL
BIT	BITUMINOUS	MH	MANHOLE
BM	BENCH MARK	MTL	METAL
CAB	CABINET	OHW	OVERHEAD WIRE
CB	CATCH BASIN	PED	PEDESTRIAN
CH	CHIMNEY	PK	PK NAIL
CI	CAST IRON	PL	PLASTIC
CIP	CAST IRON PIPE	PTC	PIPE TYPE HIGH VOLTAGE POWER CONDUIT
CMH	CABLE MANHOLE	PVC	POLYVINYL CHLORIDE PIPE
CMP	CORRUGATED METAL PIPE	PWW	PAVED WATERWAY
CONC	CONCRETE	PZ	PIEZOMETER
CPP	CORRUGATED PLASTIC PIPE	RC	REINFORCED CONCRETE
CSP	CORRUGATED STEEL PIPE	RCP	REINFORCED CONCRETE PIPE
CS	COATED STEEL	RR	RAILROAD
CSS	COMBINED SEWER	RRS	RAILROAD SPIKE
CTV	CABLE TV	SB	STONE BOUND
CULV	CULVERT	SD	STORM DRAIN
DB	DIRECT BURIED	SFM	SEWER FORCE MAIN
DH	DRILL HOLE	SMH	SEWER MANHOLE
DI	DUCTILE IRON	SS	SANITARY SEWER
DIA	DIAMETER	SU	SUMP DEPTH
DICL	DUCTILE IRON CEMENT LINED PIPE	T	TELECOMMUNICATIONS LINE
DMH	DRAIN MANHOLE	TAN	TANGENT
DSK	DISK	TC	TERRA COTTA TILE CONDUIT
E	ELECTRICAL POWER	TEMP	TEMPORARY
EL	ELEVATION	TMH	TELEPHONE MANHOLE
EMH	ELECTRIC MANHOLE	TR	TRAFFIC SIGNAL CONDUIT
EX	EXISTING	TRMH	TRAFFIC CONTROL MANHOLE
FA	FIRE ALARM	TYP	TYPICAL
FBR	FIBER CONDUIT	UNK	UKNOWN UTILITY TYPE
FL	FLOWLINE	UMH	UKNOWN MANHOLE
FO	FIBER OPTIC	VCP	VITRIFIED CLAY PIPE
G	GAS	VLT	VAULT
GIP	GALVANIZED IRON PIPE	W	WATER
GMH	GAS MANHOLE	WD	WOOD
HDPE	HIGH DENSITY POLYETHYLENE	WIP	WROUGHT IRON PIPE
HYD	HYDRANT	WMH	WATER MANHOLE
INV	INVERT		

UTILITY LABELS LEGEND

UTILITY LINES ARE LABELED AS FOLLOWS:

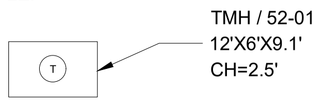
"SIZE/# " - "MATERIAL TYPE" - "UTILITY TYPE" - "UTILITY OWNER" - "ASCE/CI 38-22 QUALITY LEVEL"

EXAMPLE: 12" RCP SD MADOT QL-C

NON-GRAVITY MANHOLES VAULTS ARE LABELED AS FOLLOWS:

"VAULT TYPE / ID No. (WHEN AVAILABLE)"
"INTERNAL VAULT DIMENSIONS" (L' X W' X D') (FT)
"CHIMNEY DEPTH FROM GRADE TO VAULT CEILING" (FT)

EXAMPLE:



OVERHEAD UTILITY LINES ARE LABELED AS FOLLOWS:

UTA "X" - UNDERGROUND TO AERIAL - CONNECTION BETWEEN UNDERGROUND SYSTEM AND AERIAL SYSTEM FOLLOWED BY "X" UTILITY TYPE.

(X)E1 - SINGLE PHASE ELECTRICAL SYSTEM FOR SUPPLY AND DISTRIBUTION

(X)E3 - THREE PHASE ELECTRICAL SYSTEM TYPICALLY FOR DISTRIBUTION

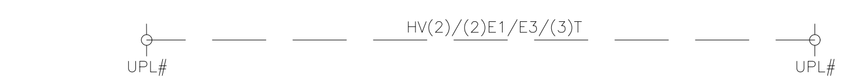
(X)HV(Y) - HIGH VOLTAGE SYSTEM TYPICALLY FOR TRANSMISSION AND CONNECTED TO DISTRIBUTION SYSTEMS AT SUBSTATIONS WHERE (Y) REPRESENTS NUMBER OF CIRCUITS, SINGLE (1), DOUBLE (2), TRIPLE (3).

(X)GW - GUY WIRE

T - TELEPHONE / DATA / COMMUNICATIONS SYSTEMS. INCLUDES COPPER, FIBER OPTIC, COAX, OR COMBINATION THERE OF.

EXAMPLE:

(2)E1
- OTHER THAN FOR SINGLE INSTANCES, A PRECEDING (X) INDICATES NUMBER OF EACH SYSTEM
(3)T



POLE TAG INFO. BLOCK
POLE ID# –POLE ID NUMBER
OWNER –POLE OWNER
DIA. –POLE DIAMETER
MATERIAL –POLE MATERIAL TYPE (WOOD, METAL, CONCRETE)
ATMNT. –ATTACHMENTS TO POLE

POLE ATTACHMENTS LEGEND
(X)UTA E –ELECTRIC UNDERGROUND TO AERIAL
(X)UTA T –TELECOMMUNICATIONS UNDERGROUND TO AERIAL
(X)T –TRANSFORMER
(X)LT –LIGHT
(X)GW –GUY WIRE
(X)EM –ELECTRIC METER
(X)W –ELECTRIC SWITCH
(X)OHS –OVERHEAD SIGN
(X)TS –TRAFFIC SIGNAL
(X)EQB –EQUIPMENT BOX

LINE TYPES LEGEND

QUALITY LEVEL B
QUALITY LEVEL C
QUALITY LEVEL D
QL-D|QL-B
QUALITY LEVEL CHANGE
PIPE SIZE CHANGE
PIPE CAP/END
END OF INFORMATION

CABLE TV QL-B
ELECTRIC QL-B
GAS QL-B
STORM DRAIN QL-B
SANITARY SEWER QL-B
TELECOMMUNICATION QL-B
TRAFFIC CONTROL QL-B
UNKNOWN SIGNAL QL-B
WATER QL-B

CABLE TV QL-C
ELECTRIC QL-C
GAS QL-C
STORM DRAIN QL-C
SANITARY SEWER QL-C
TELECOMMUNICATION QL-C
TRAFFIC CONTROL QL-C
UNKNOWN SIGNAL QL-C
WATER QL-C

CABLE TV QL-D
ELECTRIC QL-D
GAS QL-D
STORM DRAIN QL-D
SANITARY SEWER QL-D
TELECOMMUNICATION QL-D
TRAFFIC CONTROL QL-D
UNKNOWN SIGNAL QL-D
WATER QL-D

PIPE AND DUCT BANK LEGEND:

DUCTS	DIMENSIONS									
	3" DUCTS		3 1/2" DUCTS		4" DUCTS		4 1/2" DUCTS		5" DUCTS	
	A Inches	B Inches	A Inches	B Inches	A Inches	B Inches	A Inches	B Inches	A Inches	B Inches
2 x 1	15	10	16	10	17	11	18	11	19	12
3 x 1	20	10	21	10	23	11	24	11	26	12
4 x 1	25	10	25	10	27	11	31	11	33	12
2 x 2	15	15	16	16	17	17	18	18	19	19
2 x 3	15	20	16	21	17	23	18	24	19	26
3 x 2	20	15	21	16	23	17	24	18	26	19
2 x 4	15	25	16	27	17	25	18	31	19	33
4 x 2	25	15	25	16	27	17	31	18	33	19
3 x 3	20	20	21	21	23	23	26	24	26	26
5 x 2	30	15	32	16	35	17	37	18	40	19
2 x 5	15	30	16	32	17	35	18	37	19	40
3 x 4	20	25	21	27	23	25	24	31	26	33
4 x 3	25	20	25	21	27	23	31	24	33	26
6 x 2	35	15	38	16	41	17	44	18	47	19
2 x 6	15	35	16	38	17	41	18	44	19	47
2 x 7	15	40	16	43	17	47	18	50	19	54
14 DUCTS	20	30	21	32	23	35	24	37	26	39
14 DUCTS	25	25	27	27	29	29	31	31	33	33
5 x 3	30	19	21	32	23	35	24	37	26	40
3 x 5	19	30	32	21	35	23	37	24	40	26
4 x 4	25	25	27	27	27	29	31	31	33	33
2 x 8	15	45	16	49	17	53	18	57	19	61

METHOD FOR CALCULATING SIZE OF LARGER DUCTS:

(SIZE OF DUCT) X (NUMBER OF DUCTS)
(A) (B)

[(A+1/2") X B] + [(B-1) X 1 1/2") + 6"

ROUND DIMENSIONS UP TO NEAREST INCH

UTILITY SYMBOLS LEGEND

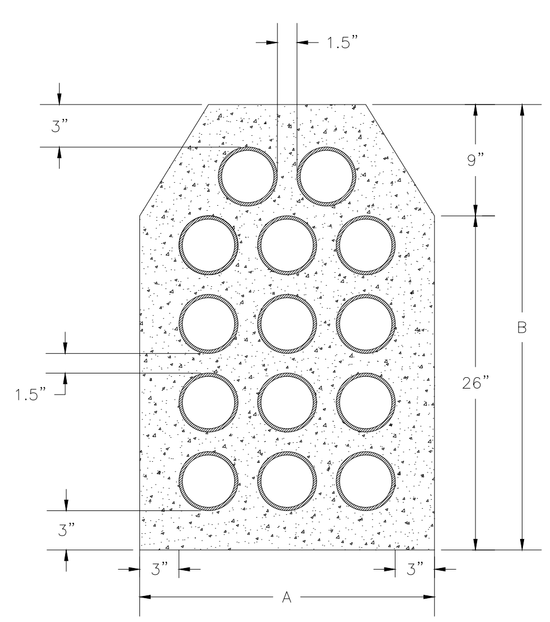
ELECTRICAL / TRAFFIC CONTROL
ECBX ELECTRIC CONTROL BOX
EHH ELECTRIC HAND HOLE
EMBX ELECTRIC METER BOX
EMH ELECTRIC MANHOLE
EMP ELECTRIC METER PIT
EMRK ELECTRIC UTILITY WITNESS MARKER
EPED ELECTRIC PEDESTAL
GA UTILITY POLE GUY WIRE ANCHOR
MBTA MBTA ELECTRICAL MANHOLE
PTCBX HIGH VOLTAGE PTC TEST BOX
TRANS ELECTRIC TRANSFORMER
PEDSIG TRAFFIC PEDESTRIAN SIGNAL
TRCBX TRAFFIC CONTROL BOX
TRHH TRAFFIC HAND HOLE
TRSIG TRAFFIC SIGNAL
TRPED TRAFFIC PEDESTAL
CI CABLE IN PVC CONDUIT
LP LIGHT POLE
UP UTILITY POLE
ULP UTILITY LIGHT POLE
UPBX POLE W/ EMERGENCY PULL BOX
CI CABLE IN PVC CONDUIT

DRAIN / SEWER
AD AREA DRAIN
CB CATCH BASIN
CB CATCH BASIN "D" GRATE
CB CATCH BASIN ROUND COVER
DCO DRAIN CLEAN OUT
DLB DRAIN LEACHING BASIN
DMH DRAIN MANHOLE
CSMH COMBINED SEWER MANHOLE
SCO SEWER CLEAN OUT
SMH SEWER MANHOLE
SMRK SEWER UTILITY WITNESS MARKER
SSAV SEWER AIR RELEASE VALVE
SSO SEWER FORCE MAIN VALVE
SVENT SEWER VENT PIPE

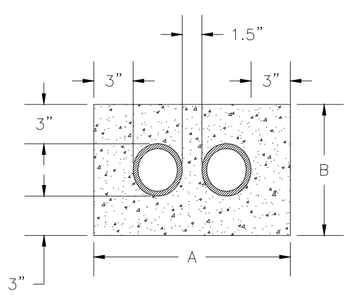
GAS / FUEL OIL / STEAM
FMRK FUEL UTILITY WITNESS MARKER
FOGV FUEL GATE VALVE
FOH FUEL HYDRANT
GDG GAS DIVISION GATE
GG GAS GATE
GGD GAS GATE DRIP
GSO GAS SERVICE GATE
GM GAS METER ABOVE GROUND
GMH GAS MANHOLE
GMP GAS METER PIT
GMRK GAS UTILITY WITNESS MARKER
GTB GAS MAIN TEXT BOX
GVENT GAS VENT PIPE
STGV STEAM GATE VALVE
STMH STEAM MANHOLE

CABLE TV / TELECOMMUNICATION
5G PED 5G WI-FI SIGNAL POLE
TCAB TELEPHONE CABINET
THH TELEPHONE HAND HOLE
TMH TELEPHONE MANHOLE
TMRK TELECOMMUNICATION WITNESS MARKER
TPED TELEPHONE PEDESTAL
FAMH FIRE ALARM MANHOLE
CMH CABLE TV MANHOLE
TVHH CABLE TV HAND HOLE
TVMRK CABLE TV UTILITY WITNESS MARKER
TVPED CABLE TV PEDESTAL

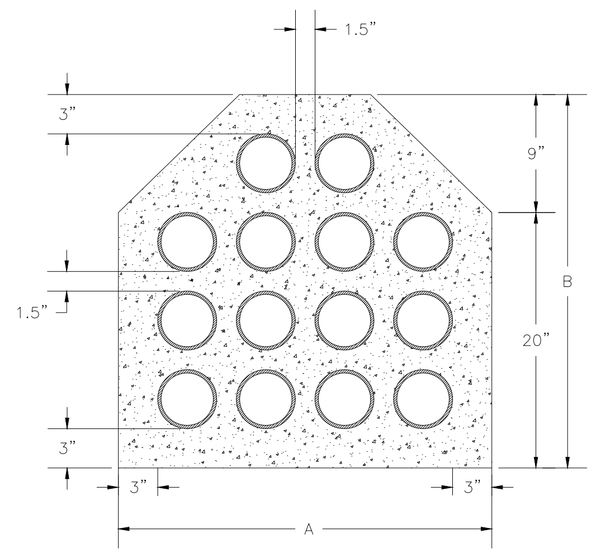
MISC. UTILITY SYMBOLS
UGV UNKNOWN GATE VAVLE
MHU UNKNOWN MANHOLE
TP–# UTILITY TEST PIT
EOI END OF INFORMATION



14 - 4" DUCTS



1x2 - 4" DUCTS



14 - 4" DUCTS

JAMES FITZPATRICK NOONE
CIVIL
No. 37911
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS
6/27/25

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		2	10
PROJECT FILE NO. 608944			

UTILITY ENGINEERING LEGEND SHEET

WATER
HYD FIRE HYDRANT
AC WATER AIR COCK
WCV WATER CHECK VALVE
WDG WATER DIVISION GATE
WG WATER GATE
WFSO FIRE PROTECTION SERVICE VAVLE
WSO WATER SERVICE VALVE
WMH WATER MANHOLE
WMP WATER METER PIT
WMRK WATER UTILITY WITNESS MARKER
PIV POST INDICATOR VAVLE
STP WATER STAND PIPE
WTB WATER MAIN TEST BOX
WVENT WATER VENT PIPE

SURVEY CONTROL MONUMENTS
BM # BENCHMARK
BOUND (CONC, STONE, LAND COURT, ETC.)
DSK DSIK (CA/T, USC&GS, LAND COURT, ETC.)
DH DRILL HOLE
EPLP ESCUTCHEON PIN IN LEAD PLUG
IP IRON PIPE
MAG MAG NAIL
MHB MASSACHUSETTS HIGHWAY BOUND
PHOTO CONTROL – H & V
PHOTO CONTROL – V ONLY
PK PK NAIL
RB REBAR / IRON PIN
RRS RAILROAD SPIKE
SN STAKE & NAIL
TRAVERSE POINT
X–CUT X–CUT

massDOT Massachusetts Department of Transportation Highway Division

PREPARED BY: OVERLAND ENGINEERING

REVISIONS		
REV.	COMMENTS	DATE

SCALE: NA FEET TO THE INCH

FILE NAME: 608944_SH.dwg
FIELD BOOK. NO: 6271
DISTRICT 5 UTILITY ENGINEER: CL
FIELD CHIEF: JFN PARS. NO:

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
UTILITY ENGINEERING PLAN
CHAUNCY STREET (ROUTE 106)
IN THE TOWN OF
MANSFIELD
100% SUBMITTAL
608944

DATE: 6/27/25 SHEET 2 OF 10

Proposal No. 613052-131228

608944_SH.DWG Plotted on 27-Jun-2025 1:19 PM

A0089218

608944_SH.DWG Plotted on 27-Jun-2025 1:19 PM

Proposal No. 613052-131228

UTILITY ENGINEERING CONSULTANT:

OVERLAND ENGINEERING, LLC
100 HALLET STREET
BOSTON, MA 02124
PH: 617-265-4547
FAX: 770-565-3815

PROJECT DESCRIPTION:

A SUBSURFACE UTILITY ENGINEERING INVESTIGATION (SUE) WAS PERFORMED BY OVERLAND ENGINEERING, LLC AND COMPLETED ON JUNE 2025 FOR THIS PROJECT. THE EXISTING UNDERGROUND FACILITIES SHOWN HEREON WERE INCLUDED IN THIS SUE INVESTIGATION. THE PRESENCE OF THESE UTILITY FACILITIES HAS BEEN THOROUGHLY INVESTIGATED.

ALL OTHER EXISTING TOPOGRAPHIC FEATURES DEPICTED HEREON HAVE BEEN REFERENCED FROM A TOPOGRAPHIC / MAPPING SURVEY AND CONTROL PACKAGE PROVIDED BY A GROUND INSTRUMENT SURVEY PERFORMED BY BETA GROUP, INC.

UTILITY ENGINEERING NOTES:

1. UTILITIES ARE DEPICTED ON THESE PLANS IN ACCORDANCE WITH THEIR ACHIEVED "QUALITY LEVELS" AS DEFINED IN THE AMERICAN SOCIETY OF CIVIL ENGINEERING'S DOCUMENT ASCE 38-22 "STANDARD GUIDELINE FOR THE INVESTIGATION AND DOCUMENTING EXISTING UTILITIES".
2. RELIANCE UPON THESE DATA FOR RISK MANAGEMENT PURPOSES DURING BIDDING DOES NOT RELIEVE THE EXCAVATOR OR UTILITY OWNER FROM FOLLOWING ALL APPLICABLE UTILITY DAMAGE PREVENTION STATUTES, POLICIES, AND/OR PROCEDURES DURING CONSTRUCTION.
3. IT IS IMPORTANT THAT THE CONTRACTOR INVESTIGATES AND UNDERSTANDS THE SCOPE OF WORK BETWEEN THE PROJECT OWNER AND THEIR ENGINEER REGARDING THE SCOPE AND LIMITS OF THE UTILITY INVESTIGATIONS LEADING TO THESE DEPICTIONS.
4. THE SIZE/TYPE OF FIRE HYDRANT LINES IS ASSUMED TO BE 6" IN DIAMETER THROUGHOUT THE PROJECT LIMITS.
5. UTILITIES RANGING IN SIZE FROM 0.5" - 10" IN DIAMETER OR MINIMUM WIDTH, ARE DEPICTED HEREIN AS SINGLE WIDTH LINE TYPES. UTILITIES RANGING IN SIZE 12" AND ABOVE, ARE DEPICTED WITH MULTI-LINES, THE WIDTH OF WHICH IS BASED ON REVIEW OF RECORDS, PROFESSIONAL JUDGEMENT, OR OTHER INFORMATION. IN SOME INSTANCES, UTILITIES LARGER THAN 1 FOOT MAY BE SHOWN AS SINGLE LINES WITHOUT APPROXIMATE WIDTH AT THE ENGINEERS DISCRETION WHERE UTILITY DENSITY WOULD OTHERWISE PREVENT A CLEAR DEPICTION OF THE SUE INFORMATION.

UTILITY QUALITY LEVEL INFORMATION INDEX (SEE ASCE/CI 38-22):

QUALITY LEVEL D: "QL D". UTILITY INFORMATION PLOTTED ON THE DRAWING BASED SOLELY ON RECORD INFORMATION, INDIVIDUAL RECOLLECTIONS OR THE EXISTENCE OF UTILITY SERVICE. IT SHALL BE NOTED THAT ALL INFORMATION SHOWN (OTHER THAN AT TEST HOLE LOCATIONS, SEE QL A BELOW), INCLUDING BUT NOT LIMITED TO A UTILITIES SIZE, CAPACITY, MATERIAL COMPOSITION, CONDITION OR SERVICE STATUS SHALL BE CONSIDERED QL D EVEN THOUGH THE UTILITY MAY BE PLOTTED AND LABELED AS QL C OR QL B.

QUALITY LEVEL C: "QL C". UTILITY INFORMATION OBTAINED AND CATEGORIZED AS QL D, PLOTTED TO CORRELATE WITH SURFACE UTILITY FEATURES WHICH HAVE BEEN FIELD VERIFIED, SURVEY LOCATED AND ACCURATELY TRANSPOSED ONTO THE DESIGN/CONSTRUCTION DOCUMENTS. INCLUDED IN THIS CATEGORY AERIAL UTILITY INFORMATION AND UTILITY DEPICTION'S, WHICH IN THE PROFESSIONAL OPINION OF THE SUBSURFACE UTILITY ENGINEER, REPRESENT THE MOST PROBABLE APPROXIMATE HORIZONTAL LOCATION, TYPE AND/OR EXISTENCE OF A UTILITY.

QUALITY LEVEL B: "QL B". UTILITY INFORMATION DERIVED BY ESTABLISHING THE APPROXIMATE SURFACE HORIZONTAL LOCATION OF A UTILITY USING ELECTRONIC METHODS. SAID INFORMATION IS SUBSEQUENTLY FIELD SURVEY LOCATED AND ACCURATELY REDUCED ONTO THE DESIGN/CONSTRUCTION DOCUMENTS.

QUALITY LEVEL A: "QL A". UTILITY INFORMATION WHICH HAS BEEN VISUALLY VERIFIED, SURVEY LOCATED (BOTH HORIZONTALLY AND VERTICALLY) AND ACCURATELY REDUCED ONTO THE DESIGN/CONSTRUCTION DOCUMENTS. THIS IS TYPICALLY SHOWN AS TEST HOLE OR OTHER DIMENSIONED INFORMATION.

UTILITY SUMMARY:

ALL THE FOLLOWING UTILITY OWNERS WERE REPORTED TO HAVE FACILITIES WITHIN THE VICINITY OF THIS PROJECT AT THE TIME OF THE SUE INVESTIGATION. UTILITIES FOUND WITHIN THE PROJECT LIMITS AT THE TIME OF THE SUE INVESTIGATION ARE NOTED FOR EACH UTILITY OWNER LISTED AND ARE SHOWN ON THE PLANS HEREON.

UTILITY OWNER	UTILITY TYPE	CONTACT	ADDRESS	EMAIL	PHONE	ABBREVIATION
Mansfield Department of Public Works	Water	Lee Azinheira	6 Park Row, Mansfield Ma 02048	N/A	508-261-7335	MDPW
Mansfield Department of Public Works	Sewer/Drain	Lee Azinheira	6 Park Row, Mansfield Ma 02048	N/A	781-741-1416	MDPW
Eversource Gas	Gas	Brendan Pitts	995 Belmont Street, Brockton, Ma 02301	Brendan.pitts@eversource.com	N/A	EVR
Mansfield Municipal Electric Department	Electric	Ralph Bellevance	125 High Street, Unit 2, Mansfield, Ma 02048	Ralph.bellavance@mansfieldma.com	508-922-6475	MMED
MassDOT	Traffic Control	Christopher Lockett District 5	1000 County St, Taunton, MA 02780	Christopher.lockett@state.ma.us	857-368-5073	MADOT
Verizon	Telecom	Karen Mealey	385 Myles Standish Boulevard	Karen.m.mealey@verizon,com	774-409-3160	VRZ

1. ALL ELECTRICAL UTILITIES WITHIN THE PROJECT LIMITS OF WORK ARE OWNED AND OPERATED BY MANSFIELD MUNICIPAL ELECTRIC DEPARTMENT UNLESS NOTED OTHERWISE ON THE PLANS HERE ON. ALL ELECTRIC LINES ON ROUTE 140 ARE OWNED BY MASSDOT.
2. ALL GAS UTILITIES WITHIN THE PROJECT LIMITS OF WORK ARE OWNED AND OPERATED BY EVERSOURCE GAS UNLESS NOTED OTHERWISE ON THE PLANS HERE ON.
3. ALL TELECOMMUNICATION UTILITIES WITHIN THE PROJECT LIMITS OF WORK ARE OWNED AND OPERATED BY VERIZON UNLESS NOTED OTHERWISE ON THE PLANS HERE ON.
4. ALL TRAFFIC CONTROL UTILITIES WITHIN THE PROJECT LIMITS OF WORK ARE OWNED AND OPERATED BY MASSDOT UNLESS NOTED OTHERWISE ON THE PLANS HERE ON.
5. ALL WATER UTILITIES WITHIN THE PROJECT LIMITS OF WORK ARE OWNED AND OPERATED BY MANSFIELD DEPARTMENT OF PUBLIC WORKS UNLESS NOTED OTHERWISE ON THE PLANS HERE ON.

COMMONWEALTH OF MASSACHUSETTS
JAMES FITZPATRICK NOONE
CIVIL
No. 37911
REGISTERED PROFESSIONAL ENGINEER
6/27/25

massDOT Massachusetts Department of Transportation Highway Division

PREPARED BY: OVERLAND ENGINEERING

REVISIONS		
REV.	COMMENTS	DATE

SCALE: NA FEET TO THE INCH

FILE NAME: 608944_SH.dwg
FIELD BOOK. NO: 6271
DISTRICT 5 UTILITY ENGINEER: CL
FIELD CHIEF: JFN PARS. NO:

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
UTILITY ENGINEERING PLAN
CHAUNCY STREET (ROUTE 106)
IN THE TOWN OF
MANSFIELD
100% SUBMITTAL
608944

DATE: 6/27/25 SHEET 3 OF 10

A00892 - 19

Proposal No. 613052-131228

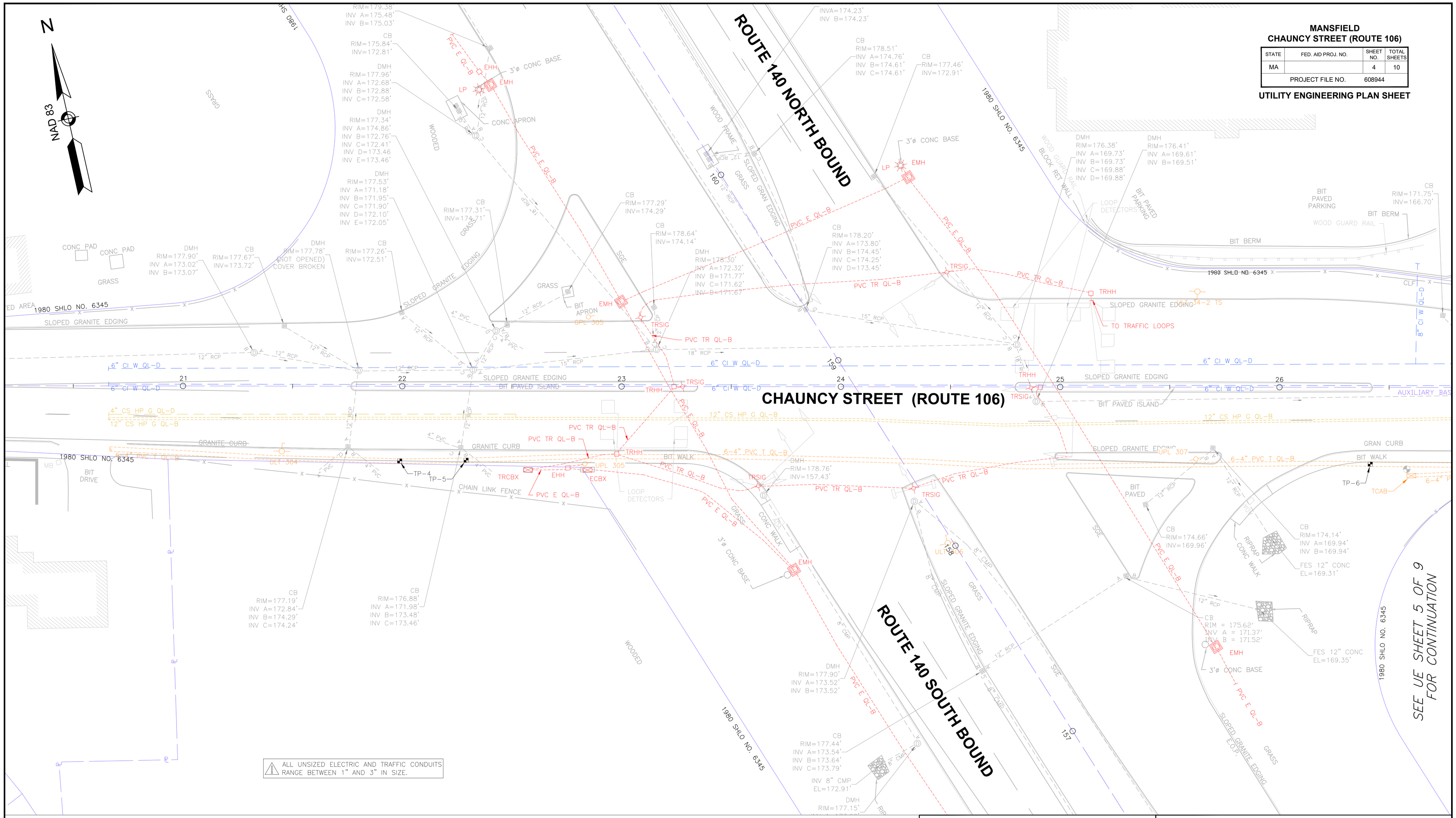
A00892 - 20

608944_SH.DWG Plotted on 27-Jun-2025 1:19 PM

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		4	10
PROJECT FILE NO.	608944		

UTILITY ENGINEERING PLAN SHEET



0 20 50 100
SCALE: 1" = 20'

JAMES FITZPATRICK NOONE CIVIL No.37911 REGISTERED PROFESSIONAL ENGINEER 6/27/25

massDOT Massachusetts Department of Transportation Highway Division

PREPARED BY: OVERLAND ENGINEERING

REVISIONS		
REV.	COMMENTS	DATE

SCALE: 20 FEET TO THE INCH

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DISTRICT 5 UTILITY ENGINEER: CL
FIELD CHIEF: JFN PARS. NO:

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
UTILITY ENGINEERING PLAN
CHAUNCY STREET (ROUTE 106)
IN THE TOWN OF
MANSFIELD
100% SUBMITTAL
608944

DATE: 6/27/25 SHEET 4 OF 10

Proposal No. 613052-131228

A00892 - 21

608944_SH.DWG Plotted on 27-Jun-2025 1:19 PM

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		5	10
PROJECT FILE NO.	608944		

UTILITY ENGINEERING PLAN SHEET

N

NAD 83

CHAUNCY STREET (ROUTE 106)

GILES AVENUE

GILES PL

PAVED DRIVE

WOODED

GRASS

EXISTING BUILDING MONARCH REALTY GROUP 273 CHAUNCY STREET

BIT. CONC. PARKING LOT

BIT PAVED PARKING

BIT PAVED DRIVE

BIT PAVED ISLAND

BIT PAVED

BIT BERM

BIT WALK

CONC WALK

CONC HEADWALL

CONC BLOCK RET WALL

WOOD GUARD RAIL

RET WALL

RIPRAP

LOOP DETECTORS

GRAN CURB

SLOPED GRANITE EDGING

UTILITY PATCH

STONE SWALE

LANDSCAPING

EXISTING BUILDING BROOKSIDE OFFICE CONDOS 272 CHAUNCY STREET

1980 SHLO NO. 6345

1981 SHLO NO. 6467

SHLO ALT. 6345 1980

DMH RIM=176.38' INV A=169.73' INV B=169.73' INV C=169.88' INV D=169.88'

DMH RIM=176.41' INV A=169.61' INV B=169.51'

CB RIM=171.75' INV=166.70'

CB RIM=172.55' INV=169.25'

CB RIM=172.58' INV=169.38'

DMH RIM=172.34' INV A=166.94' INV B=167.14' INV C=167.14'

CONC WIER V NOTCH IN WIER EL=168.80'

INV 12" CONC EL=168.52'

INV 12" RCP EL=168.70'

WOODED INV 12" RCP EL=168.88'

CONC WIER INV V" NOTCH IN WIER EL=169.04'

INV 12" EL=168.34'

CB RIM=168.06' INV=164.56'

INV 18" CMP EL = 164.2'±

INV 18" CMP EL = 164.2'±

INV 12" RCP EL = 164.61'

DMH RIM=169.03 INV1(12"RCP-IN)=165.02 INV2(12"RCP-IN)=165.33 INV3(12"RCP-IN)=165.03 INV4(12"RCP-OUT)=164.93

SMH RIM=169.39 SEWER LIFT STATION

CB RIM=169.84 ND PIPES VISIBLE WATER=165.32 SUMP=161.84

PIPE CHANGES FROM 18" CMP TO 18" CPP 3.20 164.64

PIPE DOES NOT EXIST.

DMH RIM=168.66' INV A=163.96'

12" CPP D QL-B PIPE CHANGES FROM 12" RCP TO 12" CPP

18" CPP SD QL-C PIPE CHANGES FROM 24" RCP TO 18" CPP

DRAINAGE VAULT.

DMH RIM=168.2' 6'X8'X4.6' INV A=163.7' INV B=163.8' INV C=163.7' INV D=164.0' INV E=163.7'

CB RIM=168.17' INV=164.05'

DMH RIM=168.51' INV A=163.51' INV B=163.16' INV C=163.66' INV D=163.36'

DMH RIM=171.63' INV A=166.43' INV B=165.98' INV C=167.28' INV D=166.08'

CB RIM=170.71' INV=167.81'

CB RIM=174.66' INV=169.96'

CB RIM=174.14' INV A=169.94' INV B=169.94'

FES 12" CONC EL=169.31'

CB RIM = 175.62' INV A = 171.37' INV B = 171.52'

EMH

3'ø CONC BASE

FES 12" CONC EL=169.35'

TRANSFORMER ON CONC. PAD

TRANSFORMER ON CONC. PAD

TMH 12'X6'X9.9' CH-3.3'

TRANS

TRHH

TO TRAFFIC LOOPS

TCAB

GSO

UPL 34-1

UPL 34-2 TS

UPL 307

UPL 308

UPL 309

UPL 312

UPL 35/15 (R)

TP-1 TP-2 TP-3 TP-6 TP-7 TP-8 TP-9 TP-14 TP-15 TP-16 TP-17 TP-18 TP-19

6" CI W QL-D

8" CI W QL-D

8" DI W QL-B

6" CI W QL-D AATR

8" DI W QL-B

12" CS HP G QL-B

2" PL HP G QL-B

6-4" PVC T QL-B

2-4" PVC E QL-B

4" PVC T QL-B

3" PVC T QL-D

3" PVC T QL-C

3" PVC E QL-C

12" RCP D QL-B

18" CPP D QL-B

18" RCP SD QL-B

30" RCP SD QL-B

12" RCP D QL-C

12" RCP D QL-F

12" HDPE D QL-B

6" PL W QL-C

8" PL W QL-C

8" PL W QL-B

6" PL W QL-C

6" CI W QL-D AATR

8" DI W QL-B

6" PVC T QL-C

3" PVC T QL-C

3" PVC E QL-C

12" RCP D QL-B

12" RCP D QL-F

18" CPP D QL-B

18" RCP SD QL-B

30" RCP SD QL-B

12" CS HP G QL-B

2" PL HP G QL-C

6" CI W QL-D AATR

8" DI W QL-B

SEE UE SHEET 5 OF 9
FOR CONTINUATION

MANSFIELD
CHAUNCY STREET (ROUTE 106)

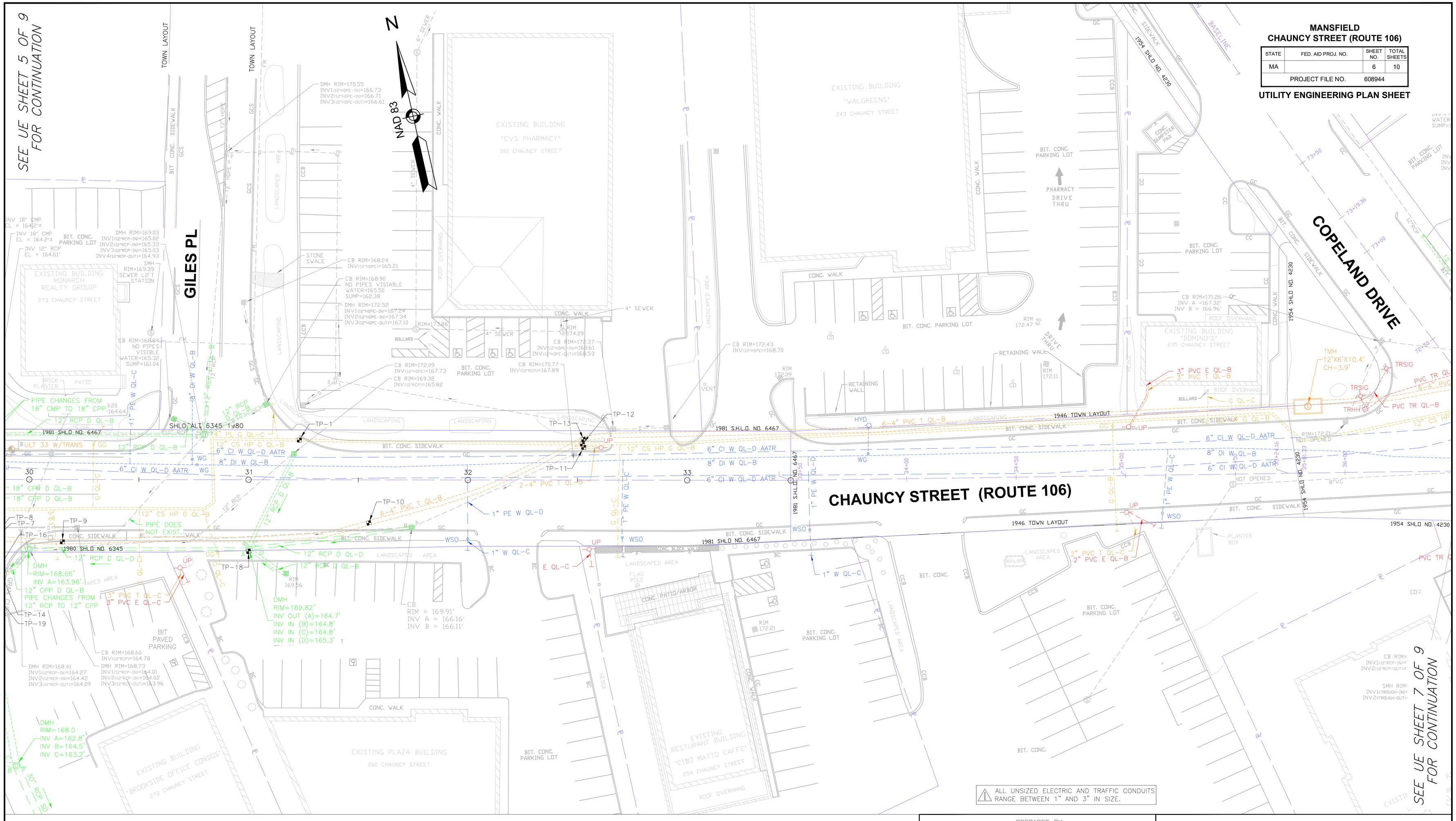
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		6	10
PROJECT FILE NO.	608944		

UTILITY ENGINEERING PLAN SHEET

608944_SH.DWG Plotted on 27-Jun-2025 1:19 PM

Proposal No. 613052-131228

A00892 - 22



SEE UE SHEET 7 OF 9
FOR CONTINUATION

0 20 50 100
SCALE: 1" = 20'

JAMES FITZPATRICK NOONE CIVIL No.37911 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS 6/27/25

massDOT Massachusetts Department of Transportation Highway Division

PREPARED BY: OVERLAND ENGINEERING

REVISIONS		
REV.	COMMENTS	DATE

SCALE: 20 FEET TO THE INCH

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DISTRICT 5 UTILITY ENGINEER: CL
FIELD CHIEF: JFN PARS. NO:

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
UTILITY ENGINEERING PLAN
CHAUNCY STREET (ROUTE 106)
IN THE TOWN OF
MANSFIELD
100% SUBMITTAL
608944

DATE: 6/27/25 SHEET 6 OF 10

Proposal No. 613052-131228

A00892 - 23

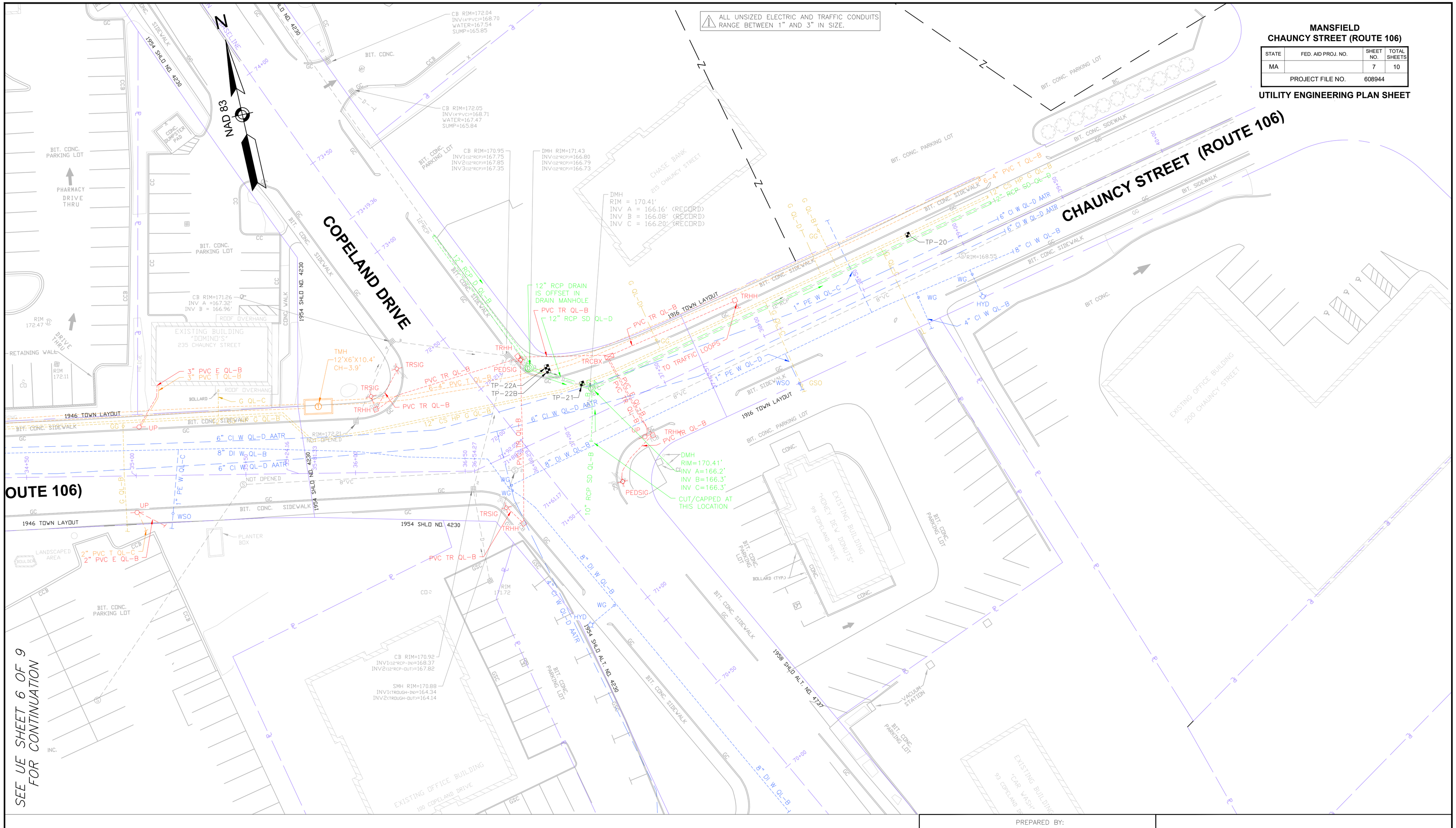
608944_SH.DWG Plotted on 27-Jun-2025 1:19 PM

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		7	10
PROJECT FILE NO.	608944		

UTILITY ENGINEERING PLAN SHEET

ALL UNSIZED ELECTRIC AND TRAFFIC CONDUITS RANGE BETWEEN 1" AND 3" IN SIZE.



SEE UE SHEET 6 OF 9 FOR CONTINUATION

SCALE: 1" = 20'

JAMES FITZPATRICK NOONE CIVIL No.37911 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS 6/27/25

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UTILITY ENGINEERING PLAN
CHAUNCY STREET (ROUTE 106)
IN THE TOWN OF
MANSFIELD
100% SUBMITTAL
608944

DATE: 6/27/25 SHEET 7 OF 10

Proposal No. 613052-131228

A00892 - 24

608944_SH.DWG Plotted on 27-Jun-2025 1:19 PM

MANSFIELD
CHAUNCY STREET (ROUTE 1069)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		8	10
PROJECT FILE NO.	608944		

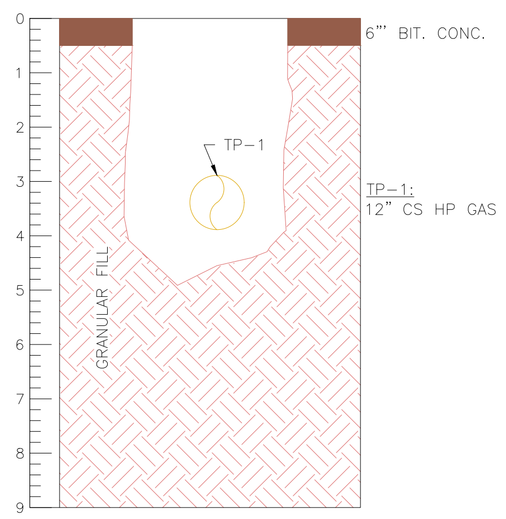
UTILITY ENGINEERING PLAN SHEET

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-1

NORTHING: 2836382.2
EASTING: 729198.0

GROUND EL. 169.4'

MEASURE DOWN TOP: 2.9'
MEASURE DOWN BTM:
UTILITY EL. TOP: 166.5'
UTILITY EL. BTM:



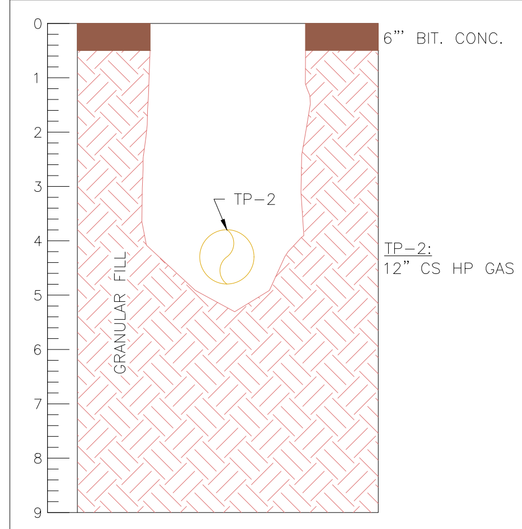
(NTS) SECTION FACING "EAST"

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-2

NORTHING: 2836460.7
EASTING: 728783.5

GROUND EL. 171.6'

MEASURE DOWN TOP: 3.8'
MEASURE DOWN BTM:
UTILITY EL. TOP: 167.8'
UTILITY EL. BTM:



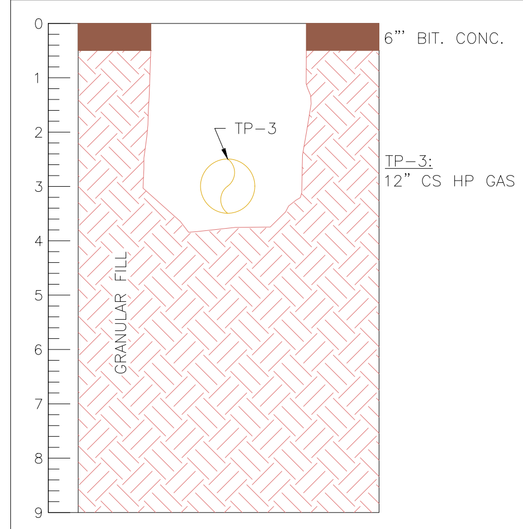
(NTS) SECTION FACING "EAST"

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-3

NORTHING: 2836397.8
EASTING: 729016.5

GROUND EL. 168.3'

MEASURE DOWN TOP: 2.5'
MEASURE DOWN BTM:
UTILITY EL. TOP: 165.8'
UTILITY EL. BTM:



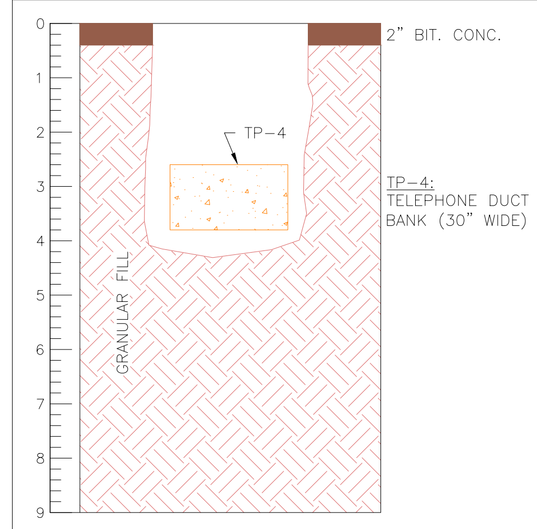
(NTS) SECTION FACING "EAST"

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-4

NORTHING: 2836572.0
EASTING: 728292.0

GROUND EL. 177.3'

MEASURE DOWN TOP: 2.6'
MEASURE DOWN BTM: 3.8'
UTILITY EL. TOP: 174.7'
UTILITY EL. BTM: 173.5'



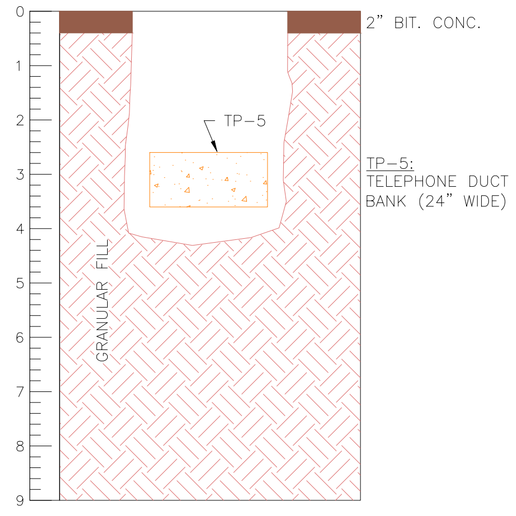
(NTS) SECTION FACING "EAST"

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-5

NORTHING: 2836564.5
EASTING: 728321.3

GROUND EL. 177.5'

MEASURE DOWN TOP: 2.6'
MEASURE DOWN BTM: 3.6'
UTILITY EL. TOP: 174.9'
UTILITY EL. BTM: 173.9'



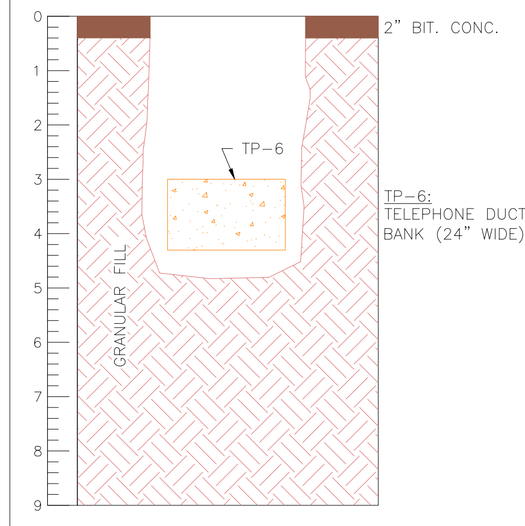
(NTS) SECTION FACING "EAST"

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-6

NORTHING: 2836456.1
EASTING: 728719.1

GROUND EL. 173.2'

MEASURE DOWN TOP: 3.0'
MEASURE DOWN BTM: 4.3'
UTILITY EL. TOP: 170.2'
UTILITY EL. BTM: 168.9'



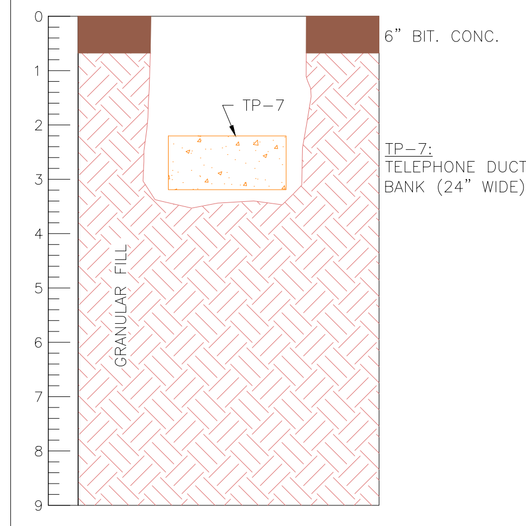
(NTS) SECTION FACING "EAST"

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-7

NORTHING: 2836374.6
EASTING: 729052.7

GROUND EL. 168.4'

MEASURE DOWN TOP: 2.2'
MEASURE DOWN BTM: 3.2'
UTILITY EL. TOP: 166.2'
UTILITY EL. BTM: 165.2'



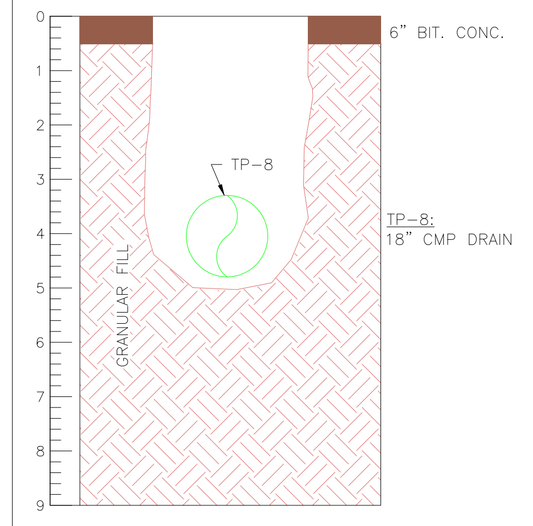
(NTS) SECTION FACING "EAST"

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-8

NORTHING: 2836376.8
EASTING: 729054.4

GROUND EL. 168.3'

MEASURE DOWN TOP: 3.3'
MEASURE DOWN BTM:
UTILITY EL. TOP: 165.0'
UTILITY EL. BTM:



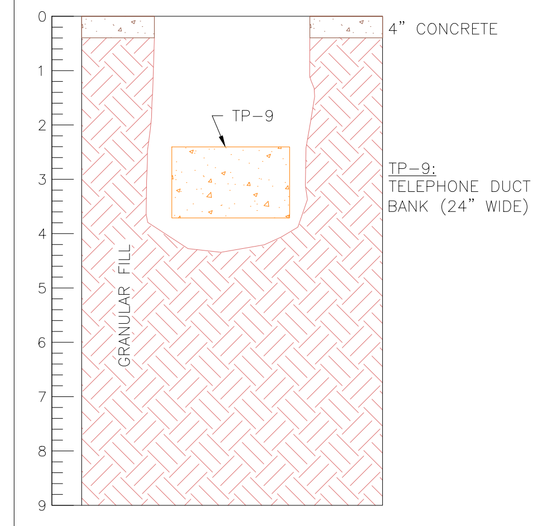
(NTS) SECTION FACING "NORTH"

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-9

NORTHING: 2836365.3
EASTING: 729081.6

GROUND EL. 169.0'

MEASURE DOWN TOP: 2.4'
MEASURE DOWN BTM: 3.7'
UTILITY EL. TOP: 166.6'
UTILITY EL. BTM: 165.3'



(NTS) SECTION FACING "EAST"

JAMES FITZPATRICK NOONE
CIVIL
No. 37911
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS
6/27/25

massDOT
Massachusetts Department of Transportation
Highway Division

PREPARED BY:
OVERLAND ENGINEERING

REVISIONS

REV.	COMMENTS	DATE

SCALE: 20 FEET TO THE INCH

FILE NAME: 608944_SH.dwg
FIELD BOOK. NO: 6271
DISTRICT 5 UTILITY ENGINEER: CL
FIELD CHIEF: JFN PARS. NO:

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
UTILITY ENGINEERING PLAN
CHAUNCY STREET (ROUTE 106)
IN THE TOWN OF
MANSFIELD
100% SUBMITTAL
608944

DATE: 6/27/25 SHEET 8 OF 10

Proposal No. 613052-131228

A00892 - 25

608944_SH.DWG Plotted on 27-Jun-2025 1:19 PM

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		9	10
PROJECT FILE NO.	608944		

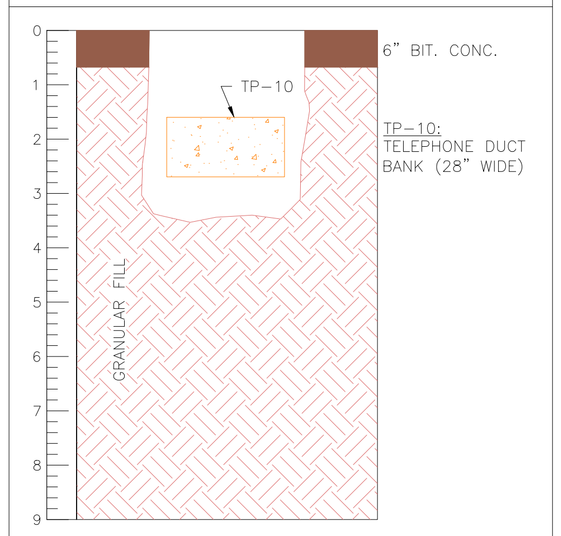
UTILITY ENGINEERING PLAN SHEET

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-10

NORTHING: 2836337.5
EASTING: 729218.8

GROUND EL. 170.0'

MEASURE DOWN TOP: 1.6'
MEASURE DOWN BTM: 2.7'
UTILITY EL. TOP: 168.4'
UTILITY EL. BTM: 167.3'



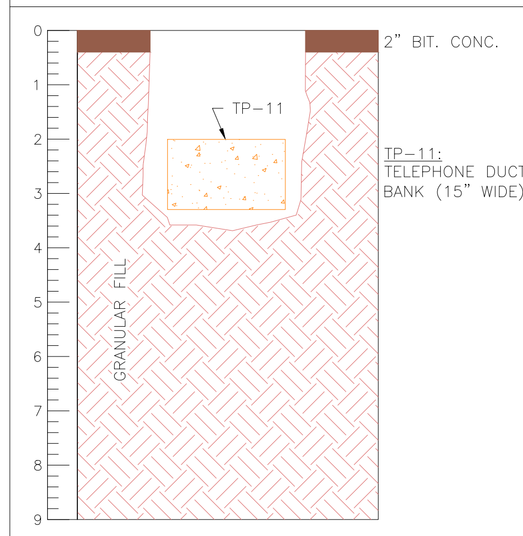
(NTS) SECTION FACING "EAST"

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-11

NORTHING: 2836345.4
EASTING: 729322.4

GROUND EL. 171.3'

MEASURE DOWN TOP: 2.0'
MEASURE DOWN BTM: 3.3'
UTILITY EL. TOP: 169.3'
UTILITY EL. BTM: 168.0'



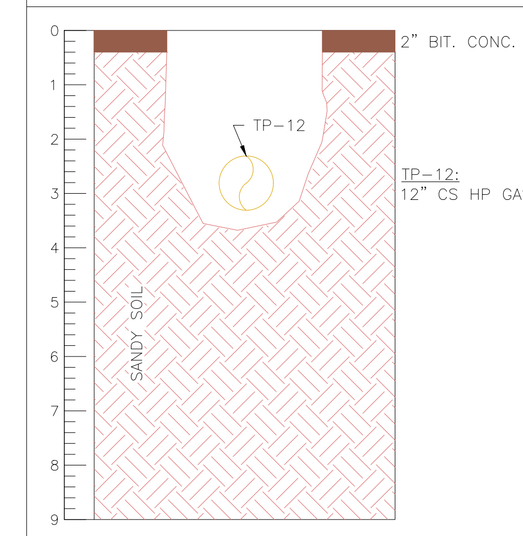
(NTS) SECTION FACING "EAST"

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-12

NORTHING: 2836347.0
EASTING: 729322.2

GROUND EL. 171.3'

MEASURE DOWN TOP: 2.3'
MEASURE DOWN BTM:
UTILITY EL. TOP: 169.0'
UTILITY EL. BTM:



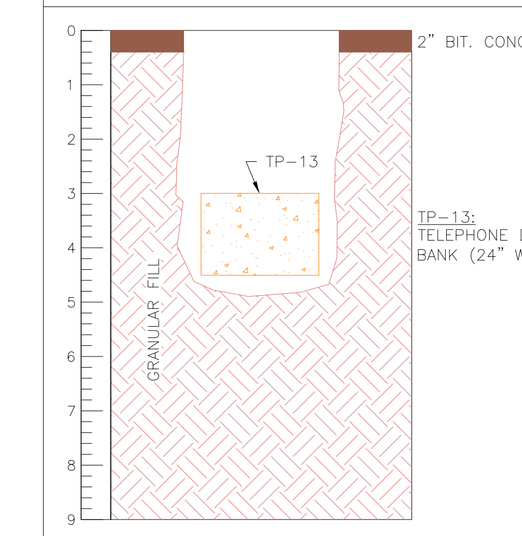
(NTS) SECTION FACING "EAST"

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-13

NORTHING: 2836348.9
EASTING: 729323.3

GROUND EL. 171.4'

MEASURE DOWN TOP: 3.0'
MEASURE DOWN BTM: 4.5'
UTILITY EL. TOP: 168.4'
UTILITY EL. BTM: 166.9'



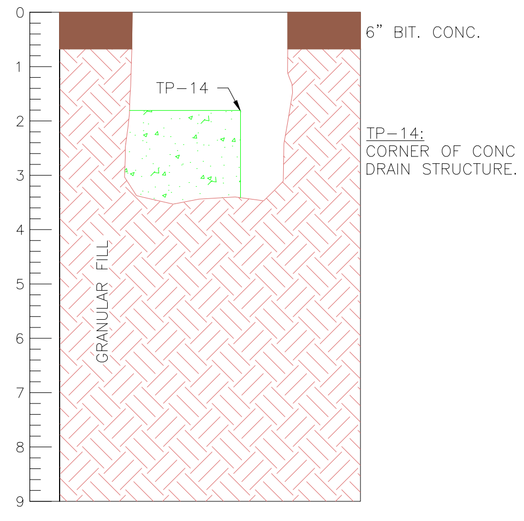
(NTS) SECTION FACING "EAST"

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-14

NORTHING: 2836359.8
EASTING: 729050.9

GROUND EL. 168.5'

MEASURE DOWN TOP: 1.8'
MEASURE DOWN BTM:
UTILITY EL. TOP: 166.7'
UTILITY EL. BTM:



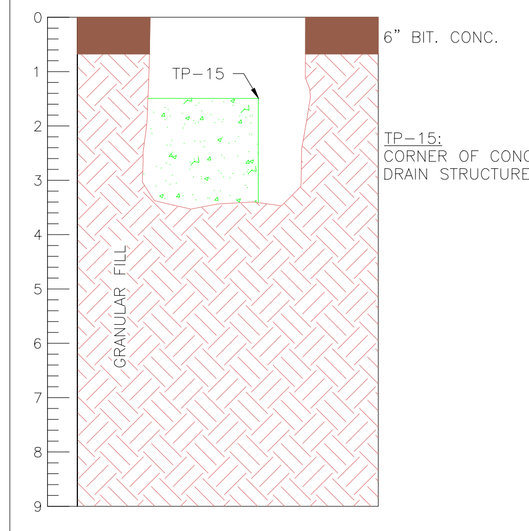
(NTS) SECTION FACING "WEST"

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-15

NORTHING: 2836362.8
EASTING: 729043.5

GROUND EL. 168.3'

MEASURE DOWN TOP: 1.5'
MEASURE DOWN BTM:
UTILITY EL. TOP: 166.8'
UTILITY EL. BTM:



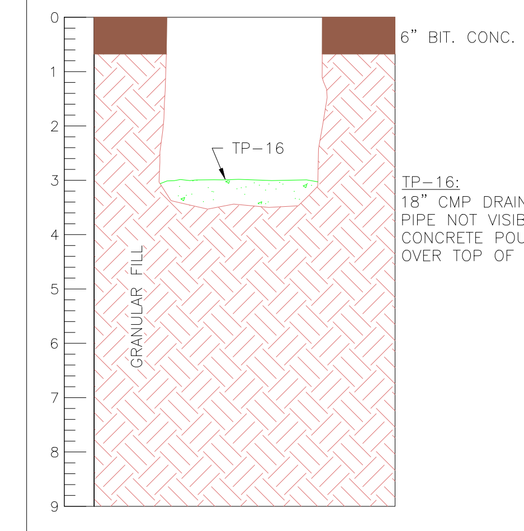
(NTS) SECTION FACING "WEST"

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-16

NORTHING: 2836360.3
EASTING: 729049.7

GROUND EL. 168.5'

MEASURE DOWN TOP: 3.0'
MEASURE DOWN BTM:
UTILITY EL. TOP: 165.5'
UTILITY EL. BTM:



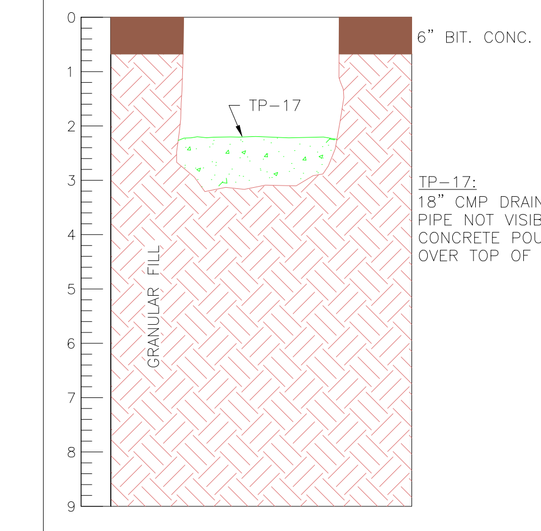
(NTS) SECTION FACING "NORTH"

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-17

NORTHING: 2836361.4
EASTING: 729047.1

GROUND EL. 168.4'

MEASURE DOWN TOP: 2.2'
MEASURE DOWN BTM:
UTILITY EL. TOP: 166.2'
UTILITY EL. BTM:



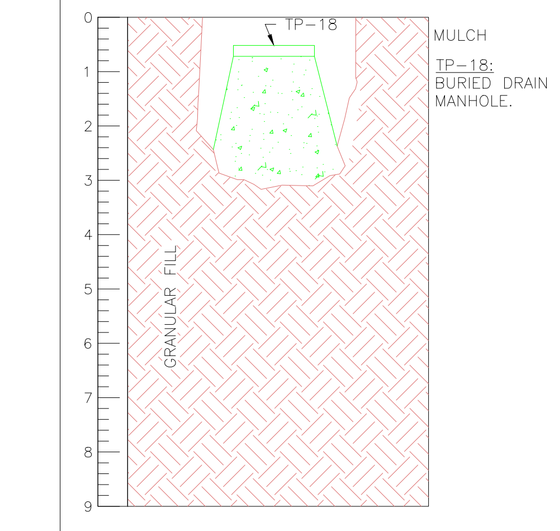
(NTS) SECTION FACING "N/A"

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-18

NORTHING: 2836339.9
EASTING: 729162.9

GROUND EL. 170.3'

MEASURE DOWN TOP: 0.5'
MEASURE DOWN BTM:
UTILITY EL. TOP: 169.8'
UTILITY EL. BTM:



(NTS) SECTION FACING "NORTH"

JAMES FITZPATRICK NOONE
COMMONWEALTH OF MASSACHUSETTS
CIVIL
No. 37911
REGISTERED PROFESSIONAL ENGINEER
6/27/25

massDOT
Massachusetts Department of Transportation
Highway Division

PREPARED BY:
OVERLAND ENGINEERING

REVISIONS		
REV.	COMMENTS	DATE

SCALE: 20 FEET TO THE INCH

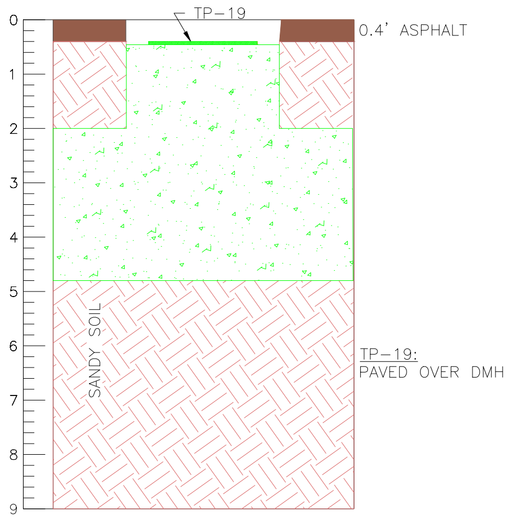
FILE NAME: 608944_SH.dwg
FIELD BOOK. NO: 6271
DISTRICT 5 UTILITY ENGINEER: CL
FIELD CHIEF: JFN PARS. NO:

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
UTILITY ENGINEERING PLAN
CHAUNCY STREET (ROUTE 106)
IN THE TOWN OF
MANSFIELD
100% SUBMITTAL
608944

DATE: 6/27/25 SHEET 9 OF 10

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-19

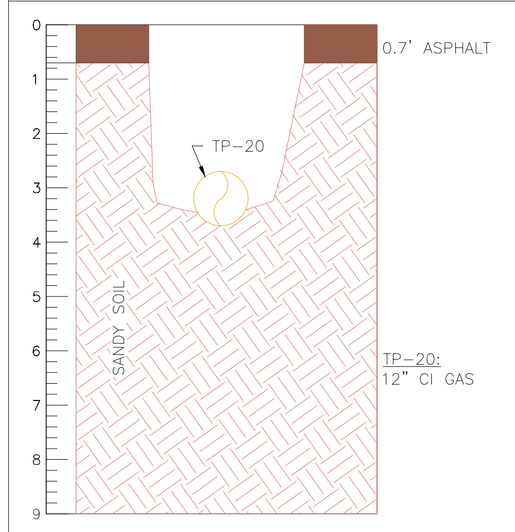
NORTHING:	2836355.06'
EASTING:	729043.93'
GROUND EL.	168.6'
MEASURE DOWN TOP:	0.4'
MEASURE DOWN BTM:	N/A
UTILITY EL. TOP:	168.2'
UTILITY EL. BTM:	N/A



(NTS) SECTION FACING EAST

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-20

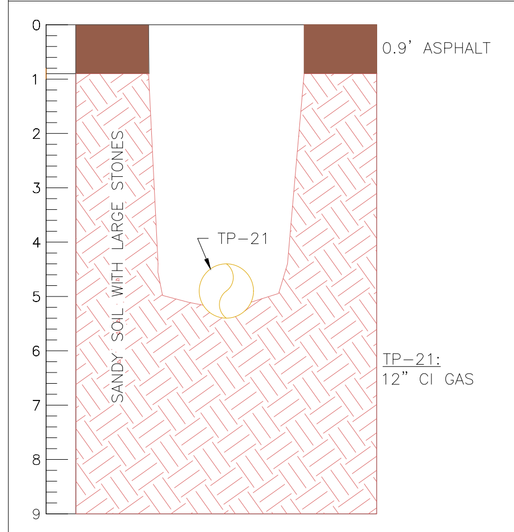
NORTHING:	2836284.13'
EASTING:	729926.08'
GROUND EL.	168.5'
MEASURE DOWN TOP:	2.7'
MEASURE DOWN BTM:	N/A
UTILITY EL. TOP:	165.8'
UTILITY EL. BTM:	N/A



(NTS) SECTION FACING EAST

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-21

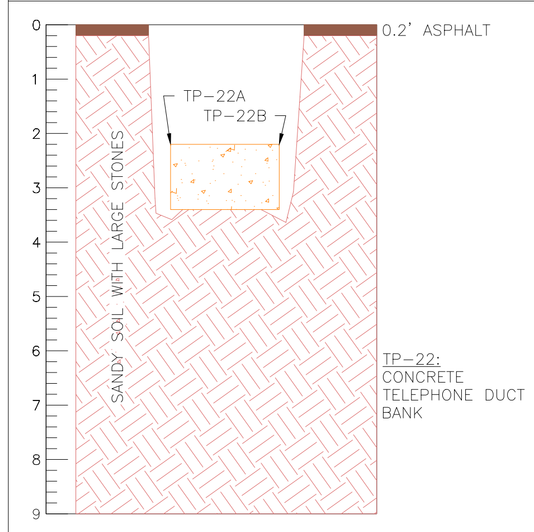
NORTHING:	2836257.03'
EASTING:	729765.03'
GROUND EL.	170.5'
MEASURE DOWN TOP:	4.4'
MEASURE DOWN BTM:	N/A
UTILITY EL. TOP:	166.1'
UTILITY EL. BTM:	N/A



(NTS) SECTION FACING EAST

QUALITY LEVEL A
VACUUM EXCAVATION TEST PIT LOG
TP-22A TP-22B

NORTHING:	2836268.55'	2836266.56'
EASTING:	729751.47'	729751.66'
GROUND EL.	171.2'	171.2'
MEASURE DOWN TOP:	2.2'	2.2'
MEASURE DOWN BTM:	3.4'	3.4'
UTILITY EL. TOP:	169.0'	169.0'
UTILITY EL. BTM:	167.8'	167.8'



(NTS) SECTION FACING EAST

MANSFIELD
CHAUNCY STREET (ROUTE 106)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA		10	10
PROJECT FILE NO.	608944		

UTILITY ENGINEERING PLAN SHEET

608944_SH.DWG Plotted on 27-Jun-2025 1:19 PM

Proposal No. 613052-131228

A00892 - 26

JAMES FITZPATRICK NOONE
COMMONWEALTH OF MASSACHUSETTS
CIVIL
No. 37911
REGISTERED PROFESSIONAL ENGINEER
6/27/25

MassDOT
Massachusetts Department of Transportation
Highway Division

PREPARED BY:
OVERLAND ENGINEERING

REVISIONS

REV.	COMMENTS	DATE

SCALE: 20 FEET TO THE INCH

FILE NAME: 608944_SH.dwg
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MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
UTILITY ENGINEERING PLAN
CHAUNCY STREET (ROUTE 106)
IN THE TOWN OF
MANSFIELD
100% SUBMITTAL
608944

DATE: 6/27/25 SHEET 10 OF 10

DOCUMENT B00420

PROPOSAL

MANSFIELD

For: **Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive**

COMMONWEALTH OF MASSACHUSETTS

LOCATION

The work referred to herein is in the Town of MANSFIELD, in Bristol County, in the Commonwealth of Massachusetts, and is shown by the locus map (Document 00331) in the Proposal Pamphlet, the work locations extend as follows:

Chauncey Street (Route 106)

Beginning – Station 20+93.80 +/-
Ending –Station 40+32.78 +/-

The contract prices shall include the furnishing of all materials (except as otherwise herein specified), the performing of all the labor requisite or proper, the providing of all necessary machinery, tools, apparatus and other means of construction, the doing of all the abovementioned work in the manner set forth, described and shown in the specifications and on the drawings for the work, and in the form of contract, and the completion thereof within **1176 CALENDAR DAYS** upon receipt of a Notice to Proceed, except that if the completion date falls between December 1 and March 15 then the same number of days beyond December 1st will be extended after March 15th.

The Work of this project is described by the following Items and quantities.

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massDOT Massachusetts Department of Transportation Highway Division

CMS Contract Management System

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
102.2	1	TREE TRIMMING AT _____ LUMP SUM		
102.3	20	HERBICIDE TREATMENT OF INVASIVE PLANTS AT _____ PER HOUR		
102.33	20	INVASIVE PLANT MANAGEMENT STRATEGY AT _____ PER HOUR		
102.511	10	TREE PROTECTION - ARMORING AND PRUNING AT _____ EACH		
102.521	60	TREE AND PLANT PROTECTION FENCE AT _____ PER FOOT		
120.1	3,500	UNCLASSIFIED EXCAVATION AT _____ PER CUBIC YARD		
141.	20	CLASS A TRENCH EXCAVATION AT _____ PER CUBIC YARD		
141.1	200	TEST PIT FOR EXPLORATION AT _____ PER CUBIC YARD		
142.	380	CLASS B TRENCH EXCAVATION AT _____ PER CUBIC YARD		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
144.	40	CLASS B ROCK EXCAVATION AT _____ PER CUBIC YARD		
146.	17	DRAINAGE STRUCTURE REMOVED AT _____ EACH		
151.	2,400	GRAVEL BORROW AT _____ PER CUBIC YARD		
151.2	280	GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES AT _____ PER CUBIC YARD		
156.	190	CRUSHED STONE AT _____ PER TON		
160.2	50	CONTROLLED LOW-STRENGTH MATERIAL - MECHANICAL EXCAVATABLE (101-300 PSI) AT _____ PER CUBIC YARD		
170.	7,100	FINE GRADING AND COMPACTING - SUBGRADE AREA AT _____ PER SQUARE YARD		
180.01	1	ENVIRONMENTAL HEALTH AND SAFETY PROGRAM AT _____ LUMP SUM		
180.02	25	PERSONAL PROTECTION LEVEL C UPGRADE AT _____ PER HOUR		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
180.03	80	LICENSED SITE PROFESSIONAL SERVICES AT _____ PER HOUR		
181.11	4,620	DISPOSAL OF UNREGULATED SOIL AT _____ PER TON		
181.12	580	DISPOSAL OF REGULATED SOIL - IN-STATE FACILITY AT _____ PER TON		
181.13	410	DISPOSAL OF REGULATED SOIL - OUT-OF-STATE FACILITY AT _____ PER TON		
181.14	180	DISPOSAL OF HAZARDOUS WASTE AT _____ PER TON		
182.1	1	INSPECTION AND TESTING FOR ASBESTOS AT _____ LUMP SUM		
182.2	20	REMOVAL OF ASBESTOS AT _____ PER FOOT		
201.	38	CATCH BASIN AT _____ EACH		
202.	14	MANHOLE AT _____ EACH		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
202.15	1	MANHOLE - 5 FOOT DIAMETER AT _____ EACH		
202.16	2	MANHOLE - 6 FOOT DIAMETER AT _____ EACH		
203.	1	SPECIAL MANHOLE AT _____ EACH		
204.11	1	GUTTER INLET - SPECIAL AT _____ EACH		
205.1	3	LEACHING BASIN - 6 FOOT DIAMETER AT _____ EACH		
220.	80	DRAINAGE STRUCTURE ADJUSTED AT _____ EACH		
220.2	20	DRAINAGE STRUCTURE REBUILT AT _____ PER FOOT		
220.3	7	DRAINAGE STRUCTURE CHANGE IN TYPE AT _____ EACH		
220.5	3	DRAINAGE STRUCTURE REMODELED AT _____ EACH		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
220.7	2	SANITARY STRUCTURE ADJUSTED AT _____ EACH		
221.	30	FRAME AND COVER AT _____ EACH		
221.1	2	FRAME AND COVER - SECURED AT _____ EACH		
222.	2	FRAME AND GRATE - MASSDOT BAR TYPE AT _____ EACH		
222.1	31	FRAME AND GRATE - MASSDOT CASCADE TYPE AT _____ EACH		
223.11	2	PRIVATE FRAME AND GRATE (OR COVER) REMOVED AND RELOCATED AT _____ EACH		
223.2	32	FRAME AND GRATE (OR COVER) REMOVED AND DISCARDED AT _____ EACH		
224.012	1	12 INCH HOOD AT _____ EACH		
227.3	75	REMOVAL OF DRAINAGE STRUCTURE SEDIMENT AT _____ PER CUBIC YARD		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
227.31	1,300	REMOVAL OF DRAINAGE PIPE SEDIMENT AT _____ PER FOOT		
227.4	10	MASONRY PLUG AT _____ PER SQUARE FOOT		
238.10	80	10 INCH DUCTILE IRON PIPE AT _____ PER FOOT		
238.12	60	12 INCH DUCTILE IRON PIPE AT _____ PER FOOT		
238.16	350	16 INCH DUCTILE IRON PIPE AT _____ PER FOOT		
238.18	240	18 INCH DUCTILE IRON PIPE AT _____ PER FOOT		
238.24	90	24 INCH DUCTILE IRON PIPE AT _____ PER FOOT		
241.15	20	15 INCH REINFORCED CONCRETE PIPE CLASS III AT _____ PER FOOT		
241.18	110	18 INCH REINFORCED CONCRETE PIPE CLASS III AT _____ PER FOOT		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
241.21	200	21 INCH REINFORCED CONCRETE PIPE CLASS III AT _____ PER FOOT		
241.30	10	30 INCH REINFORCED CONCRETE PIPE CLASS III AT _____ PER FOOT		
243.12	640	12 INCH REINFORCED CONCRETE PIPE CLASS IV AT _____ PER FOOT		
252.12	60	12 INCH CORRUGATED PLASTIC PIPE AT _____ PER FOOT		
258.	10	STONE FOR PIPE ENDS AT _____ PER SQUARE YARD		
269.06	235	6 INCH SLOT-PERFORATED CORRUGATED PLASTIC PIPE (SUBDRAIN) AT _____ PER FOOT		
271.1	90	DRAINAGE PIPE REMOVED AND DISCARDED AT _____ PER FOOT		
281.	10	CEMENT CONCRETE PAVING (WATERWAY) AT _____ PER SQUARE YARD		
303.06	5	6 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT) AT _____ PER FOOT		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
309.	100	DUCTILE IRON FITTINGS FOR WATER PIPE AT _____ PER POUND		
357.08	5	8 INCH GATE BOX AT _____ EACH		
358.	20	GATE BOX ADJUSTED AT _____ EACH		
376.2	1	HYDRANT - REMOVED AND RESET AT _____ EACH		
381.01	5	SERVICE BOX (MUNICIPAL STANDARD) AT _____ EACH		
381.3	12	SERVICE BOX ADJUSTED AT _____ EACH		
384.	5	CURB STOP AT _____ EACH		
402.1	520	DENSE GRADED CRUSHED STONE FOR SUB-BASE AT _____ PER TON		
415.2	19,500	PAVEMENT FINE MILLING AT _____ PER SQUARE YARD		

Project # 613052 Contract # 131228				
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
431.	530	HIGH EARLY STRENGTH CEMENT CONCRETE BASE COURSE AT _____ PER SQUARE YARD		
440.	10,300	CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL AT _____ PER POUND		
443.	25	WATER FOR ROADWAY DUST CONTROL AT _____ PER 1000 GALLONS		
450.23	1,950	SUPERPAVE SURFACE COURSE - 12.5 (SSC - 12.5) AT _____ PER TON		
450.31	310	SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC -12.5) AT _____ PER TON		
450.41	580	SUPERPAVE BASE COURSE - 25.0 (SBC - 25.0) AT _____ PER TON		
450.53	1,590	SUPERPAVE LEVELING COURSE - 12.5 (SLC - 12.5) AT _____ PER TON		
451.	360	HMA FOR PATCHING AT _____ PER TON		
452.	2,800	ASPHALT EMULSION FOR TACK COAT AT _____ PER GALLON		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
453.	9,200	HMA JOINT ADHESIVE AT _____ PER FOOT		
472.	310	TEMPORARY ASPHALT PATCHING AT _____ PER TON		
476.12	890	STAMPED AND COLORED CEMENT CONCRETE AT _____ PER SQUARE YARD		
477.2	70	MILLED RUMBLE STRIP (TYPE C) AT _____ PER FOOT		
482.5	2,400	SAWCUTTING ASPHALT PAVEMENT FOR BOX WIDENING AT _____ PER FOOT		
502.	160	GRANITE CURB TYPE VA2 - STRAIGHT AT _____ PER FOOT		
506.	1,830	GRANITE CURB TYPE VB - STRAIGHT AT _____ PER FOOT		
506.1	385	GRANITE CURB TYPE VB - CURVED AT _____ PER FOOT		
509.	174	GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - STRAIGHT AT _____ PER FOOT		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
509.1	268	GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - CURVED AT _____ PER FOOT		
511.1	1,830	GRANITE EDGING TYPE SB - STRAIGHT AT _____ PER FOOT		
512.1	110	GRANITE EDGING TYPE SB (RADIUS 10 FEET OR LESS) AT _____ PER FOOT		
514.	17	GRANITE CURB INLET - STRAIGHT AT _____ EACH		
515.	1	GRANITE CURB INLET - CURVED AT _____ EACH		
570.2	235	HOT MIX ASPHALT CURB TYPE 2 AT _____ PER FOOT		
580.	1,380	CURB REMOVED AND RESET AT _____ PER FOOT		
590.3	60	CONCRETE BLOCK WALL REMOVED AND STACKED AT _____ PER FOOT		
594.	1,710	CURB REMOVED AND DISCARDED AT _____ PER FOOT		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
620.12	50	GUARDRAIL, TL-2 (SINGLE FACED) AT _____ PER FOOT		
620.131	20	GUARDRAIL, DEEP POST (SINGLE FACED) AT _____ PER FOOT		
627.1	2	TRAILING ANCHORAGE AT _____ EACH		
627.82	1	GUARDRAIL TANGENT END TREATMENT, TL-2 AT _____ EACH		
628.314	4	TEMPORARY IMPACT ATTENUATOR, REDIRECTIVE, TL-2 AT _____ EACH		
628.315	4	TEMPORARY IMPACT ATTENUATOR, REDIRECTIVE, TL-3 AT _____ EACH		
628.32	6	IMPACT ATTENUATOR FOR SHOULDER, CAPABLE OF REDIRECTION AT _____ EACH		
628.4	6	TEMPORARY IMPACT ATTENUATOR, REMOVED AND RESET AT _____ EACH		
669.	10	FENCE REMOVED AND STACKED AT _____ PER FOOT		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
670.	205	FENCE REMOVED AND RESET AT _____ PER FOOT		
697.1	47	SILT SACK AT _____ EACH		
698.2	180	GEOTEXTILE FABRIC FOR SUBSURFACE DRAINAGE AT _____ PER SQUARE YARD		
698.4	10	GEOTEXTILE FABRIC FOR PERMANENT EROSION CONTROL AT _____ PER SQUARE YARD		
701.	2,130	CEMENT CONCRETE SIDEWALK AT _____ PER SQUARE YARD		
701.1	340	CEMENT CONCRETE SIDEWALK AT DRIVEWAYS AT _____ PER SQUARE YARD		
701.2	400	CEMENT CONCRETE PEDESTRIAN CURB RAMP AT _____ PER SQUARE YARD		
702.	130	HOT MIX ASPHALT SIDEWALK OR DRIVEWAY AT _____ PER TON		
710.3	41	BOUND - LETTERED GRANITE AT _____ EACH		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
711.	1	BOUND REMOVED AND RESET AT _____ EACH		
714.	1	MONUMENT REMOVED AND RESET AT _____ EACH		
722.3	1	SCHEDULE OF OPERATIONS (TYPE C) - FIXED PRICE $60000 AT Sixty Thousand Dollars LUMP SUM	$60,000.00	$60,000.00
730.1	2	WELCOME TO MANSFIELD SIGN AT _____ EACH		
740.	39	ENGINEER'S FIELD OFFICE AND EQUIPMENT (TYPE A) AT _____ PER MONTH		
748.	1	MOBILIZATION AT _____ LUMP SUM		
751.	200	LOAM FOR ROADSIDES AT _____ PER CUBIC YARD		
756.	1	NPDES STORMWATER POLLUTION PREVENTION PLAN AT _____ LUMP SUM		
758.1	100	LOAMY SAND BORROW AT _____ PER CUBIC YARD		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
765.	1,300	SEEDING AT _____ PER SQUARE YARD		
765.553	40	WETLAND SEED - RIPARIAN MIX AT _____ PER SQUARE YARD		
767.121	800	SEDIMENT CONTROL BARRIER AT _____ PER FOOT		
767.122	20	SEDIMENT BARRIER-COIR LOG AT _____ PER FOOT		
767.4	25	WOOD CHIP MULCH AT _____ PER CUBIC YARD		
767.9	30	JUTE MESH AT _____ PER SQUARE YARD		
769.	100	PAVEMENT MILLING MULCH UNDER GUARD RAIL AT _____ PER FOOT		
772.038	7	ARBORVITAE 7-8 FEET AT _____ EACH		
772.337	10	CEDAR - RED 7-8 FEET AT _____ EACH		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
776.557	1	MAPLE - RED - RED SUNSET 2-2.5 INCH CALIPER AT _____ EACH		
777.263	2	OAK - SWAMP WHITE 2-2.5 INCH CAL` AT _____ EACH		
777.675	6	SWEETGUM - 'SLENDER SILHOUETTE' 1.5-2 INCH CAL AT _____ EACH		
778.521	5	DOGWOOD - APPALACIAN SNOW 2-2.5 INCH CAL AT _____ EACH		
781.257	4	HAWTHORN - WASHINGTON 2-2.5 INCH CAL AT _____ EACH		
783.044	5	SERVICEBERRY - AUTUMN BRILLIANCE 7-8 FEET AT _____ EACH		
783.467	2	TUPELO 2-2.5 INCH CALIPER AT _____ EACH		
785.734	21	INKBERRY - COMPACT 2-3 FEET / #3 AT _____ EACH		
786.111	44	JUNIPER - GREY OWL 18-24 INCH / #2 AT _____ EACH		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
786.672	1	MOUNTAIN LAUREL 2-3 FEET AT _____ EACH		
793.446	14	ROSE - RADYOD KNOCKOUT 18-24 INCH AT _____ EACH		
793.447	21	ROSE - DOUBLE KNOCKOUT 18-24 INCH AT _____ EACH		
793.448	27	ROSE - SUNNY KNOCKOUT 18-24 INCH AT _____ EACH		
793.729	10	SPIREA 2-3 FEET / #3 AT _____ EACH		
794.331	31	SUMAC SHRUB - FRAGRANT-GRO-LOW 2-3 FEET / #2 AT _____ EACH		
794.737	21	SUMMERSWEET SHRUB 3-4 FEET / #3 AT _____ EACH		
795.153	3	WINTERBERRY - MALE 24-30 INCH / #3 AT _____ EACH		
795.157	19	WINTERBERRY - FEMALE 24-30 INCH / #3 AT _____ EACH		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
796.001	39	YARROW - COMMON 1 GAL. AT _____ EACH		
796.002	31	CONE FLOWER - 'LITTLE GIANT' 1 GAL AT _____ EACH		
796.003	27	BONSET 1 GAL. AT _____ EACH		
796.004	26	ASTER - LARGE LEAF WOOD 1 GAL AT _____ EACH		
796.005	26	DAYLILY - STELLA DE ORO 1 GAL AT _____ EACH		
796.006	31	BLACK EYEYD SUSAN - 'LITTLE GOLDSTAR' 1 GAL AT _____ EACH		
796.201	61	LITTLE BLUESTEM - CAROUSEL 1 GAL. AT _____ EACH		
802.44	230	4 IN TELEPHONE CATV CONDUIT - TYPE NM (4 BANK) AT _____ PER FOOT		
804.3	1,510	3 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC -(UL) AT _____ PER FOOT		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
804.32	200	3 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC - (UL) - DOUBLE AT _____ PER FOOT		
811.23	5	ELECTRIC HANDHOLE - SD2.023 AT _____ EACH		
811.31	18	PULL BOX 12 X 12 INCHES - SD2.031 AT _____ EACH		
813.792	1	INTERCONNECT CABLE SYSTEM - COPPER WIRE AT _____ LUMP SUM		
816.1	1	TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 4 AT _____ LUMP SUM		
816.2	1	TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 4A AT _____ LUMP SUM		
816.5	1	TRAFFIC SIGNAL SYSTEM ADJUSTMENT AT _____ LUMP SUM		
817.63	2	SIGNAL MAST ARM 35 FEET - STEEL AT _____ EACH		
823.711	11	COBRAHEAD LUMINARE AT _____ EACH		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
829.06	6	ROADSIDE SIGN AND SUPPORT (D6/D8) REMOVED AND DISCARDED AT _____ EACH		
831.11	290	ROADSIDE GUIDE SIGN (MA-D1-XX) - ALUMINUM PANEL (TYPE A) AT _____ PER SQUARE FOOT		
832.	320	WARNING-REGULATORY AND ROUTE MARKER - ALUMINUM PANEL (TYPE A) AT _____ PER SQUARE FOOT		
841.11	6	SUPPORT FOR GUIDE SIGN (MA-D1-XX) - 5 INCH TUBULAR - STEEL AT _____ EACH		
847.1	33	SIGN SUP (N/GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL AT _____ EACH		
848.1	6	SIGN SUP (N/GUIDE)+RTE MKR W/2 BRKWAY POST ASSEMBLIES-STEEL AT _____ EACH		
850.41	220	ROADWAY FLAGGER AT _____ PER HOUR		
851.1	425	TRAFFIC CONES FOR TRAFFIC MANAGEMENT AT _____ PER DAY		
852.	1,875	SAFETY SIGNING FOR TRAFFIC MANAGEMENT AT _____ PER SQUARE FOOT		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
852.11	800	TEMPORARY PEDESTRIAN BARRICADE AT _____ PER FOOT		
852.12	6	TEMPORARY PEDESTRIAN CURB RAMP AT _____ EACH		
853.1	12	PORTABLE BREAKAWAY BARRICADE TYPE III AT _____ EACH		
853.2	100	TEMPORARY BARRIER (TL-2) AT _____ PER FOOT		
853.21	1,000	TEMPORARY BARRIER REMOVED AND RESET AT _____ PER FOOT		
853.403	200	TRUCK MOUNTED ATTENUATOR AT _____ PER DAY		
853.8	20	TEMPORARY ILLUMINATION FOR WORK ZONE AT _____ PER DAY		
854.016	47,000	TEMPORARY PAVING MARKINGS - 6 INCH (PAINTED) AT _____ PER FOOT		
854.036	1,825	TEMPORARY PAVING MARKINGS - 6 INCH (TAPE) AT _____ PER FOOT		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
854.1	30	PAVEMENT MARKING REMOVAL AT _____ PER SQUARE FOOT		
856.	2,880	ARROW BOARD AT _____ PER DAY		
856.12	4,400	PORTABLE CHANGEABLE MESSAGE SIGN AT _____ PER DAY		
859.	54,000	REFLECTORIZED DRUM AT _____ PER DAY		
864.02	30	PAVEMENT ARROW AND LEGENDS - TAPE AT _____ PER SQUARE FOOT		
864.04	1,150	PAVEMENT ARROWS AND LEGENDS REFLECTORIZED WHITE (THERMOPLASTIC) AT _____ PER SQUARE FOOT		
864.33	25	SLOTTED PAVEMENT MARKER TWO-WAY WHITE/RED AT _____ EACH		
864.41	130	GREEN COLORIZED PAVEMENT MARKINGS AT _____ PER SQUARE FOOT		
866.106	5,400	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC) AT _____ PER FOOT		

Project # 613052 Contract # 131228				
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
866.112	2,600	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC) AT _____ PER FOOT		
867.106	4,000	6 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC) AT _____ PER FOOT		
867.112	450	12 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC) AT _____ PER FOOT		
874.	11	STREET NAME SIGN AT _____ EACH		
874.52	38	MISCELLANEOUS SIGNS REMOVED AND DISCARDED AT _____ EACH		
874.7	1	MISCELLANEOUS SIGNS REMOVED AND STACKED AT _____ EACH		
901.	5	4000 PSI, 1.5 INCH, 565 CEMENT CONCRETE AT _____ PER CUBIC YARD		
903.	3	3000 PSI, 1.5 INCH, 470 CEMENT CONCRETE AT _____ PER CUBIC YARD		
910.1	60	STEEL REINFORCEMENT FOR STRUCTURES - EPOXY COATED AT _____ PER POUND		

Project # 613052	Contract # 131228			
Location : MANSFIELD				
Description : Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
970.	135	DAMP-PROOFING AT _____ PER SQUARE FOOT		
991.1	1	CONTROL OF WATER - STRUCTURE NO. CULVERT AT _____ LUMP SUM		
Total Qty:	221,930			

DOCUMENT B00853

SCHEDULE OF PARTICIPATION
BY DISADVANTAGED BUSINESS ENTERPRISES (DBEs)

APPENDIX F – FORM F3: DBE SCHEDULE OF PARTICIPATION

PRIME BIDDER: _____

DATE OF BID OPENING: _____ MassDOT PROJECT NO.: 613052

FEDERAL AID PROJECT NUMBER: NHP (NHS)/ HSI-003S (871) X

PROJECT LOCATION: MANSFIELD

Name Address and Phone Number of DBE	Name of Activity	NAICS Code(s)	(a) DBE Contractor Activity Amount *Construction Work*	(b) DBE Other Business Amount *Services, Supplies, Material*	(c) Total amount eligible for credit
Total Bid Amount	TOTALS:		$		$
$ 204,889	DBE Percentage of Total bid:		%		%

A copy of the DBE's most recent certification and an original affidavit must be attached to this document.

Is a Joint Check Approval being submitted for any of the above? ☐ Yes X No
Will any of the contractors listed above be using a third party to deliver materials or perform any portion of work?
☐ Yes X No
(i.e. manufacturing)

SIGNATURE:_____ DATE_____

NAME AND TITLE (*PRINT*):_____

EMAIL ADDRESS: _____TEL NO.:_____

Rev'd 5/8/13

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DOCUMENT B00854

DBE Letter of Intent

(To be completed by the DBE – Page 1 of 2)

The DBE firm will also include the latest MassUCP letter with this Letter of Intent.

To: _____ (Prime Bidder)

From: _____ (DBE Firm)

Federal Aid Project No.: NHP (NHS)/ HSI-003S (871) X Bid Opening or Due Date: _____

Project Name: _____ Project Location: MANSFIELD

I, _____, authorized signatory of the above-reference DBE firm hereby declare:

(Print Name)

(a) My company is currently certified as a Disadvantaged Business Enterprise (DBE) by the Massachusetts Supplier Diversity Office (SDO), as a (check all that apply):

☐ CONTRACTOR ☐ REGULAR DEALER ☐ OTHER
☐ MANUFACTURER ☐ TRUCKING OPERATIONS ☐ PROFESSIONAL SERVICES

[Additional guidance is available at Title 49, Code of Federal Regulations, Part 26.55 (49 CFR Part 26.55)]

(b) My firm has the ability to manage, supervise and perform the activity described on page 3 of this Letter of Intent. If you are awarded the contract, my company intends to enter into a contract with your firm to perform the items of work or other activity described on the following sheet for the prices indicated.

(c) There have been no changes affecting the ownership, control or independence of my company since my last certification review on _____. If any such change is planned or occurs prior to my company's completion of this proposed work, I will give prior written notification to your firm and to the Office of Diversity and Civil Rights (ODCR)(MBTA/MassDOT) and SDO.

(d) I have read the MassDOT proposal for the Project, and acknowledge that my company will comply with that document and the requirements of 49 CFR Part 26.

(e) For the purpose of obtaining subcontractor approval from the MassDOT, my firm will provide to you:

a. ***The following construction work:***
   i. a complete list of contact information for proposed Superintendent, i.e., address, phone number and e-mail address, and;
   ii. a list of projects completed in the last 10 years. I shall also include, for each project: the name and telephone number of a contact person for the contracting authority, person, or organization; project title / location (City/State), dollar value of the work; a description of the work; and the date project completed .

b. The following professional services work:
   i. resume, stating the qualifications and experience of person responsible for project oversight and contact information, i.e., address, phone number and e-mail address.
   ii. proposed team and organization,
   iii. resumes of key personnel;
   iv. example projects

c. The following services, materials or supplies:
   i. a written agreement and invoices for the materials or supplies, and any other documents evidencing the terms of providing such items to be sent to the Office of Diversity and Civil Rights Government Compliance Unit designee;
   ii. information concerning brokers fees and commissions for providing services or materials.

DBE Firm Authorized Signature Date

DBE Letter of Intent (Continued)

(To be completed by the DBE – Page 2 of 2)

Prime Bidder: _____

DBE Firm: _____

Federal Aid Project No.: NHP (NHS)/ HSI-003S (871) X

Bid Opening or Due Date: _____

Project Name: _____

Project Location: MANSFIELD

Item number if applicable	NAICS Code	Description of Activity with notations such as Services, or Brokerage, Labor Only, Material Only, or Complete	Quantity	Unit Price	Amount
			TOTAL AMOUNT:		

Please give full explanations, attach additional sheets if necessary.

I HEREBY VERIFY THAT _____

(DBE Firm)

WILL SOLELY PERFORM THE WORK, OR PROVIDE THE SERVICES OR MATERIALS, AS DESCRIBED ABOVE.

DBE Authorized Signature: _____

Name (Print): _____

Title: _____

Email Address: _____

Phone Number: _____ Fax Number: _____

END OF DOCUMENT

DOCUMENT B00855

DBE JOINT CHECK ARRANGEMENT APPROVAL FORM

(to be submitted by Prime Contractor)

Contract No: 131228 **Project No.** 613052 **Federal Aid No.:** NHP (NHS)/ HSI-003S (871) X

Location: MANSFIELD **Bid Opening Date:** _____

Project Description: Corridor Improvements on Chauncy Street (Route 106) from State Route 140 to Copeland Drive

We have received the attached request for the use of a joint check arrangement from _____ _____ , a DBE on the above- referenced Contract and _____ _____, a Material Supplier/Vendor for the subject Contract. The DBE has complied with the requirements of 49 CFR Part 26.55(c)(1). In particular, the DBE has:

- a written agreement with the material supplier/vendor;
- applied for credit with the subject material supplier and has supplied the vendor's response;
- shown that it will place all orders to the subject material supplier/vendor;
- made and retains all decision-making responsibilities concerning the materials; and
- provided a Joint Check Agreement that is acceptable to MassDOT;

As the Contractor for the Project, we agree to issue joint checks (made payable to the Material Supplier/Vendor and the DBE) for payment of sums due pursuant to invoices from the Supplier/Vendor and DBE.

Contractor:

_____ _____
Company Name Signature
Duly Authorized

_____
Printed Name

_____ _____
Date Title

SubContractor:

_____ _____
Company Name Signature –
Duly Authorized

_____
Printed Name

_____ _____
Date Title

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DOCUMENT B00856

JOINT VENTURE AFFIDAVIT

(All Firms)

- All Information Requested By This Schedule Must Be Answered. Additional Sheets May Be Attached.
- If, there is any change in the information submitted, the Joint Venture parties must inform MassDOT Pre-Qualifications Office (and, if one of the companies is a DBE, the Director of Contract Compliance, Office of Civil Rights) *prior* to such change, in writing, either directly or through the Prime Contractor if the Joint Venture is a subcontractor.
- If the Joint Venture Entity will be the bidder on a prime Contract, it must bid and submit all required documents (insurance, worker's compensation, bonds, etc.) in the name of the Joint Venture Entity.

I. Name of Joint Venture: _____

Type of Entity if applicable (Corp., LLC):_____Filing State _____

Address of joint venture: _____

_____

Phone No(s) for JV Entity: _____E-mail:_____

Contact Person(s)_____

Tax ID/EIN of Joint Venture: _____Vendor Code:_____

II. Identify each firm or party to the Joint Venture:

Name of Firm: _____

Address: _____

Phone : _____E-mail:_____

Contact person(s) _____

Name of Firm: _____

Address: _____

Phone: _____E-mail:_____

Contact Person(s)_____

III. Describe the role(s) of the each party to the Joint Venture:

_____

_____

IV. Attach a copy of the Joint Venture Agreement. The proposed Joint Venture Agreement should include specific details including, but not limited to: (1) the contributions of capital and equipment; (2) work items to be performed by each company's forces, (3) work items to be performed under the supervision of any DBE Venturer; (4) the commitment of management, supervisory and operative personnel employed by the DBE to be dedicated to the performance of the Project; and (5) warranty, guaranty, and indemnification clauses.

V. Attach any applicable Corporate or LLC Votes, Authorizations, etc.

VI. Ownership of the Joint Venture:

A. What is the percentage(s) of each company's ownership in the Joint Venture?

ownership percentage(s): _____

ownership percentage(s): _____

B. Specify percentages for each of the following (provide narrative descriptions and other detail as applicable):

1. Sharing of profit and loss: _____

2. Capital contributions:

(a) Dollar amounts of initial contribution: _____

(b) Dollar amounts of anticipated on-going contributions: _____

(c) Contributions of equipment (specify types, quality and quantities of equipment to be provided by each firm): _____

_____

4. Other applicable ownership interests, including ownership options or other agreements, which restrict or limit ownership and/or control:

_____

_____

5. Provide copies of all other written agreements between firms concerning bidding and operation of this Project or projects or contracts.

6. Identify all current contracts and contracts completed during the past two (2) years by either of the Joint Venture partners to this Joint Venture:

_____

_____

VII. Control of and Participation in the Joint Venture. Identify by name and firm those individuals who are, or will be, responsible for and have the authority to engage in the following management functions and policy decisions. (Indicate any limitations to their authority such as dollar limits and co-signatory requirements.):

A. Joint Venture check signing:

_____

_____

B. Authority to enter Contracts on behalf of the Joint Venture:

_____

_____

C. Signing, co-signing and/or collateralizing loans:

_____

_____

D. Acquisition of lines of credit:

_____

_____

E. Acquisition and indemnification of payment and performance bonds:

_____

_____

F. Negotiating and signing labor agreements:

_____

_____

G. Management of contract performance. *(Identify by name and firm only)*:

1. Supervision of field operations: _____
2. Major purchases: _____
3. Estimating: _____
4. Engineering: _____

VIII. Financial Controls of Joint Venture:

A. Which firm and/or individual will be responsible for keeping the books of account?

_____

_____

B. Identify the "Managing Partner," if any, and describe the means and measure of their compensation:

_____

_____

C. What authority does each firm have to commit or obligate the other to insurance and bonding companies, financing institutions, suppliers, subcontractors, and/or other parties participating in the performance of this Contract or the work of this Project?

_____

IX. Personnel of Joint Venture: State the approximate number of personnel (by trade) needed to perform the Joint Venture's work under this Contract. Indicate whether they will be employees of the majority firm, DBE firm, or the Joint Venture.

	Firm 1 (number)	Firm 2 (number)	Joint Venture (number)
Trade			
Professional			
Administrative/Clerical			
Unskilled Labor			

Will any personnel proposed for this Project be employees of the Joint Venture?: _____

If so, who: _____

A. Are any proposed Joint Venture employees currently employed by either firm?

Employed by Firm 1: _____Employed by firm 2 _____

B. Identify by name and firm the individual who will be responsible for Joint Venture hiring: ____

_____

X. Additional Information. Please state any material facts and additional information pertinent to the control and structure of this Joint Venture.

_____

_____

XI. AFFIDAVIT OF JOINT VENTURE PARTIES. The undersigned affirm that the foregoing statements and attached documents are correct and include all material information necessary to identify and explain the terms and operations of our Joint Venture and the intended participation of each firm in the undertaking. Further, the undersigned covenant and agree to provide to MassDOT current, complete and accurate information regarding actual Joint Venture work, payments, and any proposed changes to any provisions of the Joint Venture, or the nature, character of each party to the Joint Venture. We understand that any material misrepresentation will be grounds for terminating any Contract awarded and for initiating action under Federal or State laws concerning false statements.

Firm 1	Firm 2
Signature Duly Authorized	Signature Duly Authorized
Printed Name and Title	Printed Name and Title
Date	Date

*** END OF DOCUMENT ***