jb

COMMONWEALTH OF MASSACHUSETTS

massDOT
Massachusetts Department of Transportation
Highway Division

CONTRACT DOCUMENTS AND SPECIAL PROVISIONS

PROPOSAL NO.	608742-132267
P.V. =	$14,367,000.00
PLANS	YES

FOR

Federal Aid Project No. STP/CMQ/TAP/CRP-0035(066)X
Reconstruction & Related Work on Main Street (Route 28),
from Upper County Road to the Herring River Bridge

in the Towns of

DENNIS-HARWICH

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

This Proposal to be opened and read: **TUESDAY, NOVEMBER 4, 2025 at 2:00 P.M.**

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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.

TUESDAY, NOVEMBER 4, 2025 at 2:00 P.M. **
DENNIS-HARWICH
Federal Aid Project No. STP/CMQ/TAP/CRP-0035(066)X
Reconstruction & Related Work on Main Street (Route 28),
from Upper County Road to the Herring River Bridge

****Date Subject to Change**

PROJECT VALUE = $14,367,000.00

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 $625.00 per ton, Portland cement $425.13 per ton, diesel fuel $2.793 per gallon, and gasoline $2.471 per gallon, and Steel Base Price Index 374.7. 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, SEPTEMBER 6, 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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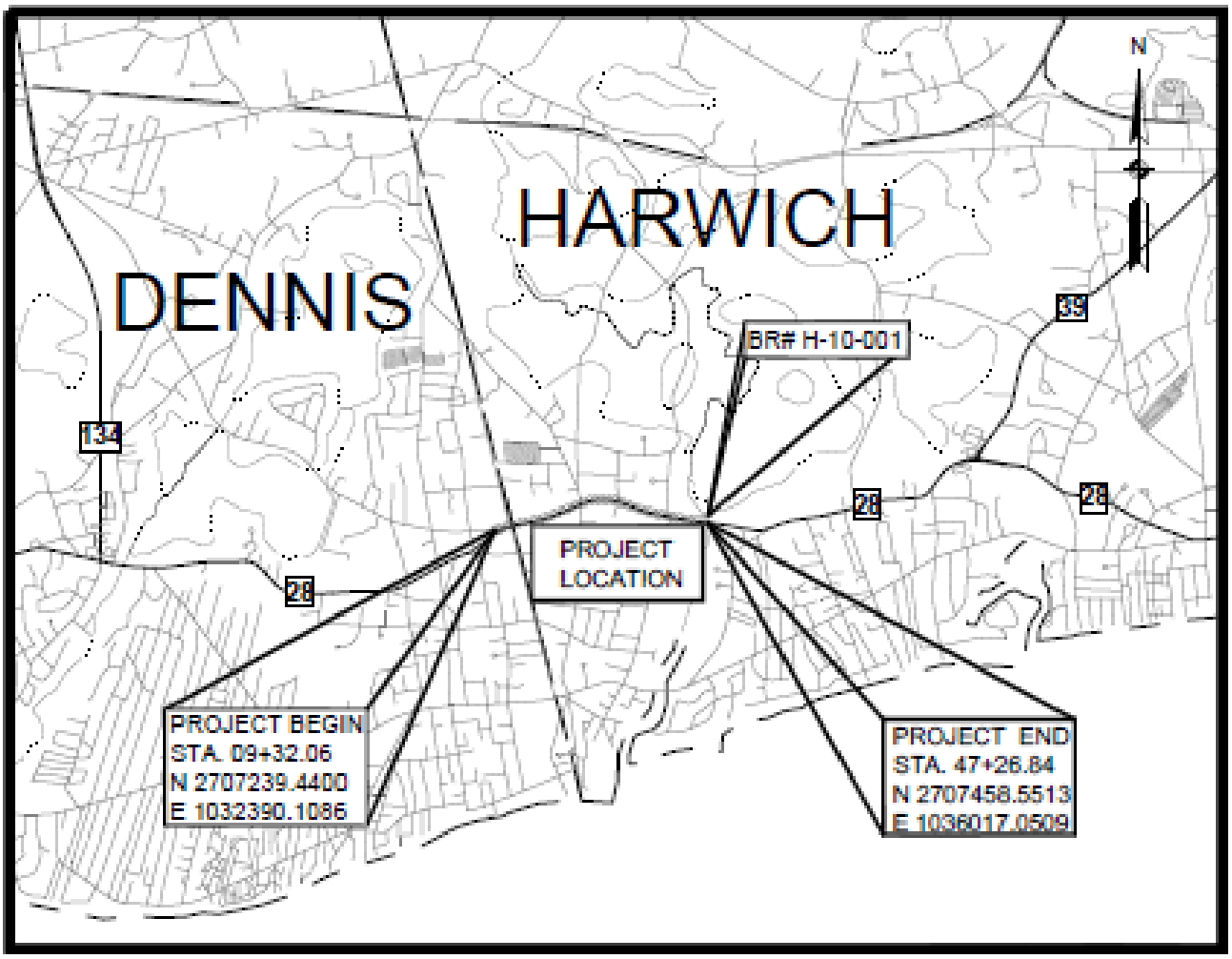
DOCUMENT 00331

LOCUS MAP

DENNIS-HARWICH
Federal Aid Project No. STP/CMQ/TAP/CRP-0035(066)X
Reconstruction & Related Work on Main Street (Route 28),
from Upper County Road to the Herring River Bridge



LENGTH OF PROJECT = 3726.84 FEET = 0.706 MILES

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DOCUMENT 00439

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:_____

WORK NOT COMPLETED WITHIN SPECIFIED TIME: _____

Revised: 04/28/17

*** END OF DOCUMENT ***

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

SEPTEMBER 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 3.00: AWARD AND EXECUTION OF THE CONTRACT

Subsection 3.02: Award of Contract
Replace the third paragraph with the following:

The successful bidder will be notified by mail or otherwise that their bid has been accepted and that they have been awarded the Contract.

SECTION 7.00: LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

Subsection 7.01: Laws to be Observed
In paragraph 701.G Buy America Provisions change Federally-aid to Federal-aid.

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.
Replace this subsection with the following;

Subsection 7.22: Labor, Lodging, Board; Maximum Hours of Employment; Minimum Wage Rates; Payment of Wages; Keeping of Payroll Records

Every employee in public work shall lodge, board and trade where and with whom he elects; and no person or their agents or employees under contract with the commonwealth, a county, city or town, or with a department, board, commission or officer acting therefor, for the doing of public work shall directly or indirectly require, as a condition of employment therein, that the employee shall lodge, board or trade at a particular place or with a particular person. This section shall be made a part of the contract for such employment. (M.G.L. c. 149, § 25).

Every contract, except for the purchase of material or supplies, involving the employment of laborers, workers, mechanics, foremen or inspectors, to which the commonwealth or any county or any town, subject to section thirty, is a party, shall contain a stipulation that no laborer, worker, mechanic, foreman or inspector working within the commonwealth, in the employ of the contractor, sub-contractor or other person doing or contracting to do the whole or a part of the work contemplated by the contract, shall be required or permitted to work more than eight hours in any one day or more than forty-eight hours in any one week, or more than six days in any one week, except in cases of emergency, or, in case any town subject to section thirty-one is a party to such a contract, more than eight hours in any one day, except as aforesaid; provided, that in contracts entered into by the department of highways [a predecessor agency to MassDOT] for the construction or reconstruction of highways there may be inserted in said stipulation a provision that said department, or any contractor or sub-contractor for said department, may employ laborers, workers, mechanics, foreman and inspectors for more than eight hours in any one day in such construction or reconstruction when, in the opinion of the commissioner [currently defined in M.G.L. c. 149, § 1 as the director of the Department of Labor Standards], public necessity so requires. Every such contract not containing the aforesaid stipulation shall be null and void. (M.G.L. c. 149, § 34).

Attention of Bidders is called to M.G.L. c. 149, § 26-27H (the Prevailing Wage Law), requiring that the rate per hour of the wages paid to mechanics and apprentices, teamsters, chauffeurs and laborers in the construction of public works shall not be less than the rate or rates of wages to be determined by the director of the department of labor standards, and M.G.L. c. 149, § 148 requiring the weekly or bi-weekly payment of employees.

The Contractor shall furnish certified copies of any or all payrolls for the Contract, showing the name, address, and occupational classification of each employee on said works, and the hours worked by, and the wages paid to each such employee. Such payroll shall also include the rates paid for rented trucks or rental equipment of any kind used on the work. This requirement shall also apply to the work of any Subcontractor, having a Subcontract for any of the work performed on the project. Such records shall be kept in such manner as the Director of Labor Standards shall prescribe, and shall be open to inspection by the Engineer or any authorized representative of the Department of Labor Standards at any reasonable time and as often as may be necessary.

SECTION 8.00: PROSECUTION AND PROGRESS

Subsection 8.01: Subletting or Assignment of Contract

In the first bullet of the third paragraph replace the title of Subsection 7.22 Labor, Lodging, Board; Maximum Hours of Employment; Minimum Wage Rates; Payment of Wages; Keeping of Payroll Records

SECTION 9.00: MEASUREMENT AND PAYMENT

Subsection 9.03: Payment for Extra Work

Replace 903.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 903.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 700: INCIDENTAL WORK

SUBSECTION 715: RURAL MAIL BOXES REMOVED AND RESET

Subsection 715: Rural Mail Boxes Removed and Reset
Change the words mail box and mail boxes to the word mailbox or mailboxes where encountered in the title, and all subsections.

SECTION 800: TRAFFIC CONTROL DEVICES

SUBSECTION 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.

SUBSECTION 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

SUBSECTION 902: ULTRA 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-

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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 **0 %**
(*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.

* * * * *

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

September 17, 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	$0.58
2	ASTM A27 (AASHTO M103) Steel Castings, H-Pile Points & Pipe Pile Shoes (See Note below.)	$0.81
3	ASTM A668 / A668M (AASHTO M102) Steel Forgings	$0.81
4	ASTM A108 (AASHTO M169) Steel Forgings for Shear Studs	$0.83
5	ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 36 or 250 Structural Steel Plate	$0.87
6	ASTM A709/A709M Grade 36 / AASHTO M270M/M270 Grade 36 or 250 Structural Steel Shapes	$0.82
7	ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 50 or 345 Structural Steel Plate	$0.87
8	ASTM A709/A709M Grade 50 / AASHTO M270M/M270 Grade 50 or 345 Structural Steel Shapes	$0.82
9	ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 50WT or 345WT Structural Steel Plate	$0.90
10	ASTM A709/A709M Grade 50WT / AASHTO M270M/M270 Grade 50WT or 345WT Structural Steel Shapes	$0.83
11	ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 50W 345W Structural Steel Plate	$0.90
12	ASTM A709/A709M Grade 50W / AASHTO M270M/M270 Grade 50W or 345W Structural Steel Shapes	$0.83
13	ASTM A709/A709M Grade HPS 50W / AASHTO M270M/M270 Grade HPS 50W or 345W Structural Steel Plate	$0.94
14	ASTM A709/A709M Grade HPS 70W / AASHTO M270M/M270 Grade HPS 70W or 485W Structural Steel Plate	$1.02
15	ASTM A514/A514M-05 Grade HPS 100W / AASHTO M270M/M270 Grade HPS 100W or 690W Structural Steel Plate	$1.55
16	ASTM A992/A992M Grade 50S / AASHTO M270M/M270 Grade 50S or 345S Structural Steel Plate	$0.90
17	ASTM A992/A992M Grade 50S / AASHTO M270M/M270 Grade 50S or 345S Structural Steel Shapes	$0.83
18	ASTM A276 Type 316 Stainless Steel	$4.67
19	ASTM A240 Type 316 Stainless Steel	$4.67
20	ASTM A148 Grade 80/50 Steel Castings (See Note below.)	$1.60
21	ASTM A53 Grade B Structural Steel Pipe	$1.02
22	ASTM A500 Grades A, B, 36 & 50 Structural Steel Pipe	$1.02
23	ASTM A252, Grades 240 (36 KSI) & 414 (60 KSI) Pipe Pile	$0.81
24	ASTM 252, Grade 2 Permanent Steel Casing	$0.81
25	ASTM A36 (AASHTO M183) for H-piles, steel supports and sign supports	$0.85
26	ASTM A328 / A328M, Grade 50 (AASHTO M202) Steel Sheetpiling	$1.53
27	ASTM A572 / A572M, Grade 50 Sheetpiling	$1.53
28	ASTM A36/36M, Grade 50	$0.87
29	ASTM A570, Grade 50	$0.85
30	ASTM A572 (AASHTO M223), Grade 50 H-Piles	$0.87
31	ASTM A1085 Grade A (50 KSI) Steel Hollow Structural Sections (HSS), heat-treated per ASTM A1085 Supplement S1	$1.02
32	AREA 140 LB Rail and Track Accessories	$0.52

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

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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 ǂ

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

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

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

Contract No: 132267 **Project No.** 608742 **Federal Aid No.:** STP/CMQ/TAP/CRP-0035(066)X

Location: DENNIS-HARWICH

Project Description: Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge

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.
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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DOCUMENT 00861

TOWN OF DENNIS WAGES

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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:**	DENNIS
Contract Number:	132267		
Description of Work:	DENNIS-HARWICH – FAP No. STP/CMQ/TAP/CRP-0035(066)X Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge (608742)		
Job Location:	Main Street (Route 28), from Upper County Road to the Herring River Bridge		

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 2) For apprentice rates see "Apprentice- PILE DRIVER"	8/1/2024	$117.16	$10.08	$11.62	$12.67	$0.00	$151.53
AIR TRACK OPERATOR LABORERS LABORERS - ZONE 2 For apprentice rates see "Apprentice- LABORER"	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
AIR TRACK OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY) For apprentice rates see "Apprentice- LABORER (Heavy and 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
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. HEAT & FROST INSULATORS LOCAL 6 HEAT & FROST INSULATORS LOCAL 6 (BOSTON)	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

Apprentice to Journeyworker Ratio: 1:4

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 (NEW BEDFORD)	8/1/2025	$67.95	$11.49	$15.57	$8.02	$0.00	$103.03
	2/1/2026	$69.30	$11.49	$15.57	$8.02	$0.00	$104.38
	8/1/2026	$71.50	$11.49	$15.57	$8.02	$0.00	$106.58
	2/1/2027	$72.90	$11.49	$15.57	$8.02	$0.00	$107.98

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	$33.98	$11.49	$15.57	$8.02	$0.00	$69.06
2	60.00	$40.77	$11.49	$15.57	$8.02	$0.00	$75.85
3	70.00	$47.57	$11.49	$15.57	$8.02	$0.00	$82.65
4	80.00	$54.36	$11.49	$15.57	$8.02	$0.00	$89.44
5	90.00	$61.16	$11.49	$15.57	$8.02	$0.00	$96.24

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

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$34.65	$11.49	$15.57	$8.02	$0.00	$69.73
2	60.00	$41.58	$11.49	$15.57	$8.02	$0.00	$76.66
3	70.00	$48.51	$11.49	$15.57	$8.02	$0.00	$83.59
4	80.00	$55.44	$11.49	$15.57	$8.02	$0.00	$90.52
5	90.00	$62.37	$11.49	$15.57	$8.02	$0.00	$97.45

Apprentice to Journeyworker Ratio: 1:5

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
BULLDOZER/GRADER/SCRAPER 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

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
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"							
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)	9/1/2025	$50.35	$10.33	$11.47	$8.50	$0.00	$80.65
	3/1/2026	$51.60	$10.33	$11.47	$8.50	$0.00	$81.90
	9/1/2026	$52.85	$10.33	$11.47	$8.50	$0.00	$83.15
	3/1/2027	$54.10	$10.33	$11.47	$8.50	$0.00	$84.40

Apprentice: CARPENTER

Effective Date: 9/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$22.66	$10.33	$0.00	$1.73	$0.00	$34.72
2	45.00	$22.66	$10.33	$0.00	$1.73	$0.00	$34.72
3	55.00	$27.69	$10.33	$0.00	$3.40	$0.00	$41.42
4	55.00	$27.69	$10.33	$0.00	$3.40	$0.00	$41.42
5	70.00	$35.25	$10.33	$11.41	$5.10	$0.00	$62.09
6	70.00	$35.25	$10.33	$11.41	$5.10	$0.00	$62.09
7	80.00	$40.28	$10.33	$11.44	$6.80	$0.00	$68.85
8	80.00	$40.28	$10.33	$11.44	$6.80	$0.00	$68.85

Construction

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

Apprentice: CARPENTER

Effective Date: 3/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$23.22	$10.33	$0.00	$1.73	$0.00	$35.28
2	45.00	$23.22	$10.33	$0.00	$1.73	$0.00	$35.28
3	55.00	$28.38	$10.33	$0.00	$3.40	$0.00	$42.11
4	55.00	$28.38	$10.33	$0.00	$3.40	$0.00	$42.11
5	70.00	$36.12	$10.33	$11.41	$5.10	$0.00	$62.96
6	70.00	$36.12	$10.33	$11.41	$5.10	$0.00	$62.96
7	80.00	$41.28	$10.33	$11.44	$6.80	$0.00	$69.85
8	80.00	$41.28	$10.33	$11.44	$6.80	$0.00	$69.85

Apprentice to Journeyworker Ratio: 1:5

CARPENTER WOOD FRAME	10/1/2025	$27.75	$7.02	$3.80	$1.00	$0.00	$39.57
CARPENTERS 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 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

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$17.31	$7.02	$0.00	$0.00	$0.00	$24.33
2	60.00	$17.31	$7.02	$0.00	$0.00	$0.00	$24.33
3	65.00	$18.75	$7.02	$0.00	$1.00	$0.00	$26.77
4	70.00	$20.20	$7.02	$0.00	$1.00	$0.00	$28.22
5	75.00	$21.64	$7.02	$3.80	$1.00	$0.00	$33.46
6	80.00	$23.08	$7.02	$3.80	$1.00	$0.00	$34.90
7	85.00	$24.52	$7.02	$3.80	$1.00	$0.00	$36.34
8	90.00	$25.97	$7.02	$3.80	$1.00	$0.00	$37.79

Apprentice to Journeyworker Ratio: 1:5

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
CEMENT MASONRY/PLASTERING BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 (NEW BEDFORD)	7/1/2024	$49.19	$13.35	$16.43	$7.78	$1.80	$88.55

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

Apprentice to Journeyworker Ratio: 1:3

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	7/1/2025	$58.51	$10.30	$11.95	$12.50	$0.00	$93.26
	1/1/2026	$59.56	$10.35	$12.00	$12.60	$0.00	$94.51

Apprentice: DELEADER (BRIDGE)

Effective Date: 7/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.26	$10.30	$0.00	$0.00	$0.00	$39.56

Construction

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

Apprentice: DELEADER (BRIDGE)

Effective Date: 7/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
2	55.00	$32.18	$10.30	$0.00	$6.88	$0.00	$49.36
3	60.00	$35.11	$10.30	$0.00	$7.50	$0.00	$52.91
4	65.00	$38.03	$10.30	$0.00	$8.13	$0.00	$56.46
5	70.00	$40.96	$10.30	$11.95	$8.75	$0.00	$71.96
6	75.00	$43.88	$10.30	$11.95	$9.38	$0.00	$75.51
7	80.00	$46.81	$10.30	$11.95	$10.00	$0.00	$79.06
8	90.00	$52.66	$10.30	$11.95	$11.25	$0.00	$86.16

Apprentice: DELEADER (BRIDGE)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.78	$10.35	$0.00	$0.00	$0.00	$40.13
2	55.00	$32.76	$10.35	$0.00	$6.93	$0.00	$50.04
3	60.00	$35.74	$10.35	$0.00	$7.56	$0.00	$53.65
4	65.00	$38.71	$10.35	$0.00	$8.19	$0.00	$57.25
5	70.00	$41.69	$10.35	$12.00	$8.82	$0.00	$72.86
6	75.00	$44.67	$10.35	$12.00	$9.45	$0.00	$76.47
7	80.00	$47.65	$10.35	$12.00	$10.08	$0.00	$80.08
8	90.00	$53.60	$10.35	$12.00	$11.34	$0.00	$87.29

Apprentice to Journeyworker Ratio: 1:1

DEMO: ADZEMAN LABORERS LABORERS - ZONE 2	6/2/2025	$47.75	$9.90	$9.25	$9.65	$0.00	$76.55
	12/1/2025	$49.25	$9.90	$9.25	$9.65	$0.00	$78.05
	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 LABORERS LABORERS - ZONE 2	6/2/2025	$48.75	$9.90	$9.25	$9.65	$0.00	$77.55
	12/1/2025	$50.25	$9.90	$9.25	$9.65	$0.00	$79.05
	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

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORERS LABORERS - ZONE 2	12/1/2025	$50.00	$9.90	$9.25	$9.65	$0.00	$78.80
	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 LABORERS LABORERS - ZONE 2	6/2/2025	$48.75	$9.90	$9.25	$9.65	$0.00	$77.55
	12/1/2025	$50.25	$9.90	$9.25	$9.65	$0.00	$79.05
	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: JACKHAMMER OPERATOR LABORERS LABORERS - ZONE 2	6/2/2025	$48.50	$9.90	$9.25	$9.65	$0.00	$77.30
	12/1/2025	$50.00	$9.90	$9.25	$9.65	$0.00	$78.80
	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 LABORERS LABORERS - ZONE 2	6/2/2025	$47.75	$9.90	$9.25	$9.65	$0.00	$76.55
	12/1/2025	$49.25	$9.90	$9.25	$9.65	$0.00	$78.05
	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 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"							
DIVER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 2)	8/1/2024	$78.11	$10.08	$11.62	$12.67	$0.00	$112.48
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	$51.97	$10.08	$11.62	$12.67	$0.00	$86.34

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 2)							
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) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 2)	8/1/2024	$83.69	$10.08	$11.62	$12.67	$0.00	$118.06
For apprentice rates see "Apprentice- PILE DRIVER"							
DIVER/SLURRY (EFFLUENT) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 2)	8/1/2024	$117.16	$10.08	$11.62	$12.67	$0.00	$151.53
For apprentice rates see "Apprentice- PILE DRIVER"							
DRAWBRIDGE OPERATOR (Construction) DRAWBRIDGE - SEIU LOCAL 888 DRAWBRIDGE - SEIU LOCAL 888	7/1/2020	$26.77	$6.67	$3.93	$0.00	$0.16	$37.53
ELECTRICIAN ELECTRICIANS LOCAL 223 ELECTRICIANS LOCAL 223	9/1/2025	$52.25	$12.25	$14.86	$3.75	$0.00	$83.11
	9/1/2026	$54.72	$12.50	$15.56	$4.00	$0.00	$86.78

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

Apprentice: ELECTRICIAN

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$21.89	$12.50	$0.66	$0.00	$0.00	$35.05
2	45.00	$24.62	$12.50	$0.74	$0.00	$0.00	$37.86
3	50.00	$27.36	$12.50	$0.82	$0.00	$0.00	$40.68
4	55.00	$30.10	$12.50	$6.92	$2.75	$0.00	$52.27
5	60.00	$32.83	$12.50	$7.54	$2.75	$0.00	$55.62
6	65.00	$35.57	$12.50	$8.18	$2.75	$0.00	$59.00
7	70.00	$38.30	$12.50	$8.81	$2.75	$0.00	$62.36
8	75.00	$41.04	$12.50	$9.43	$2.75	$0.00	$65.72

Apprentice to Journeyworker Ratio: 2:3

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
ELEVATOR CONSTRUCTOR	1/1/2025	$74.17	$16.28	$10.96	$10.40	$0.00	$111.81
ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2026	$77.26	$16.38	$11.06	$10.70	$0.00	$115.40
ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2027	$80.55	$16.48	$11.16	$11.00	$0.00	$119.19

Apprentice: ELEVATOR CONSTRUCTOR

Effective Date: 1/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$37.09	$0.00	$0.00	$0.00	$0.00	$37.09
2	55.00	$40.79	$16.28	$10.96	$10.40	$0.00	$78.43
3	65.00	$48.21	$16.28	$10.96	$10.40	$0.00	$85.85
4	70.00	$51.92	$16.28	$10.96	$10.40	$0.00	$89.56
5	80.00	$59.34	$16.28	$10.96	$10.40	$0.00	$96.98

Apprentice: ELEVATOR CONSTRUCTOR

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$38.63	$0.00	$0.00	$0.00	$0.00	$38.63
2	55.00	$42.49	$16.38	$11.06	$10.70	$0.00	$80.63
3	65.00	$50.22	$16.38	$11.06	$10.70	$0.00	$88.36
4	70.00	$54.08	$16.38	$11.06	$10.70	$0.00	$92.22
5	80.00	$61.81	$16.38	$11.06	$10.70	$0.00	$99.95

Apprentice to Journeyworker Ratio: 1:1

ELEVATOR CONSTRUCTOR HELPER	1/1/2025	$51.92	$16.28	$10.96	$10.40	$0.00	$89.56
ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2026	$54.08	$16.38	$11.06	$10.07	$0.00	$91.59
ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2027	$56.39	$16.48	$11.16	$11.00	$0.00	$95.03

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

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	$52.47	$15.85	$13.15	$3.25	$0.00	$84.72
OPERATING ENGINEERS LOCAL 4	11/1/2025	$53.76	$15.85	$13.15	$3.25	$0.00	$86.01
OPERATING ENGINEERS LOCAL 4	5/1/2026	$55.20	$15.85	$13.15	$3.25	$0.00	$87.45
	11/1/2026	$56.49	$15.85	$13.15	$3.25	$0.00	$88.74
	5/1/2027	$57.92	$15.85	$13.15	$3.25	$0.00	$90.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY	5/1/2025	$54.07	$15.85	$13.15	$3.25	$0.00	$86.32
OPERATING ENGINEERS LOCAL 4	11/1/2025	$55.37	$15.85	$13.15	$3.25	$0.00	$87.62
OPERATING ENGINEERS LOCAL 4	5/1/2026	$56.82	$15.85	$13.15	$3.25	$0.00	$89.07
	11/1/2026	$58.12	$15.85	$13.15	$3.25	$0.00	$90.37

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	5/1/2027	$59.57	$15.85	$13.15	$3.25	$0.00	$91.82
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY	5/1/2025	$25.47	$15.85	$13.15	$3.25	$0.00	$57.72
OPERATING ENGINEERS LOCAL 4	11/1/2025	$26.23	$15.85	$13.15	$3.25	$0.00	$58.48
OPERATING ENGINEERS LOCAL 4	5/1/2026	$27.08	$15.85	$13.15	$3.25	$0.00	$59.33
	11/1/2026	$27.84	$15.85	$13.15	$3.25	$0.00	$60.09
	5/1/2027	$28.69	$15.85	$13.15	$3.25	$0.00	$60.94
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIRE ALARM INSTALLER	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- ELECTRICIAN"							
FIRE ALARM REPAIR / MAINTENANCE	9/1/2025	$52.25	$12.25	$14.86	$3.75	$0.00	$83.11
/ COMMISSIONING	9/1/2026	$54.72	$12.50	$15.56	$4.00	$0.00	$86.78
ELECTRICIANS LOCAL 223							
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	3/1/2024	$48.93	$10.33	$11.47	$8.80	$0.00	$79.53
FLOORCOVERERS LOCAL 2168							
FLOORCOVERERS LOCAL 2168 ZONE II							

Apprentice: FLOORCOVERER

Effective Date: 3/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.47	$10.33	$0.00	$1.76	$0.00	$36.56
2	55.00	$26.91	$10.33	$0.00	$1.76	$0.00	$39.00
3	60.00	$29.36	$10.33	$0.00	$3.52	$0.00	$43.21
4	65.00	$31.80	$10.33	$0.00	$3.52	$0.00	$45.65
5	70.00	$34.25	$10.33	$11.47	$5.28	$0.00	$61.33
6	75.00	$36.70	$10.33	$11.47	$5.28	$0.00	$63.78
7	80.00	$39.14	$10.33	$11.47	$7.04	$0.00	$67.98
8	85.00	$41.59	$10.33	$11.47	$7.04	$0.00	$70.43

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice Notes							
Steps are 750 hrs.							
Apprentice to Journeyworker Ratio: 1:1							
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)	6/1/2025	$43.13	$10.80	$8.25	$5.50	$0.00	$67.68
GLAZIERS LOCAL 1333	6/1/2026	$44.73	$11.20	$8.40	$6.05	$0.00	$70.38
GLAZIERS LOCAL 1333	6/1/2027	$46.73	$11.60	$8.55	$6.60	$0.00	$73.48
	6/1/2028	$48.73	$12.00	$8.70	$7.20	$0.00	$76.63

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

Effective Date: 6/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$21.57	$10.80	$8.25	$5.50	$0.00	$46.12
2	56.25	$24.26	$10.80	$8.25	$5.50	$0.00	$48.81
3	62.50	$26.96	$10.80	$8.25	$5.50	$0.00	$51.51
4	68.75	$29.65	$10.80	$8.25	$5.50	$0.00	$54.20
5	75.00	$32.35	$10.80	$8.25	$5.50	$0.00	$56.90
6	81.25	$35.04	$10.80	$8.25	$5.50	$0.00	$59.59
7	87.50	$37.74	$10.80	$8.25	$5.50	$0.00	$62.29
8	93.75	$40.43	$10.80	$8.25	$5.50	$0.00	$64.98

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

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$22.37	$11.20	$8.40	$6.05	$0.00	$48.02
2	56.25	$25.16	$11.20	$8.40	$6.05	$0.00	$50.81
3	62.50	$27.96	$11.20	$8.40	$6.05	$0.00	$53.61
4	68.75	$30.75	$11.20	$8.40	$6.05	$0.00	$56.40
5	75.00	$33.55	$11.20	$8.40	$6.05	$0.00	$59.20
6	81.25	$36.34	$11.20	$8.40	$6.05	$0.00	$61.99
7	87.50	$39.14	$11.20	$8.40	$6.05	$0.00	$64.79

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)							
Effective Date: 6/1/2026							
Step / Percent / Apprentice Base Wage							
8 / 93.75		$41.93	$11.20	$8.40	$6.05	$0.00	$67.58
Apprentice to Journeyworker Ratio: 3:1							
HOISTING ENGINEER/CRANES/GRADALLS	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
Apprentice: HOISTING ENGINEER/CRANES/GRADALLS							
Effective Date: 6/1/2025							
Step / Percent / Apprentice Base Wage							
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							
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
Apprentice to Journeyworker Ratio: 1:6							
HVAC (DUCTWORK)	10/1/2025	$44.05	$14.91	$13.35	$6.15	$2.24	$80.70
SHEETMETAL WORKERS LOCAL 17	4/1/2026	$45.55	$14.91	$13.35	$6.15	$2.24	$82.20
SHEETMETAL WORKERS LOCAL 17 - B							
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (ELECTRICAL CONTROLS)	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

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
ELECTRICIANS LOCAL 223							
For apprentice rates see "Apprentice- ELECTRICIAN"							
HVAC (TESTING AND BALANCING - AIR)	10/1/2025	$44.05	$14.91	$13.35	$6.15	$2.24	$80.70
SHEETMETAL WORKERS LOCAL 17	4/1/2026	$45.55	$14.91	$13.35	$6.15	$2.24	$82.20
SHEETMETAL WORKERS LOCAL 17 - B							
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (TESTING AND BALANCING -WATER)	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44
PLUMBERS & PIPEFITTERS LOCAL 51							
PLUMBERS & PIPEFITTERS LOCAL 51							
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
HVAC MECHANIC	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44
PLUMBERS & PIPEFITTERS LOCAL 51							
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)	9/1/2025	$60.34	$14.75	$9.52	$10.09	$0.00	$94.70
HEAT & FROST INSULATORS LOCAL 6	9/1/2026	$63.76	$14.75	$9.52	$10.09	$0.00	$98.12
HEAT & FROST INSULATORS LOCAL 6 (BOSTON)							

Apprentice: INSULATOR (PIPES & TANKS)

Effective Date: 9/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$30.17	$14.75	$9.27	$5.05	$0.00	$59.24
2	60.00	$36.20	$14.75	$9.32	$6.05	$0.00	$66.32
3	70.00	$42.24	$14.75	$9.37	$7.06	$0.00	$73.42
4	80.00	$48.27	$14.75	$9.42	$8.07	$0.00	$80.51

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: INSULATOR (PIPES & TANKS)							
Effective Date: 9/1/2026							
Step / Percent / Apprentice Base Wage							
1 / 50.00		$31.88	$14.75	$9.27	$5.05	$0.00	$60.95
2 / 60.00		$38.26	$14.75	$9.32	$6.05	$0.00	$68.38
3 / 70.00		$44.63	$14.75	$9.37	$7.06	$0.00	$75.81
4 / 80.00		$51.01	$14.75	$9.42	$8.07	$0.00	$83.25
Apprentice to Journeyworker Ratio: 1:4							
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
Apprentice to Journeyworker Ratio: 1:4							
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
	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

Construction

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

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

Apprentice to Journeyworker Ratio: 1:5

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

Apprentice to Journeyworker Ratio: 1:5

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	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: 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

Construction

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

Apprentice: MARBLE & TILE FINISHERS

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$26.58	$11.49	$15.57	$6.05	$0.00	$59.69
2	60.00	$31.90	$11.49	$15.57	$6.05	$0.00	$65.01
3	70.00	$37.21	$11.49	$15.57	$6.05	$0.00	$70.32
4	80.00	$42.53	$11.49	$15.57	$6.05	$0.00	$75.64
5	90.00	$47.84	$11.49	$15.57	$6.05	$0.00	$80.95

Apprentice to Journeyworker Ratio: 1:5

MARBLE MASONS,TILELAYERS & TERRAZZO MECH BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 - MARBLE & TILE	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 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

Apprentice: MARBLE MASONS,TILELAYERS & TERRAZZO MECH

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$34.66	$11.49	$15.57	$7.99	$0.00	$69.71
2	60.00	$41.59	$11.49	$15.57	$7.99	$0.00	$76.64
3	70.00	$48.52	$11.49	$15.57	$7.99	$0.00	$83.57
4	80.00	$55.46	$11.49	$15.57	$7.99	$0.00	$90.51
5	90.00	$62.39	$11.49	$15.57	$7.99	$0.00	$97.44

Apprentice to Journeyworker Ratio: 1:5

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	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"

MILLWRIGHT (Zone 2)	1/6/2025	$45.03	$10.08	$11.47	$10.00	$0.00	$76.58
MILLWRIGHTS LOCAL 1121 MILLWRIGHTS LOCAL 1121 - Zone 2	1/5/2026	$47.36	$10.08	$11.47	$10.00	$0.00	$78.91

Apprentice: MILLWRIGHT (Zone 2)

Effective Date: 1/6/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	$24.77	$10.08	$0.00	$5.50	$0.00	$40.35
2	65.00	$29.27	$10.08	$0.00	$6.50	$0.00	$45.85
3	75.00	$33.77	$10.08	$11.47	$7.50	$0.00	$62.82
4	85.00	$38.28	$10.08	$11.47	$8.50	$0.00	$68.33

Apprentice: MILLWRIGHT (Zone 2)

Effective Date: 1/5/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	$26.05	$10.08	$0.00	$5.50	$0.00	$41.63
2	65.00	$30.78	$10.08	$0.00	$6.50	$0.00	$47.36
3	75.00	$35.52	$10.08	$11.47	$7.50	$0.00	$64.57
4	85.00	$40.26	$10.08	$11.47	$8.50	$0.00	$70.31

Apprentice Notes

Step 1&2 Appr. indentured after 1/6/2020 receive no pension,

Apprentice to Journeyworker Ratio: 1:4

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"

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
OILER (TRUCK CRANES, GRADALLS)	6/1/2025	$31.80	$15.30	$13.15	$3.25	$0.00	$63.50
OPERATING ENGINEERS LOCAL 4	12/1/2025	$32.60	$15.30	$13.15	$3.25	$0.00	$64.30
OPERATING ENGINEERS LOCAL 4	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
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)	7/1/2025	$58.51	$10.30	$11.95	$12.50	$0.00	$93.26
PAINTERS LOCAL 35	1/1/2026	$59.56	$10.35	$12.00	$12.50	$0.00	$94.41
PAINTERS LOCAL 35 - ZONE 2							

Apprentice: PAINTER (BRIDGES/TANKS)

Effective Date: 7/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.26	$10.30	$0.00	$0.00	$0.00	$39.56
2	55.00	$32.18	$10.30	$0.00	$6.88	$0.00	$49.36
3	60.00	$35.11	$10.30	$0.00	$7.50	$0.00	$52.91
4	65.00	$38.03	$10.30	$0.00	$8.13	$0.00	$56.46
5	70.00	$40.96	$10.30	$11.95	$8.75	$0.00	$71.96
6	75.00	$43.88	$10.30	$11.95	$9.38	$0.00	$75.51
7	80.00	$46.81	$10.30	$11.95	$10.00	$0.00	$79.06
8	90.00	$52.66	$10.30	$11.95	$11.25	$0.00	$86.16

Apprentice: PAINTER (BRIDGES/TANKS)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.78	$10.35	$0.00	$0.00	$0.00	$40.13
2	55.00	$32.76	$10.35	$0.00	$6.93	$0.00	$50.04
3	60.00	$35.74	$10.35	$0.00	$7.56	$0.00	$53.65
4	65.00	$38.71	$10.35	$0.00	$8.19	$0.00	$57.25
5	70.00	$41.69	$10.35	$12.00	$8.82	$0.00	$72.86
6	75.00	$44.67	$10.35	$12.00	$9.45	$0.00	$76.47
7	80.00	$47.65	$10.35	$12.00	$10.08	$0.00	$80.08
8	90.00	$53.60	$10.35	$12.00	$11.34	$0.00	$87.29

Apprentice to Journeyworker Ratio: 1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	7/1/2025	$49.41	$10.30	$11.95	$12.50	$0.00	$84.16
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.	1/1/2026	$50.46	$10.35	$12.00	$12.60	$0.00	$85.41
PAINTERS LOCAL 35							
PAINTERS LOCAL 35 - ZONE 2							

Construction

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

Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) *

Effective Date: 7/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.71	$10.30	$0.00	$0.00	$0.00	$35.01
2	55.00	$27.18	$10.30	$0.00	$6.88	$0.00	$44.36
3	60.00	$29.65	$10.30	$0.00	$7.50	$0.00	$47.45
4	65.00	$32.12	$10.30	$0.00	$8.13	$0.00	$50.55
5	70.00	$34.59	$10.30	$11.95	$8.75	$0.00	$65.59
6	75.00	$37.06	$10.30	$11.95	$9.38	$0.00	$68.69
7	80.00	$39.53	$10.30	$11.95	$10.00	$0.00	$71.78
8	90.00	$44.47	$10.30	$11.95	$11.25	$0.00	$77.97

Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) *

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$25.23	$10.35	$0.00	$0.00	$0.00	$35.58
2	55.00	$27.75	$10.35	$0.00	$6.93	$0.00	$45.03
3	60.00	$30.28	$10.35	$0.00	$7.56	$0.00	$48.19
4	65.00	$32.80	$10.35	$0.00	$8.19	$0.00	$51.34
5	70.00	$35.32	$10.35	$12.00	$8.82	$0.00	$66.49
6	75.00	$37.85	$10.35	$12.00	$9.45	$0.00	$69.65
7	80.00	$40.37	$10.35	$12.00	$10.08	$0.00	$72.80
8	90.00	$45.41	$10.35	$12.00	$11.34	$0.00	$79.10

Apprentice to Journeyworker Ratio: 1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	7/1/2025	$47.47	$10.30	$11.95	$12.50	$0.00	$82.22
PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 2	1/1/2026	$48.52	$10.35	$12.00	$12.60	$0.00	$83.47

Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)

Effective Date: 7/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$23.74	$10.30	$0.00	$0.00	$0.00	$34.04
2	55.00	$26.11	$10.30	$0.00	$6.88	$0.00	$43.29
3	60.00	$28.48	$10.30	$0.00	$7.50	$0.00	$46.28
4	65.00	$30.86	$10.30	$0.00	$8.13	$0.00	$49.29
5	70.00	$33.23	$10.30	$11.95	$8.75	$0.00	$64.23
6	75.00	$35.60	$10.30	$11.95	$9.38	$0.00	$67.23
7	80.00	$37.98	$10.30	$11.95	$10.00	$0.00	$70.23
8	90.00	$42.72	$10.30	$11.95	$11.25	$0.00	$76.22

Construction

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

Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.26	$10.35	$0.00	$0.00	$0.00	$34.61
2	55.00	$26.69	$10.35	$0.00	$6.93	$0.00	$43.97
3	60.00	$29.11	$10.35	$0.00	$7.56	$0.00	$47.02
4	65.00	$31.54	$10.35	$0.00	$8.19	$0.00	$50.08
5	70.00	$33.96	$10.35	$12.00	$8.82	$0.00	$65.13
6	75.00	$36.39	$10.35	$12.00	$9.45	$0.00	$68.19
7	80.00	$38.82	$10.35	$12.00	$10.08	$0.00	$71.25
8	90.00	$43.67	$10.35	$12.00	$11.34	$0.00	$77.36

Apprentice to Journeyworker Ratio: 1:1

PAINTER / TAPER (BRUSH, NEW) *	7/1/2025	$48.01	$10.30	$11.95	$12.50	$0.00	$82.76
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.	1/1/2026	$49.06	$10.35	$12.00	$12.60	$0.00	$84.01
PAINTERS LOCAL 35							
PAINTERS LOCAL 35 - ZONE 2							

Apprentice: PAINTER / TAPER (BRUSH, NEW) *

Effective Date: 7/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.01	$10.30	$0.00	$0.00	$0.00	$34.31
2	55.00	$26.41	$10.30	$0.00	$6.88	$0.00	$43.59
3	60.00	$28.81	$10.30	$0.00	$7.50	$0.00	$46.61
4	65.00	$31.21	$10.30	$0.00	$8.13	$0.00	$49.64
5	70.00	$33.61	$10.30	$11.95	$8.75	$0.00	$64.61
6	75.00	$36.01	$10.30	$11.95	$9.38	$0.00	$67.64
7	80.00	$38.41	$10.30	$11.95	$10.00	$0.00	$70.66
8	90.00	$43.21	$10.30	$11.95	$11.25	$0.00	$76.71

Apprentice: PAINTER / TAPER (BRUSH, NEW) *

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.53	$10.35	$0.00	$0.00	$0.00	$34.88
2	55.00	$26.98	$10.35	$0.00	$6.93	$0.00	$44.26
3	60.00	$29.44	$10.35	$0.00	$7.56	$0.00	$47.35
4	65.00	$31.89	$10.35	$0.00	$8.19	$0.00	$50.43
5	70.00	$34.34	$10.35	$12.00	$8.82	$0.00	$65.51
6	75.00	$36.80	$10.35	$12.00	$9.45	$0.00	$68.60
7	80.00	$39.25	$10.35	$12.00	$10.08	$0.00	$71.68
8	90.00	$44.15	$10.35	$12.00	$11.34	$0.00	$77.84

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice to Journeyworker Ratio: 1:1							
PAINTER / TAPER (BRUSH, REPAINT) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 2	7/1/2025	$46.07	$10.30	$11.95	$12.50	$0.00	$80.82
	1/1/2026	$47.12	$10.35	$12.00	$12.60	$0.00	$82.07

Apprentice: PAINTER / TAPER (BRUSH, REPAINT)

Effective Date: 7/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$23.04	$10.30	$0.00	$0.00	$0.00	$33.34
2	55.00	$25.34	$10.30	$0.00	$6.88	$0.00	$42.52
3	60.00	$27.64	$10.30	$0.00	$7.50	$0.00	$45.44
4	65.00	$29.95	$10.30	$0.00	$8.13	$0.00	$48.38
5	70.00	$32.25	$10.30	$11.95	$8.75	$0.00	$63.25
6	75.00	$34.55	$10.30	$11.95	$9.38	$0.00	$66.18
7	80.00	$36.86	$10.30	$11.95	$10.00	$0.00	$69.11
8	90.00	$41.46	$10.30	$11.95	$11.25	$0.00	$74.96

Apprentice: PAINTER / TAPER (BRUSH, REPAINT)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$23.56	$10.35	$0.00	$0.00	$0.00	$33.91
2	55.00	$25.92	$10.35	$0.00	$6.93	$0.00	$43.20
3	60.00	$28.27	$10.35	$0.00	$7.56	$0.00	$46.18
4	65.00	$30.63	$10.35	$0.00	$8.19	$0.00	$49.17
5	70.00	$32.98	$10.35	$12.00	$8.82	$0.00	$64.15
6	75.00	$35.34	$10.35	$12.00	$9.45	$0.00	$67.14
7	80.00	$37.70	$10.35	$12.00	$10.08	$0.00	$70.13
8	90.00	$42.41	$10.35	$12.00	$11.34	$0.00	$76.10

Apprentice to Journeyworker Ratio: 1:1							
PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2025	$40.34	$9.90	$9.25	$9.21	$0.00	$68.70
	12/1/2025	$41.72	$9.90	$9.25	$9.21	$0.00	$70.08
	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 TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2025	$40.78	$15.57	$20.17	$0.00	$0.00	$76.52
	12/1/2025	$40.78	$15.57	$21.78	$0.00	$0.00	$78.13
	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	8/1/2024	$51.97	$10.08	$11.62	$12.67	$0.00	$86.34

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
DECK) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 2) For apprentice rates see "Apprentice- PILE DRIVER"							
PILE DRIVER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 2)	8/1/2024	$51.97	$10.08	$11.62	$12.67	$0.00	$86.34

Apprentice: PILE DRIVER

Effective Date: 8/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$23.39	$10.08	$0.00	$2.53	$0.00	$36.00
2	55.00	$28.58	$10.08	$0.00	$5.07	$0.00	$43.73
3	70.00	$36.38	$10.08	$11.62	$7.60	$0.00	$65.68
4	80.00	$41.58	$10.08	$11.62	$10.14	$0.00	$73.42

Apprentice to Journeyworker Ratio: 1:5

PIPELAYER 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"							
PIPELAYER (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)"							
PLUMBER & PIPEFITTER PLUMBERS & PIPEFITTERS LOCAL 51 PLUMBERS & PIPEFITTERS LOCAL 51	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44

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

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice to Journeyworker Ratio: 1:3							
PNEUMATIC CONTROLS (TEMP.) PLUMBERS & PIPEFITTERS LOCAL 51 PLUMBERS & PIPEFITTERS LOCAL 51	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
PNEUMATIC DRILL/TOOL OPERATOR LABORERS LABORERS - ZONE 2	6/1/2025	$41.09	$9.90	$9.25	$8.29	$0.00	$68.53
	12/1/2025	$42.47	$9.90	$9.25	$8.29	$0.00	$69.91
	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) 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)"							
POWDERMAN & BLASTER LABORERS LABORERS - ZONE 2	6/1/2025	$41.34	$9.90	$9.25	$9.11	$0.00	$69.60
	12/1/2025	$42.72	$9.90	$9.25	$9.11	$0.00	$70.98
	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) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2025	$41.34	$9.65	$9.25	$9.21	$0.00	$69.45
	12/1/2025	$42.72	$9.65	$9.25	$9.21	$0.00	$70.83
	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 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"							
PUMP OPERATOR (CONCRETE) 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"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
PUMP OPERATOR (DEWATERING, OTHER) 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"							
READY-MIX CONCRETE DRIVER TEAMSTERS 653 TEAMSTERS 653 - Southeastern Concrete (Weymouth)	8/1/2023	$25.00	$13.91	$6.90	$0.00	$0.00	$45.81
RECLAIMERS 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"							
RIDE-ON MOTORIZED BUGGY 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"							
ROLLER/SPREADER/MULCHING MACHINE 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"							
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) ROOFERS LOCAL 33 ROOFERS LOCAL 33	8/1/2025	$53.53	$13.28	$12.67	$9.03	$0.00	$88.51
	2/1/2026	$54.78	$13.28	$12.67	$9.03	$0.00	$89.76

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

Construction

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

Apprentice: ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg)

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$27.39	$13.28	$6.52	$9.03	$0.00	$56.22
2	60.00	$32.87	$13.28	$12.67	$9.03	$0.00	$67.85
3	65.00	$35.61	$13.28	$12.67	$9.03	$0.00	$70.59
4	75.00	$41.09	$13.28	$12.67	$9.03	$0.00	$76.07
5	85.00	$46.56	$13.28	$12.67	$9.03	$0.00	$81.54

Apprentice Notes

** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1

Apprentice to Journeyworker Ratio: 1:5

ROOFER SLATE / TILE / PRECAST CONCRETE	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
ROOFERS LOCAL 33							

For apprentice rates see "Apprentice- ROOFER"

SHEETMETAL WORKER	10/1/2025	$44.05	$14.91	$13.35	$6.15	$2.24	$80.70
SHEETMETAL WORKERS LOCAL 17	4/1/2026	$45.55	$14.91	$13.35	$6.15	$2.24	$82.20
SHEETMETAL WORKERS LOCAL 17 - B							

Apprentice: SHEETMETAL WORKER

Effective Date: 10/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$17.62	$14.91	$4.27	$0.00	$1.09	$37.89
2	45.00	$19.82	$14.91	$4.80	$0.00	$1.17	$40.70
3	50.00	$22.03	$14.91	$12.28	$0.00	$1.45	$50.67
4	55.00	$24.23	$14.91	$12.28	$0.00	$1.52	$52.94
5	60.00	$26.43	$14.91	$12.28	$3.69	$1.64	$58.95
6	65.00	$28.63	$14.91	$12.28	$4.00	$1.71	$61.53
7	70.00	$30.84	$14.91	$12.28	$4.31	$1.78	$64.12
8	75.00	$33.04	$14.91	$12.28	$4.61	$1.86	$66.70
9	80.00	$35.24	$14.91	$12.28	$4.92	$1.93	$69.28
10	85.00	$37.44	$14.91	$12.28	$5.23	$2.00	$71.86

Apprentice: SHEETMETAL WORKER

Effective Date: 4/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$18.22	$14.91	$4.27	$0.00	$1.09	$38.49
2	45.00	$20.50	$14.91	$4.80	$0.00	$1.17	$41.38
3	50.00	$22.78	$14.91	$12.28	$0.00	$1.45	$51.42

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: SHEETMETAL WORKER							
Effective Date: 4/1/2026							
Step / Percent		**Apprentice Base Wage**					
4 / 55.00		$25.05	$14.91	$12.28	$0.00	$1.52	$53.76
5 / 60.00		$27.33	$14.91	$12.28	$3.69	$1.64	$59.85
6 / 65.00		$29.61	$14.91	$12.28	$4.00	$1.71	$62.51
7 / 70.00		$31.89	$14.91	$12.28	$4.31	$1.78	$65.17
8 / 75.00		$34.16	$14.91	$12.28	$4.61	$1.86	$67.82
9 / 80.00		$36.44	$14.91	$12.28	$4.92	$1.93	$70.48
10 / 85.00		$38.72	$14.91	$12.28	$5.23	$2.00	$73.14
Apprentice to Journeyworker Ratio: 1:4							
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 B) Zone 2	3/1/2025	$63.72	$12.25	$7.40	$17.00	$0.00	$100.37
Apprentice: SPRINKLER FITTER							
Effective Date: 3/1/2025							
Step / Percent		**Apprentice Base Wage**					
1 / 35.00		$22.30	$11.51	$13.35	$0.00	$0.00	$47.16
2 / 40.00		$25.49	$11.51	$14.20	$0.00	$0.00	$51.20
3 / 45.00		$28.67	$11.51	$15.05	$0.00	$0.00	$55.23
4 / 50.00		$31.86	$11.51	$15.90	$0.00	$0.00	$59.27
5 / 55.00		$35.05	$11.51	$16.75	$0.00	$0.00	$63.31
6 / 60.00		$38.23	$11.51	$17.60	$0.00	$0.00	$67.34
7 / 65.00		$41.42	$11.51	$18.45	$0.00	$0.00	$71.38
8 / 70.00		$44.60	$11.51	$19.30	$0.00	$0.00	$75.41
9 / 75.00		$47.79	$11.51	$20.15	$0.00	$0.00	$79.45
10 / 80.00		$50.98	$11.51	$21.00	$0.00	$0.00	$83.49

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice Notes							
Apprentice entered prior 9/30/10:							
Apprentice to Journeyworker Ratio: 1:3							
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	9/1/2025	$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
ELECTRICIANS LOCAL 223	9/1/2027	$46.51	$12.50	$13.18	$3.75	$0.00	$75.94
TERRAZZO FINISHERS	8/1/2025	$66.89	$11.49	$15.57	$8.02	$0.00	$101.97
BRICKLAYERS LOCAL 3	2/1/2026	$68.24	$11.49	$15.57	$8.02	$0.00	$103.32
BRICKLAYERS LOCAL 3 - MARBLE & TILE	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

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

Apprentice: TERRAZZO FINISHERS

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$34.12	$11.49	$15.57	$8.02	$0.00	$69.20
2	60.00	$40.94	$11.49	$15.57	$8.02	$0.00	$76.02
3	70.00	$47.77	$11.49	$15.57	$8.02	$0.00	$82.85
4	80.00	$54.59	$11.49	$15.57	$8.02	$0.00	$89.67
5	90.00	$61.42	$11.49	$15.57	$8.02	$0.00	$96.50

Apprentice to Journeyworker Ratio: 1:5

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
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 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	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
	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 LABORERS LABORERS (COMPRESSED AIR)	6/1/2025	$59.93	$9.90	$9.25	$10.25	$0.00	$89.33
	12/1/2025	$61.43	$9.90	$9.25	$10.25	$0.00	$90.83
	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) LABORERS LABORERS (COMPRESSED AIR)	6/1/2025	$61.93	$9.90	$9.25	$10.25	$0.00	$91.33
	12/1/2025	$63.43	$9.90	$9.25	$10.25	$0.00	$92.83
	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 LABORERS LABORERS (FREE AIR TUNNEL)	6/1/2025	$52.00	$9.90	$9.25	$10.25	$0.00	$81.40
	12/1/2025	$53.50	$9.90	$9.25	$10.25	$0.00	$82.90
	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

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORERS LABORERS (FREE AIR TUNNEL)	12/1/2025	$55.50	$9.90	$9.25	$10.25	$0.00	$84.90
	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 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
WAGON DRILL OPERATOR LABORERS LABORERS - ZONE 2	6/1/2025	$42.00	$9.65	$9.00	$8.70	$0.00	$69.35
	12/1/2025	$43.38	$9.65	$9.00	$8.70	$0.00	$70.73
	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) 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)"							
WASTE WATER PUMP OPERATOR 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"							
WATER METER INSTALLER PLUMBERS & PIPEFITTERS LOCAL 51 PLUMBERS & PIPEFITTERS LOCAL 51	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"							

Outside Electrical

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
CABLE TECHNICIAN (Power Zone) OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 For apprentice rates see "Apprentice- LINEMAN"	8/30/2020	$29.67	$9.25	$0.89	$1.00	$0.00	$40.81
CABLEMAN (Underground Ducts & Cables) OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 For apprentice rates see "Apprentice- LINEMAN"	8/30/2020	$42.03	$9.25	$1.26	$9.01	$0.00	$61.55
DRIVER / GROUNDMAN CDL OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 For apprentice rates see "Apprentice- LINEMAN"	8/30/2020	$34.62	$9.25	$1.04	$9.03	$0.00	$53.94
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 For apprentice rates see "Apprentice- LINEMAN"	8/30/2020	$27.20	$9.25	$0.82	$1.00	$0.00	$38.27
EQUIPMENT OPERATOR (Class A CDL) OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 For apprentice rates see "Apprentice- LINEMAN"	8/30/2020	$42.03	$9.25	$1.26	$13.09	$0.00	$65.63
EQUIPMENT OPERATOR (Class B CDL) OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 For apprentice rates see "Apprentice- LINEMAN"	8/30/2020	$37.09	$9.25	$1.11	$9.76	$0.00	$57.21
GROUNDMAN OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 For apprentice rates see "Apprentice- LINEMAN"	8/30/2020	$27.20	$9.25	$0.82	$1.00	$0.00	$38.27
GROUNDMAN -Inexperienced (<2000 Hrs.) OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 For apprentice rates see "Apprentice- LINEMAN"	8/30/2020	$22.25	$9.25	$0.82	$1.00	$0.00	$33.32
JOURNEYMAN LINEMAN OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	8/30/2020	$49.45	$9.25	$1.48	$16.00	$0.00	$76.18

Apprentice: JOURNEYMAN LINEMAN

Effective Date: 8/30/2020

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$29.67	$9.25	$0.89	$2.50	$0.00	$42.31
2	65.00	$32.14	$9.25	$0.96	$2.50	$0.00	$44.85
3	70.00	$34.62	$9.25	$1.04	$2.50	$0.00	$47.41
4	75.00	$37.09	$9.25	$1.11	$4.00	$0.00	$51.45

Outside Electrical

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: JOURNEYMAN LINEMAN							
Effective Date: 8/30/2020							
Step / Percent		**Apprentice Base Wage**	**Health**	**Pension**	**Annuity**	**Supplemental Unemployment**	**Total Rate**
5 / 80.00		$39.56	$9.25	$1.19	$4.00	$0.00	$54.00
6 / 85.00		$42.03	$9.25	$1.26	$4.00	$0.00	$56.54
7 / 90.00		$44.51	$9.25	$1.34	$6.00	$0.00	$61.10
Apprentice to Journeyworker Ratio: 1:2							
TELEDATA CABLE SPLICER OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	2/4/2019	$30.73	$4.70	$0.92	$2.25	$0.00	$38.60
TELEDATA LINEMAN/EQUIPMENT OPERATOR OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	2/4/2019	$28.93	$4.70	$0.89	$2.25	$0.00	$36.77
TELEDATA WIREMAN/INSTALLER/TECHNICIAN OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	2/4/2019	$28.93	$4.70	$0.89	$2.25	$0.00	$36.77

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 00861

TOWN OF HARWICH WAGES

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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:**	HARWICH
Contract Number:	132267		
Description of Work:	DENNIS-HARWICH – FAP No. STP/CMQ/TAP/CRP-0035(066)X Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge (608742)		
Job Location:	Main Street (Route 28), from Upper County Road to the Herring River Bridge		

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 2) For apprentice rates see "Apprentice- PILE DRIVER"	8/1/2024	$117.16	$10.08	$11.62	$12.67	$0.00	$151.53
AIR TRACK OPERATOR LABORERS LABORERS - ZONE 2 For apprentice rates see "Apprentice- LABORER"	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
AIR TRACK OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY) For apprentice rates see "Apprentice- LABORER (Heavy and 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
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. HEAT & FROST INSULATORS LOCAL 6 HEAT & FROST INSULATORS LOCAL 6 (BOSTON)	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

Apprentice to Journeyworker Ratio: 1:4

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 (NEW BEDFORD)	8/1/2025	$67.95	$11.49	$15.57	$8.02	$0.00	$103.03
	2/1/2026	$69.30	$11.49	$15.57	$8.02	$0.00	$104.38
	8/1/2026	$71.50	$11.49	$15.57	$8.02	$0.00	$106.58
	2/1/2027	$72.90	$11.49	$15.57	$8.02	$0.00	$107.98

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	$33.98	$11.49	$15.57	$8.02	$0.00	$69.06
2	60.00	$40.77	$11.49	$15.57	$8.02	$0.00	$75.85
3	70.00	$47.57	$11.49	$15.57	$8.02	$0.00	$82.65
4	80.00	$54.36	$11.49	$15.57	$8.02	$0.00	$89.44
5	90.00	$61.16	$11.49	$15.57	$8.02	$0.00	$96.24

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

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$34.65	$11.49	$15.57	$8.02	$0.00	$69.73
2	60.00	$41.58	$11.49	$15.57	$8.02	$0.00	$76.66
3	70.00	$48.51	$11.49	$15.57	$8.02	$0.00	$83.59
4	80.00	$55.44	$11.49	$15.57	$8.02	$0.00	$90.52
5	90.00	$62.37	$11.49	$15.57	$8.02	$0.00	$97.45

Apprentice to Journeyworker Ratio: 1:5

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
BULLDOZER/GRADER/SCRAPER 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

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
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"							
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)	9/1/2025	$50.35	$10.33	$11.47	$8.50	$0.00	$80.65
	3/1/2026	$51.60	$10.33	$11.47	$8.50	$0.00	$81.90
	9/1/2026	$52.85	$10.33	$11.47	$8.50	$0.00	$83.15
	3/1/2027	$54.10	$10.33	$11.47	$8.50	$0.00	$84.40

Apprentice: CARPENTER

Effective Date: 9/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$22.66	$10.33	$0.00	$1.73	$0.00	$34.72
2	45.00	$22.66	$10.33	$0.00	$1.73	$0.00	$34.72
3	55.00	$27.69	$10.33	$0.00	$3.40	$0.00	$41.42
4	55.00	$27.69	$10.33	$0.00	$3.40	$0.00	$41.42
5	70.00	$35.25	$10.33	$11.41	$5.10	$0.00	$62.09
6	70.00	$35.25	$10.33	$11.41	$5.10	$0.00	$62.09
7	80.00	$40.28	$10.33	$11.44	$6.80	$0.00	$68.85
8	80.00	$40.28	$10.33	$11.44	$6.80	$0.00	$68.85

Construction

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

Apprentice: CARPENTER

Effective Date: 3/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$23.22	$10.33	$0.00	$1.73	$0.00	$35.28
2	45.00	$23.22	$10.33	$0.00	$1.73	$0.00	$35.28
3	55.00	$28.38	$10.33	$0.00	$3.40	$0.00	$42.11
4	55.00	$28.38	$10.33	$0.00	$3.40	$0.00	$42.11
5	70.00	$36.12	$10.33	$11.41	$5.10	$0.00	$62.96
6	70.00	$36.12	$10.33	$11.41	$5.10	$0.00	$62.96
7	80.00	$41.28	$10.33	$11.44	$6.80	$0.00	$69.85
8	80.00	$41.28	$10.33	$11.44	$6.80	$0.00	$69.85

Apprentice to Journeyworker Ratio: 1:5

CARPENTER WOOD FRAME	10/1/2025	$27.75	$7.02	$3.80	$1.00	$0.00	$39.57
CARPENTERS 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 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

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$17.31	$7.02	$0.00	$0.00	$0.00	$24.33
2	60.00	$17.31	$7.02	$0.00	$0.00	$0.00	$24.33
3	65.00	$18.75	$7.02	$0.00	$1.00	$0.00	$26.77
4	70.00	$20.20	$7.02	$0.00	$1.00	$0.00	$28.22
5	75.00	$21.64	$7.02	$3.80	$1.00	$0.00	$33.46
6	80.00	$23.08	$7.02	$3.80	$1.00	$0.00	$34.90
7	85.00	$24.52	$7.02	$3.80	$1.00	$0.00	$36.34
8	90.00	$25.97	$7.02	$3.80	$1.00	$0.00	$37.79

Apprentice to Journeyworker Ratio: 1:5

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
CEMENT MASONRY/PLASTERING BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 (NEW BEDFORD)	7/1/2024	$49.19	$13.35	$16.43	$7.78	$1.80	$88.55

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

Apprentice to Journeyworker Ratio: 1:3

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	7/1/2025	$58.51	$10.30	$11.95	$12.50	$0.00	$93.26
	1/1/2026	$59.56	$10.35	$12.00	$12.60	$0.00	$94.51

Apprentice: DELEADER (BRIDGE)

Effective Date: 7/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.26	$10.30	$0.00	$0.00	$0.00	$39.56

Construction

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

Apprentice: DELEADER (BRIDGE)

Effective Date: 7/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
2	55.00	$32.18	$10.30	$0.00	$6.88	$0.00	$49.36
3	60.00	$35.11	$10.30	$0.00	$7.50	$0.00	$52.91
4	65.00	$38.03	$10.30	$0.00	$8.13	$0.00	$56.46
5	70.00	$40.96	$10.30	$11.95	$8.75	$0.00	$71.96
6	75.00	$43.88	$10.30	$11.95	$9.38	$0.00	$75.51
7	80.00	$46.81	$10.30	$11.95	$10.00	$0.00	$79.06
8	90.00	$52.66	$10.30	$11.95	$11.25	$0.00	$86.16

Apprentice: DELEADER (BRIDGE)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.78	$10.35	$0.00	$0.00	$0.00	$40.13
2	55.00	$32.76	$10.35	$0.00	$6.93	$0.00	$50.04
3	60.00	$35.74	$10.35	$0.00	$7.56	$0.00	$53.65
4	65.00	$38.71	$10.35	$0.00	$8.19	$0.00	$57.25
5	70.00	$41.69	$10.35	$12.00	$8.82	$0.00	$72.86
6	75.00	$44.67	$10.35	$12.00	$9.45	$0.00	$76.47
7	80.00	$47.65	$10.35	$12.00	$10.08	$0.00	$80.08
8	90.00	$53.60	$10.35	$12.00	$11.34	$0.00	$87.29

Apprentice to Journeyworker Ratio: 1:1

DEMO: ADZEMAN LABORERS LABORERS - ZONE 2	6/2/2025	$47.75	$9.90	$9.25	$9.65	$0.00	$76.55
	12/1/2025	$49.25	$9.90	$9.25	$9.65	$0.00	$78.05
	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 LABORERS LABORERS - ZONE 2	6/2/2025	$48.75	$9.90	$9.25	$9.65	$0.00	$77.55
	12/1/2025	$50.25	$9.90	$9.25	$9.65	$0.00	$79.05
	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

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORERS LABORERS - ZONE 2	12/1/2025	$50.00	$9.90	$9.25	$9.65	$0.00	$78.80
	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 LABORERS LABORERS - ZONE 2	6/2/2025	$48.75	$9.90	$9.25	$9.65	$0.00	$77.55
	12/1/2025	$50.25	$9.90	$9.25	$9.65	$0.00	$79.05
	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: JACKHAMMER OPERATOR LABORERS LABORERS - ZONE 2	6/2/2025	$48.50	$9.90	$9.25	$9.65	$0.00	$77.30
	12/1/2025	$50.00	$9.90	$9.25	$9.65	$0.00	$78.80
	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 LABORERS LABORERS - ZONE 2	6/2/2025	$47.75	$9.90	$9.25	$9.65	$0.00	$76.55
	12/1/2025	$49.25	$9.90	$9.25	$9.65	$0.00	$78.05
	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 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"							
DIVER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 2)	8/1/2024	$78.11	$10.08	$11.62	$12.67	$0.00	$112.48
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	$51.97	$10.08	$11.62	$12.67	$0.00	$86.34

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 2)							
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) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 2)	8/1/2024	$83.69	$10.08	$11.62	$12.67	$0.00	$118.06
For apprentice rates see "Apprentice- PILE DRIVER"							
DIVER/SLURRY (EFFLUENT) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 2)	8/1/2024	$117.16	$10.08	$11.62	$12.67	$0.00	$151.53
For apprentice rates see "Apprentice- PILE DRIVER"							
DRAWBRIDGE OPERATOR (Construction) DRAWBRIDGE - SEIU LOCAL 888 DRAWBRIDGE - SEIU LOCAL 888	7/1/2020	$26.77	$6.67	$3.93	$0.00	$0.16	$37.53
ELECTRICIAN ELECTRICIANS LOCAL 223 ELECTRICIANS LOCAL 223	9/1/2025	$52.25	$12.25	$14.86	$3.75	$0.00	$83.11
	9/1/2026	$54.72	$12.50	$15.56	$4.00	$0.00	$86.78

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

Apprentice: ELECTRICIAN

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$21.89	$12.50	$0.66	$0.00	$0.00	$35.05
2	45.00	$24.62	$12.50	$0.74	$0.00	$0.00	$37.86
3	50.00	$27.36	$12.50	$0.82	$0.00	$0.00	$40.68
4	55.00	$30.10	$12.50	$6.92	$2.75	$0.00	$52.27
5	60.00	$32.83	$12.50	$7.54	$2.75	$0.00	$55.62
6	65.00	$35.57	$12.50	$8.18	$2.75	$0.00	$59.00
7	70.00	$38.30	$12.50	$8.81	$2.75	$0.00	$62.36
8	75.00	$41.04	$12.50	$9.43	$2.75	$0.00	$65.72

Apprentice to Journeyworker Ratio: 2:3

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
ELEVATOR CONSTRUCTOR ELEVATOR CONSTRUCTORS LOCAL 4 ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2025	$74.17	$16.28	$10.96	$10.40	$0.00	$111.81
	1/1/2026	$77.26	$16.38	$11.06	$10.70	$0.00	$115.40
	1/1/2027	$80.55	$16.48	$11.16	$11.00	$0.00	$119.19

Apprentice: ELEVATOR CONSTRUCTOR

Effective Date: 1/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$37.09	$0.00	$0.00	$0.00	$0.00	$37.09
2	55.00	$40.79	$16.28	$10.96	$10.40	$0.00	$78.43
3	65.00	$48.21	$16.28	$10.96	$10.40	$0.00	$85.85
4	70.00	$51.92	$16.28	$10.96	$10.40	$0.00	$89.56
5	80.00	$59.34	$16.28	$10.96	$10.40	$0.00	$96.98

Apprentice: ELEVATOR CONSTRUCTOR

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$38.63	$0.00	$0.00	$0.00	$0.00	$38.63
2	55.00	$42.49	$16.38	$11.06	$10.70	$0.00	$80.63
3	65.00	$50.22	$16.38	$11.06	$10.70	$0.00	$88.36
4	70.00	$54.08	$16.38	$11.06	$10.70	$0.00	$92.22
5	80.00	$61.81	$16.38	$11.06	$10.70	$0.00	$99.95

Apprentice to Journeyworker Ratio: 1:1

ELEVATOR CONSTRUCTOR HELPER ELEVATOR CONSTRUCTORS LOCAL 4 ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2025	$51.92	$16.28	$10.96	$10.40	$0.00	$89.56
	1/1/2026	$54.08	$16.38	$11.06	$10.07	$0.00	$91.59
	1/1/2027	$56.39	$16.48	$11.16	$11.00	$0.00	$95.03
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"							
FENCE & GUARD RAIL ERECTOR (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)							
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	5/1/2025	$52.47	$15.85	$13.15	$3.25	$0.00	$84.72
	11/1/2025	$53.76	$15.85	$13.15	$3.25	$0.00	$86.01
	5/1/2026	$55.20	$15.85	$13.15	$3.25	$0.00	$87.45
	11/1/2026	$56.49	$15.85	$13.15	$3.25	$0.00	$88.74
	5/1/2027	$57.92	$15.85	$13.15	$3.25	$0.00	$90.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	5/1/2025	$54.07	$15.85	$13.15	$3.25	$0.00	$86.32
	11/1/2025	$55.37	$15.85	$13.15	$3.25	$0.00	$87.62
	5/1/2026	$56.82	$15.85	$13.15	$3.25	$0.00	$89.07
	11/1/2026	$58.12	$15.85	$13.15	$3.25	$0.00	$90.37

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	5/1/2027	$59.57	$15.85	$13.15	$3.25	$0.00	$91.82
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY	5/1/2025	$25.47	$15.85	$13.15	$3.25	$0.00	$57.72
OPERATING ENGINEERS LOCAL 4	11/1/2025	$26.23	$15.85	$13.15	$3.25	$0.00	$58.48
OPERATING ENGINEERS LOCAL 4	5/1/2026	$27.08	$15.85	$13.15	$3.25	$0.00	$59.33
	11/1/2026	$27.84	$15.85	$13.15	$3.25	$0.00	$60.09
	5/1/2027	$28.69	$15.85	$13.15	$3.25	$0.00	$60.94
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIRE ALARM INSTALLER	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- ELECTRICIAN"							
FIRE ALARM REPAIR / MAINTENANCE	9/1/2025	$52.25	$12.25	$14.86	$3.75	$0.00	$83.11
/ COMMISSIONING	9/1/2026	$54.72	$12.50	$15.56	$4.00	$0.00	$86.78
ELECTRICIANS LOCAL 223							
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	3/1/2024	$48.93	$10.33	$11.47	$8.80	$0.00	$79.53
FLOORCOVERERS LOCAL 2168							
FLOORCOVERERS LOCAL 2168 ZONE II							

Apprentice: FLOORCOVERER

Effective Date: 3/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.47	$10.33	$0.00	$1.76	$0.00	$36.56
2	55.00	$26.91	$10.33	$0.00	$1.76	$0.00	$39.00
3	60.00	$29.36	$10.33	$0.00	$3.52	$0.00	$43.21
4	65.00	$31.80	$10.33	$0.00	$3.52	$0.00	$45.65
5	70.00	$34.25	$10.33	$11.47	$5.28	$0.00	$61.33
6	75.00	$36.70	$10.33	$11.47	$5.28	$0.00	$63.78
7	80.00	$39.14	$10.33	$11.47	$7.04	$0.00	$67.98
8	85.00	$41.59	$10.33	$11.47	$7.04	$0.00	$70.43

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice Notes							
Steps are 750 hrs.							
Apprentice to Journeyworker Ratio: 1:1							
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)	6/1/2025	$43.13	$10.80	$8.25	$5.50	$0.00	$67.68
GLAZIERS LOCAL 1333	6/1/2026	$44.73	$11.20	$8.40	$6.05	$0.00	$70.38
GLAZIERS LOCAL 1333	6/1/2027	$46.73	$11.60	$8.55	$6.60	$0.00	$73.48
	6/1/2028	$48.73	$12.00	$8.70	$7.20	$0.00	$76.63

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

Effective Date: 6/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$21.57	$10.80	$8.25	$5.50	$0.00	$46.12
2	56.25	$24.26	$10.80	$8.25	$5.50	$0.00	$48.81
3	62.50	$26.96	$10.80	$8.25	$5.50	$0.00	$51.51
4	68.75	$29.65	$10.80	$8.25	$5.50	$0.00	$54.20
5	75.00	$32.35	$10.80	$8.25	$5.50	$0.00	$56.90
6	81.25	$35.04	$10.80	$8.25	$5.50	$0.00	$59.59
7	87.50	$37.74	$10.80	$8.25	$5.50	$0.00	$62.29
8	93.75	$40.43	$10.80	$8.25	$5.50	$0.00	$64.98

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

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$22.37	$11.20	$8.40	$6.05	$0.00	$48.02
2	56.25	$25.16	$11.20	$8.40	$6.05	$0.00	$50.81
3	62.50	$27.96	$11.20	$8.40	$6.05	$0.00	$53.61
4	68.75	$30.75	$11.20	$8.40	$6.05	$0.00	$56.40
5	75.00	$33.55	$11.20	$8.40	$6.05	$0.00	$59.20
6	81.25	$36.34	$11.20	$8.40	$6.05	$0.00	$61.99
7	87.50	$39.14	$11.20	$8.40	$6.05	$0.00	$64.79

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)							
Effective Date: 6/1/2026							
Step / Percent / Apprentice Base Wage							
8 / 93.75		$41.93	$11.20	$8.40	$6.05	$0.00	$67.58
Apprentice to Journeyworker Ratio: 3:1							
HOISTING ENGINEER/CRANES/GRADALLS	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
Apprentice: HOISTING ENGINEER/CRANES/GRADALLS							
Effective Date: 6/1/2025							
Step / Percent / Apprentice Base Wage							
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							
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
Apprentice to Journeyworker Ratio: 1:6							
HVAC (DUCTWORK)	10/1/2025	$44.05	$14.91	$13.35	$6.15	$2.24	$80.70
SHEETMETAL WORKERS LOCAL 17	4/1/2026	$45.55	$14.91	$13.35	$6.15	$2.24	$82.20
SHEETMETAL WORKERS LOCAL 17 - B							
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (ELECTRICAL CONTROLS)	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

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
ELECTRICIANS LOCAL 223							
For apprentice rates see "Apprentice- ELECTRICIAN"							
HVAC (TESTING AND BALANCING - AIR)	10/1/2025	$44.05	$14.91	$13.35	$6.15	$2.24	$80.70
SHEETMETAL WORKERS LOCAL 17	4/1/2026	$45.55	$14.91	$13.35	$6.15	$2.24	$82.20
SHEETMETAL WORKERS LOCAL 17 - B							
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (TESTING AND BALANCING -WATER)	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44
PLUMBERS & PIPEFITTERS LOCAL 51							
PLUMBERS & PIPEFITTERS LOCAL 51							
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
HVAC MECHANIC	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44
PLUMBERS & PIPEFITTERS LOCAL 51							
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)	9/1/2025	$60.34	$14.75	$9.52	$10.09	$0.00	$94.70
HEAT & FROST INSULATORS LOCAL 6	9/1/2026	$63.76	$14.75	$9.52	$10.09	$0.00	$98.12
HEAT & FROST INSULATORS LOCAL 6 (BOSTON)							

Apprentice: INSULATOR (PIPES & TANKS)

Effective Date: 9/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$30.17	$14.75	$9.27	$5.05	$0.00	$59.24
2	60.00	$36.20	$14.75	$9.32	$6.05	$0.00	$66.32
3	70.00	$42.24	$14.75	$9.37	$7.06	$0.00	$73.42
4	80.00	$48.27	$14.75	$9.42	$8.07	$0.00	$80.51

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: INSULATOR (PIPES & TANKS)							
Effective Date: 9/1/2026							
Step / Percent		**Apprentice Base Wage**					
1 / 50.00		$31.88	$14.75	$9.27	$5.05	$0.00	$60.95
2 / 60.00		$38.26	$14.75	$9.32	$6.05	$0.00	$68.38
3 / 70.00		$44.63	$14.75	$9.37	$7.06	$0.00	$75.81
4 / 80.00		$51.01	$14.75	$9.42	$8.07	$0.00	$83.25
Apprentice to Journeyworker Ratio: 1:4							
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
Apprentice to Journeyworker Ratio: 1:4							
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
	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

Construction

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

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

Apprentice to Journeyworker Ratio: 1:5

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

Apprentice to Journeyworker Ratio: 1:5

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	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: 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

Construction

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

Apprentice: MARBLE & TILE FINISHERS

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$26.58	$11.49	$15.57	$6.05	$0.00	$59.69
2	60.00	$31.90	$11.49	$15.57	$6.05	$0.00	$65.01
3	70.00	$37.21	$11.49	$15.57	$6.05	$0.00	$70.32
4	80.00	$42.53	$11.49	$15.57	$6.05	$0.00	$75.64
5	90.00	$47.84	$11.49	$15.57	$6.05	$0.00	$80.95

Apprentice to Journeyworker Ratio: 1:5

MARBLE MASONS,TILELAYERS & TERRAZZO MECH BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 - MARBLE & TILE	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 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

Apprentice: MARBLE MASONS,TILELAYERS & TERRAZZO MECH

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$34.66	$11.49	$15.57	$7.99	$0.00	$69.71
2	60.00	$41.59	$11.49	$15.57	$7.99	$0.00	$76.64
3	70.00	$48.52	$11.49	$15.57	$7.99	$0.00	$83.57
4	80.00	$55.46	$11.49	$15.57	$7.99	$0.00	$90.51
5	90.00	$62.39	$11.49	$15.57	$7.99	$0.00	$97.44

Apprentice to Journeyworker Ratio: 1:5

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	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"

MILLWRIGHT (Zone 2)	1/6/2025	$45.03	$10.08	$11.47	$10.00	$0.00	$76.58
MILLWRIGHTS LOCAL 1121 MILLWRIGHTS LOCAL 1121 - Zone 2	1/5/2026	$47.36	$10.08	$11.47	$10.00	$0.00	$78.91

Apprentice: MILLWRIGHT (Zone 2)

Effective Date: 1/6/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	$24.77	$10.08	$0.00	$5.50	$0.00	$40.35
2	65.00	$29.27	$10.08	$0.00	$6.50	$0.00	$45.85
3	75.00	$33.77	$10.08	$11.47	$7.50	$0.00	$62.82
4	85.00	$38.28	$10.08	$11.47	$8.50	$0.00	$68.33

Apprentice: MILLWRIGHT (Zone 2)

Effective Date: 1/5/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	$26.05	$10.08	$0.00	$5.50	$0.00	$41.63
2	65.00	$30.78	$10.08	$0.00	$6.50	$0.00	$47.36
3	75.00	$35.52	$10.08	$11.47	$7.50	$0.00	$64.57
4	85.00	$40.26	$10.08	$11.47	$8.50	$0.00	$70.31

Apprentice Notes

Step 1&2 Appr. indentured after 1/6/2020 receive no pension,

Apprentice to Journeyworker Ratio: 1:4

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"

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
OILER (TRUCK CRANES, GRADALLS)	6/1/2025	$31.80	$15.30	$13.15	$3.25	$0.00	$63.50
OPERATING ENGINEERS LOCAL 4	12/1/2025	$32.60	$15.30	$13.15	$3.25	$0.00	$64.30
OPERATING ENGINEERS LOCAL 4	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
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)	7/1/2025	$58.51	$10.30	$11.95	$12.50	$0.00	$93.26
PAINTERS LOCAL 35	1/1/2026	$59.56	$10.35	$12.00	$12.50	$0.00	$94.41
PAINTERS LOCAL 35 - ZONE 2							

Apprentice: PAINTER (BRIDGES/TANKS)

Effective Date: 7/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.26	$10.30	$0.00	$0.00	$0.00	$39.56
2	55.00	$32.18	$10.30	$0.00	$6.88	$0.00	$49.36
3	60.00	$35.11	$10.30	$0.00	$7.50	$0.00	$52.91
4	65.00	$38.03	$10.30	$0.00	$8.13	$0.00	$56.46
5	70.00	$40.96	$10.30	$11.95	$8.75	$0.00	$71.96
6	75.00	$43.88	$10.30	$11.95	$9.38	$0.00	$75.51
7	80.00	$46.81	$10.30	$11.95	$10.00	$0.00	$79.06
8	90.00	$52.66	$10.30	$11.95	$11.25	$0.00	$86.16

Apprentice: PAINTER (BRIDGES/TANKS)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.78	$10.35	$0.00	$0.00	$0.00	$40.13
2	55.00	$32.76	$10.35	$0.00	$6.93	$0.00	$50.04
3	60.00	$35.74	$10.35	$0.00	$7.56	$0.00	$53.65
4	65.00	$38.71	$10.35	$0.00	$8.19	$0.00	$57.25
5	70.00	$41.69	$10.35	$12.00	$8.82	$0.00	$72.86
6	75.00	$44.67	$10.35	$12.00	$9.45	$0.00	$76.47
7	80.00	$47.65	$10.35	$12.00	$10.08	$0.00	$80.08
8	90.00	$53.60	$10.35	$12.00	$11.34	$0.00	$87.29

Apprentice to Journeyworker Ratio: 1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	7/1/2025	$49.41	$10.30	$11.95	$12.50	$0.00	$84.16
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.	1/1/2026	$50.46	$10.35	$12.00	$12.60	$0.00	$85.41
PAINTERS LOCAL 35							
PAINTERS LOCAL 35 - ZONE 2							

Construction

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

Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) *

Effective Date: 7/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.71	$10.30	$0.00	$0.00	$0.00	$35.01
2	55.00	$27.18	$10.30	$0.00	$6.88	$0.00	$44.36
3	60.00	$29.65	$10.30	$0.00	$7.50	$0.00	$47.45
4	65.00	$32.12	$10.30	$0.00	$8.13	$0.00	$50.55
5	70.00	$34.59	$10.30	$11.95	$8.75	$0.00	$65.59
6	75.00	$37.06	$10.30	$11.95	$9.38	$0.00	$68.69
7	80.00	$39.53	$10.30	$11.95	$10.00	$0.00	$71.78
8	90.00	$44.47	$10.30	$11.95	$11.25	$0.00	$77.97

Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) *

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$25.23	$10.35	$0.00	$0.00	$0.00	$35.58
2	55.00	$27.75	$10.35	$0.00	$6.93	$0.00	$45.03
3	60.00	$30.28	$10.35	$0.00	$7.56	$0.00	$48.19
4	65.00	$32.80	$10.35	$0.00	$8.19	$0.00	$51.34
5	70.00	$35.32	$10.35	$12.00	$8.82	$0.00	$66.49
6	75.00	$37.85	$10.35	$12.00	$9.45	$0.00	$69.65
7	80.00	$40.37	$10.35	$12.00	$10.08	$0.00	$72.80
8	90.00	$45.41	$10.35	$12.00	$11.34	$0.00	$79.10

Apprentice to Journeyworker Ratio: 1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 2	7/1/2025	$47.47	$10.30	$11.95	$12.50	$0.00	$82.22
	1/1/2026	$48.52	$10.35	$12.00	$12.60	$0.00	$83.47

Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)

Effective Date: 7/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$23.74	$10.30	$0.00	$0.00	$0.00	$34.04
2	55.00	$26.11	$10.30	$0.00	$6.88	$0.00	$43.29
3	60.00	$28.48	$10.30	$0.00	$7.50	$0.00	$46.28
4	65.00	$30.86	$10.30	$0.00	$8.13	$0.00	$49.29
5	70.00	$33.23	$10.30	$11.95	$8.75	$0.00	$64.23
6	75.00	$35.60	$10.30	$11.95	$9.38	$0.00	$67.23
7	80.00	$37.98	$10.30	$11.95	$10.00	$0.00	$70.23
8	90.00	$42.72	$10.30	$11.95	$11.25	$0.00	$76.22

Construction

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

Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.26	$10.35	$0.00	$0.00	$0.00	$34.61
2	55.00	$26.69	$10.35	$0.00	$6.93	$0.00	$43.97
3	60.00	$29.11	$10.35	$0.00	$7.56	$0.00	$47.02
4	65.00	$31.54	$10.35	$0.00	$8.19	$0.00	$50.08
5	70.00	$33.96	$10.35	$12.00	$8.82	$0.00	$65.13
6	75.00	$36.39	$10.35	$12.00	$9.45	$0.00	$68.19
7	80.00	$38.82	$10.35	$12.00	$10.08	$0.00	$71.25
8	90.00	$43.67	$10.35	$12.00	$11.34	$0.00	$77.36

Apprentice to Journeyworker Ratio: 1:1

PAINTER / TAPER (BRUSH, NEW) *	7/1/2025	$48.01	$10.30	$11.95	$12.50	$0.00	$82.76
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.	1/1/2026	$49.06	$10.35	$12.00	$12.60	$0.00	$84.01
PAINTERS LOCAL 35							
PAINTERS LOCAL 35 - ZONE 2							

Apprentice: PAINTER / TAPER (BRUSH, NEW) *

Effective Date: 7/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.01	$10.30	$0.00	$0.00	$0.00	$34.31
2	55.00	$26.41	$10.30	$0.00	$6.88	$0.00	$43.59
3	60.00	$28.81	$10.30	$0.00	$7.50	$0.00	$46.61
4	65.00	$31.21	$10.30	$0.00	$8.13	$0.00	$49.64
5	70.00	$33.61	$10.30	$11.95	$8.75	$0.00	$64.61
6	75.00	$36.01	$10.30	$11.95	$9.38	$0.00	$67.64
7	80.00	$38.41	$10.30	$11.95	$10.00	$0.00	$70.66
8	90.00	$43.21	$10.30	$11.95	$11.25	$0.00	$76.71

Apprentice: PAINTER / TAPER (BRUSH, NEW) *

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.53	$10.35	$0.00	$0.00	$0.00	$34.88
2	55.00	$26.98	$10.35	$0.00	$6.93	$0.00	$44.26
3	60.00	$29.44	$10.35	$0.00	$7.56	$0.00	$47.35
4	65.00	$31.89	$10.35	$0.00	$8.19	$0.00	$50.43
5	70.00	$34.34	$10.35	$12.00	$8.82	$0.00	$65.51
6	75.00	$36.80	$10.35	$12.00	$9.45	$0.00	$68.60
7	80.00	$39.25	$10.35	$12.00	$10.08	$0.00	$71.68
8	90.00	$44.15	$10.35	$12.00	$11.34	$0.00	$77.84

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice to Journeyworker Ratio: 1:1							
PAINTER / TAPER (BRUSH, REPAINT)	7/1/2025	$46.07	$10.30	$11.95	$12.50	$0.00	$80.82
PAINTERS LOCAL 35	1/1/2026	$47.12	$10.35	$12.00	$12.60	$0.00	$82.07
PAINTERS LOCAL 35 - ZONE 2							

Apprentice: PAINTER / TAPER (BRUSH, REPAINT)

Effective Date: 7/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$23.04	$10.30	$0.00	$0.00	$0.00	$33.34
2	55.00	$25.34	$10.30	$0.00	$6.88	$0.00	$42.52
3	60.00	$27.64	$10.30	$0.00	$7.50	$0.00	$45.44
4	65.00	$29.95	$10.30	$0.00	$8.13	$0.00	$48.38
5	70.00	$32.25	$10.30	$11.95	$8.75	$0.00	$63.25
6	75.00	$34.55	$10.30	$11.95	$9.38	$0.00	$66.18
7	80.00	$36.86	$10.30	$11.95	$10.00	$0.00	$69.11
8	90.00	$41.46	$10.30	$11.95	$11.25	$0.00	$74.96

Apprentice: PAINTER / TAPER (BRUSH, REPAINT)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$23.56	$10.35	$0.00	$0.00	$0.00	$33.91
2	55.00	$25.92	$10.35	$0.00	$6.93	$0.00	$43.20
3	60.00	$28.27	$10.35	$0.00	$7.56	$0.00	$46.18
4	65.00	$30.63	$10.35	$0.00	$8.19	$0.00	$49.17
5	70.00	$32.98	$10.35	$12.00	$8.82	$0.00	$64.15
6	75.00	$35.34	$10.35	$12.00	$9.45	$0.00	$67.14
7	80.00	$37.70	$10.35	$12.00	$10.08	$0.00	$70.13
8	90.00	$42.41	$10.35	$12.00	$11.34	$0.00	$76.10

Apprentice to Journeyworker Ratio: 1:1							
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	8/1/2024	$51.97	$10.08	$11.62	$12.67	$0.00	$86.34

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
DECK) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 2) For apprentice rates see "Apprentice- PILE DRIVER"							
PILE DRIVER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 2)	8/1/2024	$51.97	$10.08	$11.62	$12.67	$0.00	$86.34

Apprentice: PILE DRIVER

Effective Date: 8/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$23.39	$10.08	$0.00	$2.53	$0.00	$36.00
2	55.00	$28.58	$10.08	$0.00	$5.07	$0.00	$43.73
3	70.00	$36.38	$10.08	$11.62	$7.60	$0.00	$65.68
4	80.00	$41.58	$10.08	$11.62	$10.14	$0.00	$73.42

Apprentice to Journeyworker Ratio: 1:5

PIPELAYER 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"							
PIPELAYER (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)"							
PLUMBER & PIPEFITTER PLUMBERS & PIPEFITTERS LOCAL 51 PLUMBERS & PIPEFITTERS LOCAL 51	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44

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

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice to Journeyworker Ratio: 1:3							
PNEUMATIC CONTROLS (TEMP.) PLUMBERS & PIPEFITTERS LOCAL 51 PLUMBERS & PIPEFITTERS LOCAL 51	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
PNEUMATIC DRILL/TOOL OPERATOR LABORERS LABORERS - ZONE 2	6/1/2025	$41.09	$9.90	$9.25	$8.29	$0.00	$68.53
	12/1/2025	$42.47	$9.90	$9.25	$8.29	$0.00	$69.91
	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) 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)"							
POWDERMAN & BLASTER LABORERS LABORERS - ZONE 2	6/1/2025	$41.34	$9.90	$9.25	$9.11	$0.00	$69.60
	12/1/2025	$42.72	$9.90	$9.25	$9.11	$0.00	$70.98
	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) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2025	$41.34	$9.65	$9.25	$9.21	$0.00	$69.45
	12/1/2025	$42.72	$9.65	$9.25	$9.21	$0.00	$70.83
	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 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"							
PUMP OPERATOR (CONCRETE) 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"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
PUMP OPERATOR (DEWATERING, OTHER) 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"							
READY-MIX CONCRETE DRIVER TEAMSTERS 653 TEAMSTERS 653 - Southeastern Concrete (Weymouth)	8/1/2023	$25.00	$13.91	$6.90	$0.00	$0.00	$45.81
RECLAIMERS 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"							
RIDE-ON MOTORIZED BUGGY 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"							
ROLLER/SPREADER/MULCHING MACHINE 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"							
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) ROOFERS LOCAL 33 ROOFERS LOCAL 33	8/1/2025	$53.53	$13.28	$12.67	$9.03	$0.00	$88.51
	2/1/2026	$54.78	$13.28	$12.67	$9.03	$0.00	$89.76

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

Construction

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

Apprentice: ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg)

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$27.39	$13.28	$6.52	$9.03	$0.00	$56.22
2	60.00	$32.87	$13.28	$12.67	$9.03	$0.00	$67.85
3	65.00	$35.61	$13.28	$12.67	$9.03	$0.00	$70.59
4	75.00	$41.09	$13.28	$12.67	$9.03	$0.00	$76.07
5	85.00	$46.56	$13.28	$12.67	$9.03	$0.00	$81.54

Apprentice Notes

** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1

Apprentice to Journeyworker Ratio: 1:5

ROOFER SLATE / TILE / PRECAST CONCRETE	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
ROOFERS LOCAL 33							

For apprentice rates see "Apprentice- ROOFER"

SHEETMETAL WORKER	10/1/2025	$44.05	$14.91	$13.35	$6.15	$2.24	$80.70
SHEETMETAL WORKERS LOCAL 17	4/1/2026	$45.55	$14.91	$13.35	$6.15	$2.24	$82.20
SHEETMETAL WORKERS LOCAL 17 - B							

Apprentice: SHEETMETAL WORKER

Effective Date: 10/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$17.62	$14.91	$4.27	$0.00	$1.09	$37.89
2	45.00	$19.82	$14.91	$4.80	$0.00	$1.17	$40.70
3	50.00	$22.03	$14.91	$12.28	$0.00	$1.45	$50.67
4	55.00	$24.23	$14.91	$12.28	$0.00	$1.52	$52.94
5	60.00	$26.43	$14.91	$12.28	$3.69	$1.64	$58.95
6	65.00	$28.63	$14.91	$12.28	$4.00	$1.71	$61.53
7	70.00	$30.84	$14.91	$12.28	$4.31	$1.78	$64.12
8	75.00	$33.04	$14.91	$12.28	$4.61	$1.86	$66.70
9	80.00	$35.24	$14.91	$12.28	$4.92	$1.93	$69.28
10	85.00	$37.44	$14.91	$12.28	$5.23	$2.00	$71.86

Apprentice: SHEETMETAL WORKER

Effective Date: 4/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$18.22	$14.91	$4.27	$0.00	$1.09	$38.49
2	45.00	$20.50	$14.91	$4.80	$0.00	$1.17	$41.38
3	50.00	$22.78	$14.91	$12.28	$0.00	$1.45	$51.42

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: SHEETMETAL WORKER							
Effective Date: 4/1/2026							
Step / Percent		**Apprentice Base Wage**					
4 / 55.00		$25.05	$14.91	$12.28	$0.00	$1.52	$53.76
5 / 60.00		$27.33	$14.91	$12.28	$3.69	$1.64	$59.85
6 / 65.00		$29.61	$14.91	$12.28	$4.00	$1.71	$62.51
7 / 70.00		$31.89	$14.91	$12.28	$4.31	$1.78	$65.17
8 / 75.00		$34.16	$14.91	$12.28	$4.61	$1.86	$67.82
9 / 80.00		$36.44	$14.91	$12.28	$4.92	$1.93	$70.48
10 / 85.00		$38.72	$14.91	$12.28	$5.23	$2.00	$73.14
Apprentice to Journeyworker Ratio: 1:4							
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 B) Zone 2	3/1/2025	$63.72	$12.25	$7.40	$17.00	$0.00	$100.37
Apprentice: SPRINKLER FITTER							
Effective Date: 3/1/2025							
Step / Percent		**Apprentice Base Wage**					
1 / 35.00		$22.30	$11.51	$13.35	$0.00	$0.00	$47.16
2 / 40.00		$25.49	$11.51	$14.20	$0.00	$0.00	$51.20
3 / 45.00		$28.67	$11.51	$15.05	$0.00	$0.00	$55.23
4 / 50.00		$31.86	$11.51	$15.90	$0.00	$0.00	$59.27
5 / 55.00		$35.05	$11.51	$16.75	$0.00	$0.00	$63.31
6 / 60.00		$38.23	$11.51	$17.60	$0.00	$0.00	$67.34
7 / 65.00		$41.42	$11.51	$18.45	$0.00	$0.00	$71.38
8 / 70.00		$44.60	$11.51	$19.30	$0.00	$0.00	$75.41
9 / 75.00		$47.79	$11.51	$20.15	$0.00	$0.00	$79.45
10 / 80.00		$50.98	$11.51	$21.00	$0.00	$0.00	$83.49

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice Notes							
Apprentice entered prior 9/30/10:							
Apprentice to Journeyworker Ratio: 1:3							
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	9/1/2025	$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
ELECTRICIANS LOCAL 223	9/1/2027	$46.51	$12.50	$13.18	$3.75	$0.00	$75.94
TERRAZZO FINISHERS	8/1/2025	$66.89	$11.49	$15.57	$8.02	$0.00	$101.97
BRICKLAYERS LOCAL 3	2/1/2026	$68.24	$11.49	$15.57	$8.02	$0.00	$103.32
BRICKLAYERS LOCAL 3 - MARBLE & TILE	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

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

Apprentice: TERRAZZO FINISHERS

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$34.12	$11.49	$15.57	$8.02	$0.00	$69.20
2	60.00	$40.94	$11.49	$15.57	$8.02	$0.00	$76.02
3	70.00	$47.77	$11.49	$15.57	$8.02	$0.00	$82.85
4	80.00	$54.59	$11.49	$15.57	$8.02	$0.00	$89.67
5	90.00	$61.42	$11.49	$15.57	$8.02	$0.00	$96.50

Apprentice to Journeyworker Ratio: 1:5

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
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 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	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
	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 LABORERS LABORERS (COMPRESSED AIR)	6/1/2025	$59.93	$9.90	$9.25	$10.25	$0.00	$89.33
	12/1/2025	$61.43	$9.90	$9.25	$10.25	$0.00	$90.83
	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) LABORERS LABORERS (COMPRESSED AIR)	6/1/2025	$61.93	$9.90	$9.25	$10.25	$0.00	$91.33
	12/1/2025	$63.43	$9.90	$9.25	$10.25	$0.00	$92.83
	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 LABORERS LABORERS (FREE AIR TUNNEL)	6/1/2025	$52.00	$9.90	$9.25	$10.25	$0.00	$81.40
	12/1/2025	$53.50	$9.90	$9.25	$10.25	$0.00	$82.90
	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

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORERS LABORERS (FREE AIR TUNNEL)	12/1/2025	$55.50	$9.90	$9.25	$10.25	$0.00	$84.90
	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 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
WAGON DRILL OPERATOR LABORERS LABORERS - ZONE 2	6/1/2025	$42.00	$9.65	$9.00	$8.70	$0.00	$69.35
	12/1/2025	$43.38	$9.65	$9.00	$8.70	$0.00	$70.73
	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) 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)"							
WASTE WATER PUMP OPERATOR 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"							
WATER METER INSTALLER PLUMBERS & PIPEFITTERS LOCAL 51 PLUMBERS & PIPEFITTERS LOCAL 51	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"							

Outside Electrical

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
CABLE TECHNICIAN (Power Zone) OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 For apprentice rates see "Apprentice- LINEMAN"	8/30/2020	$29.67	$9.25	$0.89	$1.00	$0.00	$40.81
CABLEMAN (Underground Ducts & Cables) OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 For apprentice rates see "Apprentice- LINEMAN"	8/30/2020	$42.03	$9.25	$1.26	$9.01	$0.00	$61.55
DRIVER / GROUNDMAN CDL OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 For apprentice rates see "Apprentice- LINEMAN"	8/30/2020	$34.62	$9.25	$1.04	$9.03	$0.00	$53.94
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 For apprentice rates see "Apprentice- LINEMAN"	8/30/2020	$27.20	$9.25	$0.82	$1.00	$0.00	$38.27
EQUIPMENT OPERATOR (Class A CDL) OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 For apprentice rates see "Apprentice- LINEMAN"	8/30/2020	$42.03	$9.25	$1.26	$13.09	$0.00	$65.63
EQUIPMENT OPERATOR (Class B CDL) OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 For apprentice rates see "Apprentice- LINEMAN"	8/30/2020	$37.09	$9.25	$1.11	$9.76	$0.00	$57.21
GROUNDMAN OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 For apprentice rates see "Apprentice- LINEMAN"	8/30/2020	$27.20	$9.25	$0.82	$1.00	$0.00	$38.27
GROUNDMAN -Inexperienced (<2000 Hrs.) OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 For apprentice rates see "Apprentice- LINEMAN"	8/30/2020	$22.25	$9.25	$0.82	$1.00	$0.00	$33.32
JOURNEYMAN LINEMAN OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	8/30/2020	$49.45	$9.25	$1.48	$16.00	$0.00	$76.18

Apprentice: JOURNEYMAN LINEMAN

Effective Date: 8/30/2020

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$29.67	$9.25	$0.89	$2.50	$0.00	$42.31
2	65.00	$32.14	$9.25	$0.96	$2.50	$0.00	$44.85
3	70.00	$34.62	$9.25	$1.04	$2.50	$0.00	$47.41
4	75.00	$37.09	$9.25	$1.11	$4.00	$0.00	$51.45

Outside Electrical

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: JOURNEYMAN LINEMAN							
Effective Date: 8/30/2020							
Step / Percent		**Apprentice Base Wage**					
5 / 80.00		$39.56	$9.25	$1.19	$4.00	$0.00	$54.00
6 / 85.00		$42.03	$9.25	$1.26	$4.00	$0.00	$56.54
7 / 90.00		$44.51	$9.25	$1.34	$6.00	$0.00	$61.10
Apprentice to Journeyworker Ratio: 1:2							
TELEDATA CABLE SPLICER OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	2/4/2019	$30.73	$4.70	$0.92	$2.25	$0.00	$38.60
TELEDATA LINEMAN/EQUIPMENT OPERATOR OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	2/4/2019	$28.93	$4.70	$0.89	$2.25	$0.00	$36.77
TELEDATA WIREMAN/INSTALLER/TECHNICIAN OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	2/4/2019	$28.93	$4.70	$0.89	$2.25	$0.00	$36.77

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 00880

Revised January 12, 2022

DEPARTMENT OF LABOR

Employment Standards Administration

MINIMUM WAGES FOR FEDERAL AND FEDERALLY ASSISTED CONTRACTS

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General Decision Number: MA20250015 09/26/2025

Superseded General Decision Number: MA20240015

State: Massachusetts

Construction Type: Highway

County: Barnstable 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	07/11/2025
3	07/18/2025
4	08/15/2025
5	09/26/2025

ELEC0223-001 09/01/2024

	Rates	Fringes
ELECTRICIAN (Includes Traffic Signalization)	$ 50.02	31.09%+15.50

ENGI0004-032 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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* IRON0007-026 09/16/2025

	Rates	Fringes
IRONWORKER (ORNAMENTAL AND STRUCTURAL)	$ 57.87	37.67

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

LABO0385-005 12/01/2024

	Rates	Fringes
LABORER (Landscape)	$ 38.95	29.41

LABO0596-009 06/01/2025

	Rates	Fringes
LABORER		
Guardrail Installation	$ 35.00	26.91

PAIN0035-023 07/01/2024

	Rates	Fringes
PAINTER (Steel)	$ 56.76	36.00

TEAM0059-001 06/01/2025

	Rates	Fringes
TRUCK DRIVER (Dump Truck)	$ 40.78	37.35+a+b

FOOTNOTES:

A. PAID HOLIDAYS: New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Patriot's Day, Columbus Day, Veteran's Day, Thanksgiving Day and Christmas Day

B. PAID VACATION: Employees with 4 months to 1 year of service receive 1/2 day's pay per month; 1 week vacation for 1 - 5 years of service; 2 weeks vacation for 5 - 10 years of service; and 3 weeks vacation for more than 10 years of service

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SUMA2014-005 01/11/2017

	Rates	Fringes
CARPENTER, Includes Form Work	$ 43.64	22.09
CEMENT MASON/CONCRETE FINISHER	$ 56.70	21.08
IRONWORKER, REINFORCING	$ 44.52	19.36
LABORER: Asphalt, Includes Raker, Shoveler, Spreader and Distributor	$ 33.65	17.32
LABORER: Concrete Saw (Hand Held/Walk Behind)	$ 44.43	14.18
LABORER: Jack Hammer	$ 38.69	17.33
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: Flatbed Truck	$ 48.53	0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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

DOCUMENT A00801

SPECIAL PROVISIONS

DENNIS-HARWICH
Federal Aid Project No. STP/CMQ/TAP/CRP-0035(066)X
Reconstruction & Related Work on Main Street (Route 28),
from Upper County Road to the Herring River Bridge

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 under this Contract will be performed on approximately 0.7 miles of roadway along Route 28 (Main Street) from Upper County Road in Dennis to the intersection of Route 28 and the Herring River Bridge in Harwich.

The proposed project will consist of full depth roadway reconstruction and reclamation, construction of brick and hot mix asphalt sidewalks, and signal upgrades at its intersection with Upper County Road / Division Street. The work includes earth excavation, full depth hot mix asphalt reconstruction and widening, pavement reclamation, drainage upgrades, hot mix asphalt shared use path, cement concrete pedestrian curb ramps, granite curb, hot mix asphalt berm, pavement markings, signs, new street lighting, landscaping, and other incidental work.

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.

WORK SCHEDULE

No work that will disrupt travel on the existing roadways (lane closures, lane shifts, trenching, etc.) shall be done from 6:00 AM to 9:00 AM and from 3:00 PM to 6:00 PM.

No work that will disrupt travel shall occur between Memorial Day and Labor Day, without prior written approval of the Engineer and of the Towns.

During approved work months, work hours shall be from 7:00 AM to 3:00 PM, Monday through Friday unless otherwise approved by MassDOT and the Towns.

Daily daytime road closure and detour of Route 28 (Main Street) may be allowed on a block-by-block basis for proposed pavement reclamation work as coordinated with MassDOT and the Towns.

ENVIRONMENTAL PERMITTING

An Order of Conditions (DEP #**SE32-2592**) has been obtained from the Harwich Conservation Commission under the Wetlands Protection Act. If field conditions and/or Contractor-proposed erection, demolition, storage, or other procedures not originally allowed by existing environmental permits require work to occur in or otherwise impact water or wetland resource areas, the Contractor is advised that no associated work can occur until all required environmental permits have been either amended or obtained allowing such work.

The Contractor must notify the District 5 Highway Director and Resident Engineer in writing at least 60 days prior to desired commencement of the proposed activity.

All environmental submittals, including any contact with Local, State, or Federal environmental agencies, must be coordinated with the District 5 Environmental Engineer.

The Contractor is expected to fully cooperate with requests for information and provide same in a timely manner. The Contractor is further advised that the Department will not entertain a delay claim due to the time required to modify or obtain the environmental permits.

NOTIFICATION OF FUNDING SOURCES FOR WORK TO BE PAID BY OTHERS

This contract contains work that shall be paid by the ***Town of Harwich.*** The said ***Town of Harwich*** shall be responsible for construction costs associated with a Non-Participating Agreement with MassDOT.

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 #**SE32-2592**.

SECTION 7 COMPLIANCE

As part of compliance with Section 7 of the Endangered Species Act (ESA), all lighting and tree clearing activities for this project must adhere to the guidelines and appropriate time-of-year (TOY) restrictions for coastal Massachusetts that have been established to protect the Northern Long-eared Bat (NLEB), a threatened species that may occur within the project limits. Any additional lighting associated with this project must be downward facing and must not increase ambient lighting conditions within NLEB suitable summer habitat. For trees greater than or equal to 3" diameter at breast height (dbh), tree clearing is restricted to between November 1st and March 15th which falls outside of the NLEB's summer occupancy period (March 15th – September 30th), spring staging (March 15th – May 14th), and fall swarming (August 16th – October 31st). In addition, tree clearing must avoid known roosting trees and maternity colonies. Further guidance regarding Section 7 compliance can be found in resources available from the U.S. Fish and Wildlife Service (USFWS).

TOWN PERMITS

The Contractor shall contact the Towns of Dennis & Harwich to identify any Town-specific permits, license, or approvals may be required to complete the work. These approvals may include, for example, removal of trees greater than 2" at breast height may be subject to Tree Warden approval and/or a public hearing. The Towns may require additional permits to work within the Town right-of-way or may require road opening/trench permits with Town-owned roads.

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. This project has been consulted with the USFWS through the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and Federal Transit Administration (FTA) Programmatic Biological Opinion for Transportation Projects in the Range of the Indiana Bat and Northern Long-Eared Bat revised February 5, 2018 and amended March 31, 2023.

On July 17, 2023, VHB, on behalf of MassDOT Highway Division Environmental Services, conducted an endangered bat summer presence/absence survey using acoustic detection methods, in accordance with the 2023 survey guidelines. The survey did not confirm the presence of NLEB and/or TCB, and as stated within the survey guidelines, the survey is valid for five years. Due to the 5-year validity of the negative presence/absence survey, it is recommended that the Contractor conduct all activities that could result in stressors to the bats such as tree removal/trimming, bridge and/or structure removal/maintenance, lighting, or use of percussive, by July 17, 2028. If additional stressor producing work is proposed by the Contractor past this date, additional review is required by the MassDOT Highway Division's Environmental Services Section, and additional review and restrictions may be required by the USFWS.

On behalf of FHWA, the lead federal agency for Section 7 consultation, MassDOT submitted a Programmatic Consultation for Transportation Projects affecting NLEB or Indiana Bat to the USFWS through the Information for Planning and Consultation (IPaC) webpage and generated a USFWS No Effect Consistency Letter (see Document A00844). Therefore, the project has completed Section 7 consultation through the ESA.

In order to protect female northern long-eared bats and their young during the maternity roosting season, no tree cutting shall be conducted from April 1 to October 31. 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.

The Contractor shall ensure all personnel working in on the project site are aware of all environmental commitments related to NLEB and TCB, including the TOY restriction and 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.

If the TOY 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.

TOWN OF HARWICH – SEWER & WATER SPECIAL PROVISIONS

Document A00807 contains Special Provisions for Sewer and Water work for the Town of Harwich that is to be performed at the same time as the work of this project. This work must conform to the latest MassDOT Standard Specifications as well as the requirements for the Town of Harwich.

2026 FIFA WORLD CUP – BOSTON, MASSACHUSETTS

The 2026 FIFA World Cup will be held at Gillette Stadium in Foxborough, related events, and significant tourist events such as Sail Boston and the 250th Anniversary of the United States will be held throughout the region. Matches and Fan Fest and other possible 250th Celebration activities are scheduled through June, July and August 2026. The District will be imposing work and/or traffic restrictions as necessary to minimize impacts during these periods when, as determined by MassDOT, the Contractor's operations could impact vehicular traffic, particularly on interstate highways and major arterials throughout the region and local roads near event sites. No additional compensation will be allowed for work restrictions except as determined under Subsection 8.10. nor will the Contractor have any claim for related costs, direct or indirect. The Contract time determinations have accounted for potential work restriction during this period and Contractor's should plan accordingly. Any necessary or emergency work required during this time will require District approval.

SOIL MANAGEMENT

CONTAMINATED SOIL

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.

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.

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.

POTENTIALLY IMPACTING CONDITIONS

The following is a summary of the information obtained during the file review for the release sites at Rte 28 Upper County Rd, Dennis; 9 Bells Neck Rd, Harwich; and 4 Main St, Harwich.

RTN 4-933, Rte 28 Upper County Rd, Mobil Station 01-707

- The site is currently occupied by a gasoline service station, which has been present on the property since before 1979.
- RTN 4-933 was assigned to the site in 1990 after petroleum impacted soil and groundwater, along with light non-aqueous phase liquid (LNAPL), were encountered during an underground storage tank (UST) removal.
- Further investigation found benzene, toluene, ethylbenzene and xylene (BTEX), total petroleum hydrocarbons (TPH), lead, methyl tert-butyl ether (MTBE), and chlorinated solvents in groundwater.
- Groundwater on the site is found at depths ranging from six to nine feet below grade (bg).
- Remediation work at the site included the installation and operation of an air sparging (AS) and soil vapor extraction (SVE) system.
- A Class C-1 RAO was submitted for the site in 2008.
- Current activities at the site consist of monitored natural attenuation (MNA).
- Excavation between the intersection of Main Street and Upper County Road and the western end of work on those two streets may encounter contaminated soil and/or groundwater.

RTN 4-13326, 9 Bells Neck Rd, Rte 25 & Depot St

- This RTN is associated with tetrachloroethylene (PCE) and trichloroethylene (TCE) groundwater contamination of uncertain origin. Other potential RTNs associated with this plume are RTN 4-12054 (18 Hall Street, Dennis) and RTN 4-12832 (13 Hall Street, Dennis).
- As of 2003, the plume of chlorinated groundwater extended from the western end of work on Upper County Road and Main Street in Dennis to approximately the intersection of Main Street and Mansion Street in Harwich.
- The contamination in this area is generally found at depths of 30 feet or more bg. However, chlorinated solvents have been found at shallower depths in the past. The Environmental Health and Safety Plan prepared for the project should include a review of current groundwater conditions within the boundary of this plume if dewatering is anticipated.

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.

SUBSECTION 8.14 UTILITY COORDINATION, DOCUMENTATION, AND MONITORING RESPONSIBILITIES

A. GENERAL

In accordance with the provisions of Section 8.00 Prosecution and Progress, utility coordination is a critical aspect to this Contract. This section defines the responsibility of the Contractor and MassDOT, with regard to the initial utility relocation plan and changes that occur as the prosecution of the Work progresses. The Engineer, with assistance from the Contractor shall coordinate with Utility companies that are impacted by the Contractor's operations. To support this effort, the Contractor shall provide routine and accurate schedule updates, provide notification of delays, and provide documentation of the steps taken to resolve any conflicts for the temporary and/or permanent relocations of the impacted utilities. The Contractor shall provide copies to the Engineer of the Contractor communication with the Utility companies, including but not limited to:

- Providing advanced notice, for all utility-related meetings initiated by the Contractor.
- Providing meeting minutes for all utility-related meetings that the Contractor attends.
- Providing all test pit records.
- Request for Early Utility work requirements of this section (see below).
- Notification letters for any proposed changes to Utility start dates and/or sequencing.
- Written notification to the Engineer of all apparent utility delays within seven (7) Calendar Days after a recognized delay to actual work in the field – either caused by a Utility or the Contractor.
- Any communication, initiated by the Contractor, associated with additional Right-of-Way needs in support of utility work.
- Submission of completed Utility Completion Forms.

B. PROJECT UTILITY COORDINATION (PUC) FORM

The utility schedule and sequence information provided in the Project Utility Coordination Form (if applicable) is the best available information at the time of the bid and has been considered in setting the contract duration. The Contractor shall use all of this information in developing the bid price and the Baseline Schedule Submission, inclusive of the individual utility durations sequencing requirements, and any work that has been noted as potentially concurrent utility installations.

SUBSECTION 8.14 (Continued)

C. INITIATION OF UTILITY WORK

The Engineer will issue all initial notice-to-proceed dates to each Utility company based on either the:

1) Contractor's accepted Baseline Schedule
2) An approved Early Utility Request in the form of an Early Utility sub-net schedule (in accordance with the requirements of this Subsection)
3) An approved Proposal Schedule

C.1 - BASELINE SCHEDULE – UTILITY BASIS

The Contractor shall provide a Baseline Schedule submission in accordance with the requirements of Subsection 8.02 and inclusive of all of the information provided in the PUC Form that has been issued in the Contract documents. This is to include the utility durations, sequencing of work, allowable concurrent work, and all applicable considerations that have been depicted on the PUC Form.

C.2 – EARLY UTILITY REQUEST – (aka SUBNET SCHEDULE) PRIOR TO THE BASELINE

All early utility work is defined as any anticipated/required utility relocations that need to occur prior to the Baseline Schedule acceptance. In all cases of proposed early utility relocation, the Contractor shall present all known information at the pre-construction conference in the form of a 'sub-net' schedule showing when each early utility activity needs to be issued a notice-to-proceed. The Contractor shall provide advance notification of this intent to request early utility work in writing at or prior to the Pre-Construction meeting. Prior to officially requesting approval for early utility work, the Contractor shall also coordinate with MassDOT and all utility companies (private, state or municipal) which may be impacted by the Contract. If this request is acceptable to the Utilities and to MassDOT, the Engineer will issue a notice-to-proceed to the affected Utilities, based on these accepted dates.

C.3 – PROPOSAL SCHEDULE - CHANGES TO THE PUC FORM

If the Contractor intends to submit a schedule (in accordance with MassDOT Standard Specifications, Division I, Subsection 8.02) that contains durations or sequencing that vary from those provided in the Project Utility Coordination (PUC) Form, the Contactor must submit this as an intended change, in the form of a Proposal Schedule and in accordance with MassDOT Standard Specifications, Division I, Subsection 8.02. These proposed changes are subject to the approval of the Engineer and the impacted utilities, in the form of this Proposal Schedule and a proposed revision to the PUC form. The Contractor shall not proceed with any changes of this type without written authorization from the Engineer, that references the approved Proposal Schedule and PUC form changes. The submission of the Baseline Schedule should not include any of these types of proposed utility changes and should not delay the submission of the Baseline Schedule. As a prerequisite to the Proposal Schedule submission, and in advance of the utility notification(s) period, the Contractor shall coordinate the proposed utility changes with the Engineer and the utility companies, to develop a mutually agreed upon schedule, prior to the start of construction.

SUBSECTION 8.14 (Continued)

D. UTILITY DELAYS

The Contractor shall notify the Engineer upon becoming aware that a Utility owner is not advancing the work in accordance with the approved utility schedule. Such notice shall be provided to the Engineer no later than seven (7) calendar days after the occurrence of the event that the Contractor believes to be a utility delay. After such notice, the Engineer and the Contractor shall continue to diligently seek the Utility Owner's cooperation in performing their scope of Work.

In order to demonstrate that a critical path delay has been caused by a third-party Utility, the Contractor must demonstrate, through the requirements of the monthly Progress Schedule submissions and the supporting contract records associated with Subsection 8.02, 8.10 and 8.14, that the delays were beyond the control of the Contractor.

All documentation provided in this section is subject to the review and verification of the Engineer and, if required, the Utility Owner. In accordance with MassDOT Specifications, Division I, Subsection 8.10, a Time Extension will be granted for a delay caused by a Utility, only if the actual duration of the utility work is in excess of that shown on the Project Utility Coordination Form, and only if;

1) proper Notification of Delay was provided to MassDOT in accordance with the time requirements that are specified in this Section
2) the utility delay is a critical path impact to the Baseline Schedule (or most recently approved Progress Schedule)

E. LOCATION OF UTILITIES

The locations of existing utilities are shown on the Contract drawings as an approximation only. The Contractor shall perform a pre-construction utility survey, including any required test pits, to determine the location of all known utilities no later than thirty (30) calendar days before commencing physical site work in the affected area.

F. POST UTILITY SURVEY – NOTIFICATION

Following completion of a utility survey of existing locations, the Contractor will be responsible to notify the Engineer of any known conflicts associated with the actual location of utilities prior to the start of the work. The Engineer and the Contractor will coordinate with any utility whose assets are to be affected by the Work of this Contract. A partial list of utility contact information is provided in the Project Utility Coordination Form.

G. MEETINGS AND COOPERATION WITH UTILITY OWNERS

The Contractor shall notify the Engineer in advance of any meeting they initiate with a Utility Owner's representative to allow MassDOT to participate in the meeting if needed.

Prior to the Pre-Construction Meeting, the Contractor should meet with all Utility Owners who will be required to perform utility relocations within the first 6 months of the project, to update the affected utilities of the Project Utility Coordination Form and all other applicable Contract requirements that impact the Utilities. The Contractor shall copy the Engineer on any correspondence between the Utility Owner and the Contractor.

SUBSECTION 8.14 (Continued)

H. FORCE ACCOUNT / UTILITY MONITORING REQUIREMENTS
The Engineer will be responsible for recording daily Utility work force reports. The start, suspension, re-start, and completion dates of each of the Utilities, within each phase of the utility relocation work, will be monitored and agreed to by the Engineer and the Contractor as the work progresses.

I. ACCESS AND INSPECTION
The Contractor shall be responsible for allowing Utility owners access to their own utilities to perform the relocations and/or inspections. The Contractor shall schedule their work accordingly so as not to delay or prevent each utility from maintaining their relocation schedule.

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.

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.

BUILD AMERICA BUY AMERICA PREFERENCE

On Federally-aid projects the Buy America (23.CFR § 635.410) and Build America, Buy America Act (Pub. L. No. 117-58, §§ 70901-52). 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 the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation; and

BUILD AMERICA BUY AMERICA PREFERENCE (Continued)

(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.

NOTE: The requirements for manufactured products indicated in paragraph (2) above are not in effect for this contract.

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.

HOLIDAY WORK RESTRICTIONS (Continued)

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.

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.

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.

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.

NATIONAL GRID EMERGENCY TELEPHONE NUMBERS

GAS:
Emergency: 1-800-233-5325
New Service: 1- 877-696-4743
Customer Support: 1-800-732-3400

EVERSOURCE EMERGENCY TELEPHONE NUMBERS

ELECTRIC:
Outage/ Emergency: 800-592-2000 or 844-726-7562
New Service: 1-888-633-3797 (1-888-need pwr)
Customer Support: 1-800-340-9822

NOTICE TO OWNERS OF UTILITIES

(Supplementing Subsection 7.13)

Written notice shall be given by the Contractor to all public service corporations or officials owning or having charge of publicly or privately owned utilities of his/her intention to commence operations affecting such utilities at least one week in advance of such operations. The Contractor shall, at the same time, file a copy of each notice with the Engineer.

Before the Contractor begins any work or operation that might damage subsurface structures, he/she shall carefully locate all such structures and conduct his operations so as to avoid any damage to them.

A list of public and private utilities can be found on the MassDOT website at:

https://www.mass.gov/info-details/utility-contacts-by-district-and-municipality

Select District 5

Select the Towns of DENNIS or HARWICH and then locate the utility.

The utility contact list is for guidance only and is not guaranteed to be complete or up to date.

Notification Of Public Officials

Town officials are shown at website https://www.mass.gov/lists/massachusetts-cities-and-towns and select the required City/Town website.

State Police are shown at website https://www.mass.gov/info-details/massachusetts-state-police-troop-boundaries. Select the area of jurisdiction to find the local station.

The following are the names of owners and representatives of the principal utilities affected, but the completeness of this list is not guaranteed:

NOTICE TO OWNERS OF UTILITIES (Continued)

TOWN OF DENNIS

Municipality	Pole Set Responsibility	Updated
DENNIS	Eversource	1/11/2018

District Utility/Constructability Engineer

County	District	Contact	Phone	Email
Barnstable	5	Christopher Lockett	857-368-5073	Christopher.lockett@state.ma.us

Utility Data

Electric

Company	Address	City	StateZip	Updated
Eversource Electric "B"	50 Duchaine Blvd.	New Bedford	MA 01745	

Contact	Office	Extension	Email	
Ned Sadowski			ned.sadowski@eversource.com	2/7/2024

Gas

Company	Address	City	StateZip	Updated
National Grid Gas	170 Data Dr	Waltham	MA 02451	12/19/2023

Contact	Office	Extension	Email	
Melissa Owens	781-907-2845		Melissa.Owens@nationalgrid.com	9/4/2012

Telephone

Company	Address	City	StateZip	Updated
Verizon	385 Myles Standish Blvd.	Taunton	MA 02780	11/8/2013

Contact	Office	Extension	Email	
Karen Mealey	774-409-3160		karen.m.mealey@verizon.com	8/29/2012

Water

Company	Address	City	StateZip	Updated
Dennis Water District	80 Old Bass River Road (P.O. Box 2000)	South Dennis	MA 02660	

Contact	Office	Extension	Email	
David Larkowski	508-398-3351			4/4/2014

Railroad

Company	Address	City	StateZip	Updated
Mass Coastal Railroad	12 Harding Street, Unit 202	Lakeville	MA 02347	6/18/2019

Contact	Office	Extension	Email	
Chris Podgurski	508-291-2116		cpodgurski@capetrain.com	3/11/2015

NOTICE TO OWNERS OF UTILITIES (Continued)

TOWN OF DENNIS (Continued)

Cable

Company	Address	City	State	Zip	Updated
Comcast Cable Corporation	PO Box 6505, 5 Omni Way	Chelmsford	MA	01824	8/8/2018

Contact	Office	Extension	Email	
Wendy Brown	978-848-5163		Wendy_Brown@comcast.com	4/22/2024

Company	Address	City	State	Zip	Updated
Eversource Fiber	247 Station Drive, Mail Stop: SUM SE 320	Westwood	MA	02090	8/1/2018

Contact	Office	Extension	Email	
Bechir Khoury	781-441-3864		bechir.khoury@eversource.com	10/7/2022

DPW

Company	Address	City	State	Zip	Updated
Dennis Town Engineer	120 Theophilus F. Smith Road	South Dennis	MA	02660	9/1/2011

Contact	Office	Extension	Email	
Thomas Andrade	508-760-6166		tandrade@town.dennis.ma.us	3/13/2025

Other

Company	Address	City	State	Zip	Updated
Open Cape	3195 Main Street	Barnstable	MA	02630	8/26/2025

Contact	Office	Extension	Email	
Corinne Green			Corinne@opencape.org	8/26/2025

Company	Address	City	State	Zip	Updated
Verizon Wireless Small Cell	20 Alexander Drive	Wallingford	CT	06492	10/27/2022

Contact	Office	Extension	Email	
Elizabeth Glidden			elizabeth.glidden@vzw.com	3/25/2025

NOTICE TO OWNERS OF UTILITIES (Continued)

TOWN OF HARWICH

HARWICH - Pole Data

Municipality	Pole Set Responsibility	Updated
HARWICH	Verizon	1/11/2018

District Utility/Constructability Engineer

County	District	Contact	Phone	Email
Barnstable	5	Christopher Lockett	857-368-5073	Christopher.lockett@state.ma.us

Utility Data

Electric

Company	Address	City	State	Zip	Updated
Eversource Electric "B"	50 Duchaine Blvd.	New Bedford	MA	01745	

Contact	Office	Extension	Email	
Ned Sadowski			ned.sadowski@eversource.com	2/7/2024

Gas

Company	Address	City	State	Zip	Updated
National Grid Gas	170 Data Dr	Waltham	MA	02451	12/19/2023

Contact	Office	Extension	Email	
Melissa Owens	781-907-2845		Melissa.Owens@nationalgrid.com	9/4/2012

Telephone

Company	Address	City	State	Zip	Updated
Verizon	385 Myles Standish Blvd.	Taunton	MA	02780	11/8/2013

Contact	Office	Extension	Email	
Karen Mealey	774-409-3160		karen.m.mealey@verizon.com	8/29/2012

Water

Company	Address	City	State	Zip	Updated
Harwich Water Department	196 Chatham Road	Harwich	MA	02645	3/5/2008

Contact	Office	Extension	Email	
Craig Wiegand	508-432-0304			6/2/2011

NOTICE TO OWNERS OF UTILITIES (Continued)

TOWN OF HARWICH (Continued)

Cable

Company	Address	City	State	Zip	Updated
Comcast Cable Corporation	PO Box 6505, 5 Omni Way	Chelmsford	MA	01824	8/8/2018
Contact	**Office**	**Extension**	**Email**		
Wendy Brown	978-848-5163		Wendy_Brown@comcast.com		4/22/2024

Company	Address	City	State	Zip	Updated
Crown Castle	80 Central Street	Boxborough	MA	01719	1/18/2018
Contact	**Office**	**Extension**	**Email**		
Mark Bonanno	508 616 7818		mark.bonanno@crowncastle.com		7/17/2018

Company	Address	City	State	Zip	Updated
Eversource Fiber	247 Station Drive, Mail Stop: SUM SE 320	Westwood	MA	02090	8/1/2018
Contact	**Office**	**Extension**	**Email**		
Bechir Khoury	781-441-3864		bechir.khoury@eversource.com		10/7/2022

DPW

Company	Address	City	State	Zip	Updated
Harwich DPW	732 Main Street	Harwich	MA		6/2/2011
Contact	**Office**	**Extension**	**Email**		
Lincoln Hooper	508-430-7555				6/2/2011

Other

Company	Address	City	State	Zip	Updated
Open Cape	3195 Main Street	Barnstable	MA	02630	8/26/2025
Contact	**Office**	**Extension**	**Email**		
Corinne Green			Corinne@opencape.org		8/26/2025
Company	**Address**	**City**	**State**	**Zip**	**Updated**
Verizon Wireless Small Cell	20 Alexander Drive	Wallingford	CT	06492	10/27/2022
Contact	**Office**	**Extension**	**Email**		
Elizabeth Glidden			elizabeth.glidden@vzw.com		3/25/2025
Company	**Address**	**City**	**State**	**Zip**	**Updated**
Barnstable County IT			MA		3/7/2023
Contact	**Office**	**Extension**	**Email**		
Bill Traverse			btraverse@capecod.gov		3/7/2023

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. The schedule type applicable to this project is established in the project special provisions.

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

722.1	SCHEDULE OF OPERATIONS (TYPE A) - FIXED PRICE $_____	LUMP SUM
722.2	SCHEDULE OF OPERATIONS (TYPE B) - FIXED PRICE $_____	LUMP SUM
722.3	SCHEDULE OF OPERATIONS (TYPE C) - FIXED PRICE $_____	LUMP SUM

ITEM 102.2 TREE TRIMMING LUMP SUM

The work under this Item shall conform to the relevant provisions of Subsections 8.08 and 101 of the Standard Specifications and the following:

The work consists 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, other areas as described on the plans, and as required by the Engineer from trees located within the limits of the Project and the satisfactory disposal of all such removed debris.

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 the 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 in order 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.

BASIS OF PAYMENT

Item 102.2, Tree Trimming will be paid at the contract LUMP SUM price, which price shall be considered full compensation for all labor, certifications, materials, equipment, apparatus, tools and incidentals necessary to complete the work.

ITEM 102.511 TREE PROTECTION – ARMORING AND PRUNING EACH

The work under this Item shall conform to the relevant provisions of Subsection 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.

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.

ITEM 102.511 (Continued)

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.

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 Sections 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 directed.

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 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.

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.

ITEM 102.521 (Continued)

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 DAMAGES 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.

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.

ITEM 102.521 (Continued)

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 Section 771.

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 102.55 ARBORIST HOUR

The work under this Item is for the services of a Certified Arborist. Arborist shall be an International Society of Arboriculture (ISA) Certified Arborist or a Massachusetts Certified Arborist. The Arborist shall have at least 10 years of experience in tree care, including tree protection during construction, and shall demonstrate a familiarity with the American National Standards Institute (ANSI) A300 Standard Practices for Tree, Shrub, and Other Woody Plant Maintenance Part 1Pruning, Part 5 Construction Management Standards, and Part 9 Tree Risk Assessment.

The Arborist's general responsibilities include protecting high priority trees within and adjacent to the project limits, stating areas, and access routes; recommending removal of diseased, damaged or otherwise unhealthy trees that pose a potential safety hazard; evaluating effects of construction on future health of trees close to proposed work; and recommending and/or overseeing tree work amd care.

The Arborist for this Item shall not be from the same company as the company responsible for selective clearing or tree removal work.

For projects with multiple phases, projects where construction activities (work or stockpiling) shifts, or when otherwise directed by the Engineer, the Arborist shall re-evaluate conditions and provide follow-up recommendations.

SUBMITTALS

A Contractor shall submit to the Engineer for approval by MassDOT Landscape Design the qualifications and experience of the Arborist. Submittal shall include copy of current certification and a resume summarizing specific construction experience (including relevant MassDOT projects) for a minimum of five projects.

B Arborist's Report documenting recommendations shall be submitted to the Engineer and an electronic copy forwarded to MassDOT Landscape Design Section. Report shall include the following:

SCOPE OF WORK

The Arborist shall be responsible for the following tasks:

- Initial Evaluation and Report
  - recommend and prioritize trees that require removal as appropriate to contract scope, project limits, and project intent;
  - review and modify, if necessary, tree protection measures shown on the drawings
  - review and mark limits of protective fencing for trees and groups of trees to be retained;
  - review and recommend protection measures for high priority trees;
  - submit a marked-up Construction Plan that briefly notes recommendations and decisions made in the field;
  - submit a corresponding report including photo documentation;
- Oversight
  - direct or execute pruning of branches and/or roots, air spading, and/or other tree care operations

ITEM 102.55 (Continued)

- Monitoring and Inspections
  - periodically inspect fencing and ensure root zones are properly protected and clear of equipment and materials as required by the Engineer
  - reevaluate tree protection measures for various phases of a project
  - submit inspection notes with relevant and dated photos to the Engineer.
- Special Care
  - oversee tree pruning for health and aesthetics
  - recommend fertilization and amendments
  - recommend and oversee pest control

METHODS

Prior to any work, the Arborist shall walk the site with the Contractor, the Engineer, the Town Tree Warden, and, if specified, the MassDOT Landscape Architect, to review trees, limits of construction activities, and other concerns. Where required for proper assessment of tree impacts, limits of work shall be staked or otherwise marked in the field prior to the site walk.

Trees to be removed shall be painted or otherwise marked.

Trees to be retained shall be marked such that it does not mar or damage the tree and such that marker is not easily removed. As applicable to the work and scope of the project, trees designated for removal or to be retained shall be noted on the plan and/or in the arborist's report and photographed.

Trees designated to remain that are damaged or removed by construction activities shall be noted and photographed for inclusion in inspection reports submitted to the Engineer.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 102.55 will be measured for payment by the HOUR of time spent onsite.

Item 102.55 will be paid at the contract unit price per HOUR upon submittal and acceptance of Reports described above.

ITEM 156.3 CRUSHED STONE FOR BACKING TON

The work under this Item shall conform to the relevant provisions of Subsection 150 of the Standard Specifications and the following:

Work under this Item consists of furnishing and installing crushed stone for use in sewer and water pipe installations.

MATERIALS

Crushed stone for backing shall be ¾" crushed stone and meet the gradation requirements of M2.01.4 on Table M2.01.0-1.

METHOD OF MEASUREMENT

Item 156.3 Crushed Stone for Backing will be measured for payment by the TON, complete in place.

BASIS OF PAYMENT

Item 156.3 Crushed Stone for Backing will be paid at the Contract unit price per TON; which price shall be full compensation for all labor, materials, equipment and incidental costs required to complete the work.

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 Sub-Contractors 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)

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 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.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

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 Massachusetts Department of Environmental Protection (DEP) shall be submitted for all work assignments listed for the LSP and environmental technicians. Upon approval of the LSP Qualifications, the LSP will be designated as the LSP of Record unless MassDOT designates in writing otherwise. The LSP of Record will serve as the primary point of contact for all hazardous material matters on the project.

The LSP shall evaluate soil and/or sediment with discoloration, odor, elevated field screening results, presence of petroleum liquid or sheen 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 media. Any enhanced management of contaminated soil to ensure proper stockpiling and storage is incidental to the LSP Services Item. The LSP shall evaluate the need for confirmatory sampling prior to backfill in areas where contaminated material has been excavated and disposed off-site for compliance with applicable regulatory requirements. The Engineer shall approve the locations of the testing sites prior to the sampling.

Contaminated media shall be handled in accordance with all applicable state and federal statutes, regulations, and policies. The LSP shall adequately evaluate contaminated media for compliance with the requirements of the MCP and Department Policies.

ITEM 180.03 (Continued)

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 both shall 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 tabular format which tracks the excavation, stockpiling, analysis and reuse/disposal of all known/suspect contaminated media. These records shall be up-to-date and submitted to the Engineer on a bi-weekly basis. The LSP shall review and summarize the laboratory data from any analyses performed on contaminated media in a tabular format and compare the results to applicable reporting thresholds. A report shall be delivered to the Engineer outlining the material sampling methods, laboratory analysis results, evaluation of applicable regulatory exemptions, reporting obligations, 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 Engineer before submittal to the DEP, except if an imminent hazard condition exists as defined in 309 CMR 4.03(4)(b).

ITEM 180.03 (Continued)

Laboratory Testing in Support of LSP Services

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 and are incidental to Items 181.11-181.14.

In order to maintain compliance with the MCP and Department Policies 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. No sampling shall be conducted without prior approval from the Engineer. 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.

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.

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 identified 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.

This Item is for LSP work for compliance with the MCP and Department Policies. LSP hours and any laboratory testing related to off-site disposal of excess soil and sediment is incidental to Items 181.11-181.14 (including, but not limited to, disposal characterization, disposal package preparation, landfill acceptance, shipment paperwork preparation, field screening, and tracking).

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.

ITEMS 181.11 thru 181.14 (Continued)

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:

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 thru 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 thru 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.

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.

ITEMS 181.11 thru 181.14 (Continued)

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 penalties and/or for 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 base plan 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.

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.

ITEMS 181.11 thru 181.14 (Continued)

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.

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.

ITEMS 181.11 thru 181.14 (Continued)

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 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 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 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 181.13 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 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 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 under this Item shall include 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. The Contractor must provide for a Massachusetts Department of Labor and Workforce Development (MADLWD)-certified Asbestos Inspector to conduct all sampling of suspect asbestos-containing materials prior to disturbance of 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, American Industrial Hygiene Association and National Voluntary Laboratory Analytical Program accredited laboratory shall be used to perform all necessary analysis. All analysis of asbestos bulk samples shall be performed using Polarized Light Microscopy (PLM) with dispersion staining in accordance with EPA Interim Method for the Determination of Asbestos In Bulk Insulation Samples (Title 40 CFR, EPA Method 600/R093/116, July 1993).

Dust suppression in the form of light water sprays with a surfactant will be implemented as required to control dust during any disturbance of asbestos suspected material during sampling. 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.

REGULATIONS

- United States Department of Labor, Occupational Safety and Health Administration (OSHA) including but not limited to:
  - 29 CFR 1910 Section 1001 and 29 CFR 1926 Section 1101, Asbestos
  - 29 CFR 1910 Section 134 Respiratory Protection
  - 29 CFR 1926 Construction Industry Standards
  - 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

- United States 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 763, Worker Protection Rule
  - 40 CRF Part 763, Asbestos Hazard Emergency Response Act (AHERA)
  - 40 CFR 61 Subpart A Regulation for Asbestos
  - 40 CFR 61 Subpart M (Revised Subpart B) National Emission Standard for Asbestos
- United States Department of Transportation 49 CFR 172 and 173

ITEM 182.1 (Continued)

- Massachusetts Department of Labor and Workforce Development Regulations (MADLWD) 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:
    - 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 Inspectional Services Departments.

Wherever there is a conflict or overlap of the above references, the most stringent provision shall apply.

BASIS OF PAYMENT

The costs of materials, tools, equipment and labor is to be paid for by the LUMP SUM for the complete inspection and testing of the asbestos suspected materials.

Inspection and Testing for Asbestos will be paid for at the Contract LUMP SUM price, which price shall include all labor, material, equipment, inspecting, testing, protection of public and incidental costs required to complete the work.

Payment will be at the contract unit prive per Lump Sum as specified above including all materials, tools, equipment and labor to complete the inspecting and testing of the asbestos suspected material

All costs in connection with the protection of general public, private property, and all costs associated with the proper inspecting and testing of the material shall be included in the price and no additional compensation will be allowed.

ITEM 182.2 REMOVAL OF ASBESTOS FOOT

The work shall include the removal and satisfactory disposal of existing asbestos, which may include (but not be limited to) asbestos-containing materials found in buried debris on-site as well as asbestos-containing conduits/utilities. 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 HASP may pose a safety hazard to the workers.

Large metal canisters are sometimes used for asbestos waste disposal. These must be completely enclosed and have doors that can be closed and locked to prevent vandalism or other disturbances of the asbestos and wind dispersion of asbestos fibers. Uncontainerized material shall not be placed in these canisters, nor shall these canisters be used for non-asbestos waste. Bags shall be placed, not thrown, into these canisters to avoid splitting. These canisters must have warning signs conforming to OSHA 29 CFR 1926.1101(k) posted at all potential entry points.

Trucks, canisters and/or other transport equipment shall be properly placarded according to the DOT; warning tapes shall be placed obviously around transport vehicles per EPA 40 CFR Part 61 prior to loading or unloading asbestos contaminated waste.

NOTIFICATIONS AND PERMITS

A Non-Traditional Asbestos Abatement Work Plan (NTAWP) may be required to complete the work and shall be prepared by the Contractor and transmitted to MassDEP using the prescribed form (AQ 36: Non-Traditional Work Practice Approval) at least 30 days prior to the start of asbestos removal work. The Contractor shall prepare a formal pre-notification form (i.e. AQ 04, ANF-001) at least ten (10) days prior to the start of asbestos removal work. These forms/applications 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.

ITEM 182.2 (Continued)

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.

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.

ITEM 182.2 (Continued)

1. Name, experience and DLI certification of proposed Supervisors and Foreman responsible for asbestos work, Also, Contractor's Industrial Hygiene MDLWD Consultant's license and consultant's laboratory license to analyze asbestos air samples. The Contractor shall be responsible for all clearance air monitoring and project monitoring.

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. Include chain of command of responsibility at Work Site, including supervisors, foremen, and competent person, and their names, resumes, and certificates of training.

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 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. The plan must also include a list of all equipment to be used on-site, by make and model, including negative air pressure equipment, HEPA filter-equipped vacuums, water atomizing devices, waste removal equipment and vehicles to be used.

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 all notifications to federal, state and local government agencies, permits, applications, licenses, and like documents required by federal, state, or local regulations obtained or submitted in proper fashion to perform the work required by these Specifications. Copies of the asbestos notification to MassDEP must be provided one week in advance of submittal to MassDEP for Engineer review.

7. Name, location and applicable approval certificates for primary and secondary landfill for disposal of asbestos-containing or asbestos contaminated waste. Name, address and license number(s) of hauler permitted to transport waste. (Submit copies of completed manifests upon disposal).

ITEM 182.2 (Continued)

8. Waste Shipment Record (WSR) must be provided and shall be used to document asbestos-containing wastes removed from the Site, in accordance with EPA regulation Title 40 CFR Part 61.149. The WSR shall include the name and address of the facility at which the waste is; the Owner's name, address and phone number; names, addresses and phone numbers of Contractor; waste transporter(s); and authorized disposal site. Contractor, transporter and disposal site operator must all sign and date the WSR as responsibility for material changes hands. In addition, the WSR must include the type of asbestos waste materials generated, the number and type of waste containers used, and the quantity of each type of waste in cubic yards.

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 AND BASIS OF PAYMENT

ITEM 182.2 Removal of Asbestos will be measured as a unit 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 necessary to complete the work.

All costs in connection with the protection of the general public, private property and all costs associated with the proper disposal of the material removed shall be included in the price bid and no additional compensation will be allowed.

ITEM 183.1 **TREATMENT OF CONTAMINATED GROUNDWATER** **GALLON**

This Item addresses the treatment and disposal of contaminated groundwater encountered during excavation operations. The work generally consists of furnishing the materials, equipment, labor, services, testing/sampling, waste characterization, transportation, disposal, permits and agreements necessary to perform the work required for the collection, treatment and disposal of contaminated groundwater.

The Contractor is advised that contaminated groundwater may be encountered during dewatering activities. The levels and nature of contamination may vary depending on location and/or depth. No data has been provided in this specification indicating the types of contaminants that may be found in groundwater encountered during this work. It will be the responsibility of the Contractor to ensure that water removed during dewatering operations is treated and disposed of in accordance with all applicable laws and regulations and in accordance with this specification.

The Contractor shall monitor the quantity of groundwater collected for treatment using an in-line totalizer flowmeter or an alternate method approved by MassDOT. The Contractor shall, at all times, minimize the quantity of groundwater removed from the excavations. All groundwater determined to be contaminated will be managed in accordance with all applicable local, state and federal regulations.

It is not the intent herein for the Department to design for or specify to the Contractor which particular treatment is to be used, if necessary. Rather, it is the Department's intent to provide guidance to the Contractor for informational and bidding purposes only. It is, therefore, the Contractor's responsibility to use a treatment method to allow him/her to meet any and all laws, regulations, policies, guidelines and permit requirements. Treatment of contaminated groundwater for dewatering operations is generally performed using a mobile treatment trailer equipped with one or more granular-activated carbon (GAC) canisters, although other techniques are also used.

It is likely that treatment of the contaminated groundwater using granular-activated carbon will be required to complete the work under this Contract. The Methods described under Item 183.1 provides for the identification, testing, management and treatment or disposal of contaminated groundwater and shall be implemented, at a minimum and as necessary by the Contractor via Methods under Item 183.1.

The overall handling and management of contaminated groundwater is regulated under the provisions of 310 CMR 40.0000, 314 CMR 3.00 and 5.00, NPDES and other applicable laws. The unpermitted discharge of contaminated dewatering effluent into the environment (storm drain, surface water body, onto the ground) is a violation of federal and state laws and regulations. Should dewatering of contaminated groundwater be necessary, approvals must be sought from the appropriate federal, state, or local regulatory jurisdiction. The USEPA will not specify a treatment system or method, but normally requires that the treated discharge meet Massachusetts Drinking Water Standards.

ITEM 183.1 (Continued)

The discharge standards are normally met by treating the dewatered groundwater through granular-activated carbon canisters, or similar techniques. Longer term discharges to surface waters or storm drains, and any discharges to the ground, require approval and/or issuance of a permit from the DEP Division of Water Pollution Control. The Contractor shall be responsible for applying for, paying all fees for and obtaining all permits required for treatment and/or disposal of contaminated groundwater. Additional requirements may be mandated by local/regional sewer authorities for discharge to sanitary sewer or Publicly Owner Treatment Works (POTW). Copies of permit applications and correspondence from federal and state agencies and sewer authorities shall be supplied to the Engineer prior to dewatering activities.

EPA regulations published in the Federal Register on September 9, 2005 (70 FR 53663) require a National Pollutant Discharge Elimination System (NPDES) Remediation & Miscellaneous Contaminated Sites General Permit (RGP) for all contaminated construction site dewatering activities in Massachusetts (MAG910000) that will involve the discharge of water to classes of receiving waters designated in the Massachusetts Water Quality Standards (314 CMR 4.00). The application requires that operators of proposed new discharges seeking coverage under this general permit submit a Notice of Intent (NOI) to EPA New England post-marked at least 14 days prior to commencement of discharge. The Contractor is solely responsible for applying for and obtaining coverage under the NPDES Remediation General Permit from EPA and, if applicable, DEP, including the costs associated with sampling and analysis of groundwater and any application fees. The Contractor is required to submit a completed copy of the NOI to the Engineer and the Director of Environmental Programs, Construction Division, 10 Park Plaza, Boston, prior to commencement of discharge.

Upon permanent cessation of the discharges authorized by the RGP, the Contractor shall be responsible for submitting a Notice of Termination (NOT) to EPA New England within 30 days of the permanent cessation. The Contractor is required to submit to MassDOT a completed copy of the NOT within 14 days of the permanent cessation of the discharges authorized by the RGP. All costs and fees associated with the submission of the NOT will be the responsibility of the Contractor.

The Contractor shall be responsible for adhering to regulations, specifications, and recognized standard practices related to contaminated groundwater handling during dewatering activities. MassDOT shall not be responsible at any time for the Contractor's violation of pertinent local, 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 Department of Environmental Protection (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 this work.

ITEM 183.1 (Continued)

The Contractor shall be responsible for determining compliance with the requirements of any permit and for any sampling, testing, and disposal required in connection with said permits. MassDOT and the City/Town reserve the right to collect additional samples of dewatered groundwater to determine the Contractor's compliance with the Permit's requirements. All laboratory testing is to be performed by a DEP certified laboratory for all parameters being tested. Copies of all field and laboratory testing results, reports, etc. required by the permits must be supplied to the Engineer. MassDOT, DEP, and the permit-granting agency, where applicable, reserve the right to collect additional samples of discharged groundwater to verify compliance with permit requirements.

For the purpose of these specifications and to establish a basis for the bid, it is anticipated that granular-activated carbon will be the treatment medium for dewatered contaminated groundwater. The bidder shall factor into the payment Item all costs associated with the testing and analyses that may be required by the permitting agency. In addition, any laboratory testing of groundwater is to be performed by a DEP certified laboratory for the parameters being tested. Copies of all field and laboratory testing results will be supplied to the Engineer. Bid price shall also include full compensation for labor, materials, maintenance, mobilization, rental and other related costs. Item 183.2 will be used for disposal of used granular-activated carbon canisters.

SUBMITTALS:

Prior to initiating work, the Contractor shall submit an excavation dewatering plan to the MassDOT that includes a detailed description of the approach to dewatering, a description of methodology for sealing the excavation to minimize infiltration of groundwater, if deemed applicable to the work, anticipated treatment, discharge points, sampling frequency, required permits, transporters and waste facilities complete with license numbers, permit numbers, contact person, and address and telephone number that the Contractor plans to utilize for waste disposal. The plan shall be submitted for the record.

The Contractor shall submit to MassDOT for review, the proposed methods for dewatering and groundwater treatment and disposal for the various portions of the work to be done. The review shall be for methods only. The Contractor shall remain responsible for the maintenance, performance, structural integrity and safety of the systems installed for this work as well as regulatory compliance of the applicable local, state and federal discharge standards. The Contractor shall provide all groundwater sampling and analyses, results and reports required by all applicable local, state and federal agencies. The Contractor shall submit to MassDOT for review all plans and documents that must be submitted to the EPA and DEP, including NOI, NOT, treatment system analytical reports and correspondence. Copies of all permits and approvals and lab analyses and test results associated with groundwater treatment and disposal must be submitted to MassDOT within 3 days of receipt by the Contractor.

ITEM 183.1 (Continued)

ESTABLISHMENT OF TREATMENT PROCEDURE:

Since concentrations of contaminants in groundwater cannot be easily assessed in the field, all groundwater extracted from the ground will be considered contaminated and will be initially pumped and stored into open settling tank(s) or a fractionation tank until it can be sampled and analyzed, unless otherwise directed by MassDOT. The Contractor will perform initial sampling and analyses of the groundwater to determine the need for a permit to dispose of contaminated groundwater. Based on the results of the initial sample analysis, which must be provided to the Engineer within twenty-four (24) hours of the time the samples are received by the laboratory, the Contractor will determine the necessity for treatment(s) and disposal procedures. Sampling must also be performed to meet applicable discharge criteria as set by the appropriate regulatory agencies for the permit obtained for disposal. All discharges must meet regulatory standards set forth in the permits required for discharge. For the purposes of the bidding process, it is anticipated that the treatment system will consist of sedimentation tanks, an oil water separator and liquid-phase granular activated carbon as the primary on-site treatment medium for dewatered contaminated groundwater. MassDOT may require additional treatment processes if such is determined necessary during the groundwater testing procedure. The Contractor shall integrate the additional treatment process into the treatment system, if necessary.

The Contractor shall provide all labor, equipment and appurtenances required to treat the groundwater, subject to the approval of MassDOT. Groundwater stored and tested but not requiring treatment or off-site disposal shall be discharged to a location subject to the approval of MassDOT without payment to the Contractor.

TREATMENT UNITS:

The Contractor shall furnish all labor and materials, and shall install and operate temporary groundwater treatment and disposal system(s) as necessary to treat contaminated groundwater pumped from excavations during construction activities under the Contract. Such systems shall be capable of treating groundwater to meet applicable discharge criteria as set by the appropriate regulatory agencies.

The Contractor or their Environmental Consultant shall operate, maintain and modify the selected treatment system, and conduct the necessary monitoring and reporting of influent, midpoint and effluent results, as required by the discharge permit for the disposal option selected.

ITEM 183.1 (Continued)

METHOD OF MEASUREMENT:

Provide a treatment system that meets permit discharge requirements, mobilize it to the site, provide copies of laboratory analytical data indicating that the system is performing appropriately to meet permit requirements, and demobilize it from the site. This includes management and disposal of wastes generated during treatment prior to discharging such as activated carbon, etc. Work under Item 183.1 is based upon the number of GALLONs disposed or contaminated groundwater pumped through the granular-activated carbon (Item 183.2) as the medium for the treatment of contaminated groundwater that is found in pipe trenches, manhole excavations, catch basin excavations, that need to be dewatered.

BASIS OF PAYMENT:

Payment shall be made at the unit price bid per GALLON of groundwater pumped, stored, treated as needed and tested as required by discharge permits and regulatory requirements, which price shall be full compensation for all necessary labor and materials, mobilization, maintenance, demobilization of the appropriate unit(s), freight, rental costs, field and laboratory testing costs and permits. Costs associated with the disposal of granular-activated carbon shall be covered under Item 183.2.

ITEM 183.2 DISPOSAL OF GRANULAR-ACTIVATED CARBON POUND

Work under Item 183.2 is based upon the disposal of used granular-activated carbon as the treatment medium for contaminated groundwater (Item 183.1) that is found during excavations in which contaminated groundwater is encountered.

BASIS OF PAYMENT

Payment shall be made at the unit price bid per pound of carbon that is properly disposed and replaced, as necessary, to meet treated water discharge requirements during dewatering operations at the site. Payment for Disposal of Granular Activated Carbon shall include compensation for all labor, equipment, materials, permits, characterization, sampling and on-site or laboratory analysis as needed or required by permits, for replacement and disposal of liquid-phase activated carbon for the on-site contaminated groundwater pumping, collection, treatment and treated water discharge system during the time period required to complete the work. No payments shall be made for replacing carbon which is spent due to the Contractor's failure to remove floating petroleum product or excess sediments prior to the groundwater entering the carbon treatment units. All other costs associated with treatment of contaminated groundwater will be covered under Item 183.1- Treatment of Contaminated Groundwater.

ITEM 184.1 DISPOSAL OF TREATED WOOD PRODUCTS TON

Work under this Item shall include the disposal of treated (contaminated) wood products excavated and stockpiled within the project limits.

The selected method of recycling/disposal of treated wood products shall comply with the methods in accordance with all Massachusetts Department of Environmental Protection and Environmental Protection Agency statutes, policies and regulations. Treated wood products shall be disposed of at an approved and appropriately permitted facility in accordance with federal, state and local codes and regulations.

The Contractor shall obtain samples of treated wood products as required by the disposal facility and arrange off-site laboratory analysis necessary for the off-site disposal of treated wood products. The sampling frequency and analysis shall be as specified by the disposal facility selected by the Contractor.

After chemical analyses are obtained the Contractor shall load and transport the treated wood products to the approved disposal facility. The Contractor shall be responsible for providing certified weight slips and fully executed Bills of Lading to the Resident Engineer of the actual quantities of material shipped to the disposal facility. The Contractor shall be responsible for providing all personnel and materials to support the anticipated levels of protection and monitoring described above.

SUBMITTALS

The Contractor shall be responsible for identifying a disposal facility and obtaining and submitting to the Resident Engineer for review and approval, all operations permits, licenses or other appropriate documentation indicating that the disposal facility selected is in compliance with federal, state and local regulations. The Contractor shall not transport contaminated wood products from the site until prior written approval of the Disposal Facility is received.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Disposal of Treated Wood Products shall be measured for payment by the TON as verified by weight slips from the disposal facility.

Disposal of Treated Wood Products shall be paid for at the Contract Unit bid price per TON, which shall include all sampling, testing, transportation to a receiving facility, labor, material, equipment and incidental costs required to complete the work.

Removal of the existing wooden guardrail posts and blocks from their existing locations will be paid for under Item 630.2.

ITEM 192.6 MONITORING WELL ADJUSTED EACH

The work under this Item shall conform to the relevant provisions of Subsection 100 of the Standard Specifications and the following:

The work under this Item shall consist of adjusting existing monitoring wells within the shoulder/limit of grading of the path. The work includes removal of the existing cover/box, extending/cutting the riser pipe, and resetting the handhole to the required grade.

Care must be taken when removing the cover/box to ensure not to damage or misalign the riser pipe in any way. The cap shall remain on the riser pipe at all times to keep soil and other debris from entering the well.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

The work under Item 192.6 will be measured and paid for at the contract unit price per EACH, which price shall be full compensation for all labor, material, equipment and incidental costs required to complete the work.

ITEM 202.5 MANHOLE - 5 FOOT DIAMETER EACH
ITEM 202.52 MANHOLE - 5 FOOT DIAMETER (9 TO 14 FOOT DEPTH) EACH
ITEM 202.6 MANHOLE - 6 FOOT DIAMETER EACH

The work under these Items shall conform to the relevant provisions of Subsection 201 of the Standard Specifications and the following:

Manhole (5 foot diameter) shall be constructed with a minimum 5-foot inside diameter.

Manhole (6 foot diameter) shall be constructed with a minimum 6-foot inside diameter.

Pre-cast concrete basins shall consist of pre-cast reinforced riser sections, a flat slab top and top ring, and a base section conforming to the typical manhole details.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Items 202.5, 202.52 and 202.6 will be measured for payment respectively by the EACH manhole installed, complete in place.

Measurement for manholes will be based on a standard unit having a depth of 6½ feet, as measured vertically at the center of the structure from the top of the cover to the top of the floor. When the measured depth exceeds the standard unit, the number of units paid for will be in the proportion of the measured depth to the standard depth. Basins having a depth less than this standard unit will be counted as one unit.

Items 202.5, 202.52 and 202.6 will be paid for at their respective Contract unit prices per EACH, which price shall include all labor, materials, equipment, excavation, crushed stone, gravel base foundation, concrete collars, and all incidental costs required to complete the work.

Frames & Covers will be paid for separately.

ITEM 251.0125	**1.25 INCH HDPE LOW PRESSURE SEWER SERVICE**	**FOOT**
ITEM 251.03	**3 INCH HDPE FORCEMAIN**	**FOOT**
ITEM 256.	**FORCEMAIN MANUAL AIR RELEASE VALVE - COMPLETE**	**EACH**
ITEM 257.	**FORCEMAIN FLUSHING ASSEMBLY - COMPLETE**	**EACH**

Work under these Items shall conform to the relevant provisions of the MassDOT Standard Specifications and the Town of Harwich specifications contained in Document A00807.

ITEM 348.075	**3/4 INCH SEWER PIPE REMOVE AND RESET**	**FOOT**
ITEM 348.1	**1 INCH SEWER PIPE REMOVE AND RESET**	**FOOT**
ITEM 348.15	**1-1/2 INCH SEWER PIPE REMOVE AND RESET**	**FOOT**
ITEM 348.2	**2 INCH SEWER PIPE REMOVE AND RESET**	**FOOT**
ITEM 349.03	**3 INCH GATE VALVE**	**EACH**
ITEM 357.03	**3 INCH GATE BOX**	**EACH**
ITEM 371.06	**6 INCH COUPLING**	**EACH**
ITEM 371.08	**8 INCH COUPLING**	**EACH**
ITEM 371.12	**12 INCH COUPLING**	**EACH**
ITEM 376.3	**HYDRANT - REMOVED AND STACKED**	**EACH**

Work under these Items shall conform to the relevant provisions of the MassDOT Standard Specifications and the Town of Harwich specifications contained in Document A00807.

ITEM 375.06 6 INCH INSERTION VALVE AND BOX EACH
ITEM 375.08 8 INCH INSERTION VALVE AND BOX EACH

The work under these Items shall conform to the relevant provisions of Section 300 of the Standard Specifications and the following:

All work shall be completed in accordance with the plans and the Dennis Water District Specifications.

An inspector from the Town of Dennis Water District shall be present for the installation of the Items, unless otherwise directed by the Engineer.

DESCRIPTION

The Contractor shall furnish and install new insertion valves as indicated on the Drawings and amended as follows.

MATERIALS

Insertion valves shall meet AWWA material specifications. The insertion valves shall be as approved by the Town of Dennis Water District.

The Contractor shall submit shop drawings of the insertion valves for review and approval.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 375.06 and 375.08 will be measured for payment per EACH unit, complete in place.

Item 375.06 and 375.08 will be paid for at their respective Contract unit prices per EACH; which prices shall include all labor, materials, equipment and incidental costs required to complete the work.

ITEM 390. REMOVE AND RESET IRRIGATION LUMP SUM

The work under this Item shall conform to the relevant provisions of Subsection 300 of the Standard Specifications and the following:

This work shall consist of the removal and resetting of existing irrigation line and any other related hardware for the existing irrigation system as required at #77 Route 28, #114 Route 28, #121 Route 28 or as directed by the Engineer. Existing tracer wire will be reset above the irrigation line in the same approximate location of the irrigation line after disturbance due to construction.

If any irrigation system elements are damaged during constrution, the Contractor shall replace or repair the elements at no cost to the Town.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 390. will be measured and paid for at the Contract LUMP SUM price, which price shall be full compensation for all labor, material, equipment and incidental costs required to complete the work.

ITEM 403.2 FULL DEPTH RECLAMATION WITH EMULSIFIED ASPHALT STABILIZATION SQUARE YARD

The work under this Item shall conform to the Standard Specifications for Highways and Bridges and Supplemental Specifications for Section 403, these Special Provisions Item 403.2 and Special Provision Item 403.21 Emulsified Asphalt for Stabilization and the following.

All existing pavement areas within the project limits shall be reclaimed material for use as base and/or sub-base course on the project.

The work under this Item shall consist of development and submittal of Full Depth Reclamation (FDR) job mix formula with an emulsified asphalt stabilization, pulverizing the existing pavement structure and a portion of the existing roadway base material into a homogenous mass, grading, windrowing, excavating, compacting, performing multiple passes to blend emulsified asphalt stabilizer, and grading and compacting this material to the lines, grades, and dimensions shown on the plans or established by the Engineer. Note: Calcium chloride for dust control is prohibited for the reclamation operation with the emulsified asphalt stabilizer specified. Dust control as needed shall be water for dust control and controlled for the reclamation operation.

The Contractor shall first use all on-site reclaimed material, which is suitable or has been supplemented with Crushed Stone for Blending to be made suitable, under roadways, sidewalks, driveways, or other locations for base and sub-base courses as indicated on the Drawings or as indicated by the Engineer. After on-site reclaimed material has been exhausted, the Contractor may use additional, suitable borrow material brought in from off-site. The Contractor shall schedule his operations such that the re-use of reclaimed material be well coordinated with the generation of the material.

MATERIALS

Full Depth Reclamation: Reclaimed Pavement Borrow Material shall conform to the requirements of the latest Supplemental Specifications Subsection M1.09.0 of Division III Materials.

Emulsified Asphalt Stabilizer: The stabilizer shall be a emulsified asphalt, approved for full depth reclamation of asphalt pavements to provide adequate time of curing for full depth reclamation operation to grade and compact the sub-base and/or base course. Approved emulsions are: Grade MS-2, SS-1, SS-1h, CSS-1 or CSS-1h or approved equal.

Material Sampling and Testing: A minimum of twenty-eight (21) days prior to the start of construction, the Contractor shall sample and test the pavement layers to be reclaimed. The samples shall be taken randomly for the various areas of the work and based on location and variations in existing pavement material layers to be reclaimed. Samples of pavement shall consist of 6-inch diameter cores of the existing pavement and 50 lbs. of the underlying materials as required for development of the FDR job mix formulas. The composite materials shall be tested for gradation and development of job mix formulas.

ITEM 403.2 (Continued)

Developing and Testing for Full Depth Reclamation Job Mix Formula (JMF): The Contractor shall submit job mix formulas to the Engineer for review, comment and approval. The reclaimed sub-base material prior to stabilization shall be compacted to not less than 95 percent of the maximum dry density per the Standard Specifications for Highways and Bridges, Section 401.60 Gravel Sub-base.

JMF with Emulsified Asphalt: A minimum three-point curve based on either Marshall Stability (50 blow) or Tensile Strength with at least one point before and one point after the maximum Stability or Strength will be prepared using 50 blows per side specimen cured at 104F degree in a forced air oven for sixteen (16) to twenty four (24) hours. The recommended Asphalt Emulsion percentage in the specimens shall be evaluated at 1.5%, 2.5%, 3.5% or as needed to result in an acceptable curve. The Design shall be performed at 3% moisture content. All test data shall accompany the JMF and recommendations.

New Aggregate or Additional Recycled Material: If additional new or recycled aggregate material is required the material properties and gradation will be in accordance with Section 403. Reclaimed Pavement Borrow for Base and/or Sub-base Course. The aggregate material will be from an approved source and sampled, tested and approved for use in the work. Crushed Stone and Recycled Asphalt Pavement to be provided if necessary, shall be free of winter sand, granular fill, construction debris, and other materials.

EQUIPMENT

Reclaimer: The reclaiming equipment shall be a self-propelled machine, specially manufactured for stabilizing with emulsified asphalt injection and mixing unit to introduce the emulsified asphalt stabilizer into the pulverized material. The mixing unit shall contain a liquid distribution and mixing system which has been specifically manufactured for FDR with emulsion injection type work, capable of mixing the pulverized material with an evenly metered distribution of emulsified asphalt into a homogeneous mixture, to the depth and width required.

ITEM 403.2 (Continued)

The reclaimer shall be capable of uniformly treating the reclaimed material in a single pass and shall have a full width spray bar consisting of a positive displacement pump interlocked to the machine speed so that the amount of emulsion being added is automatically adjusted with changes in machine speed. The injection system shall be capable of incorporating the emulsified asphalt stabilizer at the specified rates in the JMF. Under no circumstances shall the bituminous material be spray applied on the road surface in front of the reclaimer and incorporated into the FDR material with subsequent passes.

Motor Grader: The Motor Grader shall be of sufficient horsepower with hydraulic moldboard and cutting edge for roadway construction. The motor grader shall be able to grade profile and cross slope to lines and grades shown on plans. The Motor Grader shall be equipped with low gears, a ground speedometer to prevent excessive speed, and a crown gauge to provide constant slope reading. Grader moldboard shall have cutting edges in good condition with straight edge without excessive wear or uneven sections. Cutting edges shall provide a straight cross slope from centerline crown to shoulder. The Operator shall be experienced with this equipment and roadway grading in order to construct the proposed lines and grades.

Water Truck: A Water truck shall be available to moisten the surface to be graded to provide better smoothing and reshaping of the surface as needed. Water is not intended for use prior to preparation of surface to be stabilized with the emulsified asphalt.

Rollers: Rollers shall have a gross weight of not less than 15 tons. A minimum of two rollers shall be provided, a rubber tired roller and a smooth-drum roller. The steel drum roller shall compact the recycled material in vibratory mode utilizing high amplitude/low frequency settings as required to achieve specified density. After completion of a reclaiming pass, the road shall be compacted with rubber tire roller and shaped as shown on plans. A steel drum roller in vibratory mode shall compact all shaped sections. The Contractor shall submit the rolling plan for each pass and for the stabilized surface for review.

Compaction density, testing, and testing frequency of the reclaimed sub-base shall be the same as that for gravel sub-base in the Standard Specifications for Highways and Bridges, Section 401.60.

CONSTRUCTION REQUIREMENTS

Weather Limitations: FDR with Injected Asphalt Emulsion Stabilization work shall not be performed when the atmospheric temperature is below 50°F or falling below, or when weather conditions are such and/or forecasted that proper pulverizing, spreading, mixing bituminous stabilizer and curing are unfavorable to proper construction procedure or compaction of the pulverized material cannot be accomplished.

Pulverizing and Emulsified Asphalt Stabilization: The reclaiming operation shall be scheduled and constructed with multiple passes of the reclaiming equipment as required for optimal blending/mixing, grading and compaction of the reclaimed pavement borrow material, for dust control (with stabilizing agent) and for opening to traffic. The full depth reclamation operation shall require multiple passes with the reclamation operation for mixing and adding the stabilizing agent.

ITEM 403.2 (Continued)

The existing road shall be reclaimed to the depth of 1.5 times the average existing pavement thickness or as directed by the Engineer. After completion of the first pass, the road shall be shaped and compacted to meet density, lines and grades for base and/or sub-base course.

Where the existing pavement's cross slopes meet appropriate standards, then the cross slope of the finished reclaimed pavement section shall match existing. Where non-standard cross slopes is identified in the contract documents and identified by the Engineer and the Contractor, the Contractor and the Engineer shall confer with the Design Engineer as required for a method that brings the cross slopes of the reclaimed pavement section into conformance with lines and grades shown on plans and for a smooth pavement.

The stabilization will occur within three (3) working days of the initial reclamation operation. A final pass of the reclaimer shall be completed to add the required amount of emulsified asphalt to be mixed and blended into the top **4 inches** of the compacted reclaimed pavement borrow base and/or sub-base course material. The emulsified asphalt stabilizer shall be injected mixed and blended in the reclaimer mixing drum, at the rate specified in the JMF.

Grading and Compaction: The completed surface of the FDR with Asphalt Emulsion Stabilization shall be shaped and maintained in a timely manner to allow asphalt to cure. The final grades and compacting shall be per the lines, grades and typical cross-sections shown on the plans or established by the Engineer.

The maximum density will be determined on a Test Strip as follows:
A Test Strip of not more than three hundred (300) feet and one or two widths of the asphalt stabilizer/reclaimer shall be constructed as specified. Compaction will proceed using the required equipment (rubber tire and vibratory steel drum rollers). The Engineer and/or Contractor shall use a nuclear density gauge (soil-type) to determine the Maximum Density. Multiple roller passes and density readings will be performed until the density readings either reach a peak or begin to drop off. The peak reading will become the Maximum Density of the Full Depth Reclamation and the Reclaimed with Asphalt Emulsion Stabilization for QC and Acceptance purposes.

Special care shall be taken in monitoring the rolling pattern. The Test Strip data shall be used to establish a rolling pattern that shall be used throughout the project.

Note: To aid compaction, the addition of water may be necessary. Water should be applied from a spray bar mounted on a water truck with an adjustable volume control. The initial pass may be watered to provide better consistency for grading and lubrication of vibratory compaction.

Caution: Excess use of water on the asphalt stabilized reclamation pass may result in flushing of the asphalt emulsion from the reclaimed mixture. The Contractor shall minimize water for reclaiming that can cause any flushing of the emulsified asphalt.

Curing: The grading and compacting of the stabilized surface shall be timely to provide for the curing of the emulsified asphalt stabilization. No new pavement shall be placed on the asphalt stabilized base until a minimum curing period as needed to establish JMF moisture content. Additional curing may be needed if weather conditions warrant as directed by the Engineer.

ITEM 403.2 (Continued)

Traffic Control: Unless otherwise specified or as directed by the Engineer, the roadway shall be kept open to traffic at all times, with traffic discontinued on the lane being reclaimed. Controlled traffic may be permitted as soon as the base is stabilized and/or asphalt stabilization is cured adequately for opening to traffic while preventing tracking or pick up of asphalt emulsion.

Structures: All drainage and utility structures shall be lowered 6 inches below subgrade and plated in accordance with Subsection 403.62 of the Standard Specifications. Lowering and plating of structures shall be considered incidental to Item 403.2 Full Depth Reclamation with Asphalt Stabilization.

Because of pipe outlet elevations, some precast drainage structures cannot be lowered to this extent. For those drainage structures, the Contractor shall excavate around the precast units to avoid damaging the structures during reclaiming operations. Reclaimed base course shall be windrowed and compacted thoroughly around the structures. The cost of excavating windrowing and compacting around structures shall be considered incidental to Item 403.2 Full Depth Reclamation with Asphalt Stabilization.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Full Depth Reclamation with Emulsified Asphalt Stabilization will be measured by the SQUARE YARD of existing pavement area reclaimed for use on the project.

The accepted quantity of Full Depth Reclamation with Emulsified Asphalt Stabilization, will be paid for at the contract unit price per SQUARE YARD, per the Supplemental Specifications for Section 403. and including all sampling and testing and development of Reclaimed Pavement Borrow job mix formula (JMF), furnishing all equipment, material and labor for pulverizing, blending and adding asphalt stabilizer, grading, compacting, and for all incidentals necessary to complete the work at the required depth and stabilization depth specified herein.

The stabilizer agent, Emulsified Asphalt, for the full depth reclamation will be paid for at the contract unit price per gallon (GAL) per Item 403.21.

Removal and disposal of unsuitable material, surplus reclaimed material, or any sub-base/subgrade material necessary for grade changes shall be paid for at the contract unit price per cubic yard for Item 120.1, Unclassified Excavation.

ITEM 403.21 EMULSIFIED ASPHALT FOR FULL DEPTH RECLAMATION GALLON

The work under this Item shall conform to the relevant provisions of Item 403.2 Full Depth Reclamation with Emulsified Asphalt Stabilization, and the Standard Specifications for Highways and Bridges and Supplemental Specifications, Section 403.

Emulsified asphalt for stabilization shall be in accordance with the special provisions found in Item 403.2 Full Depth Reclamation with Emulsified Asphalt Stabilization.

METHOD OF MEASUREMENT

Emulsifed Asphalt for Full Depth Reclamation shall be calculated by measuring the reclaimed pavement area and multiplying it by the application rate applied for the approved JMF.

BASIS OF PAYMENT

The accepted quantity of Emulsified Asphalt for full depth reclamation will be paid for at the contract unit price per gallon (GAL) complete in-place including addition of emulsified asphalt stabilizer into the Full Depth Reclamation operation and all sampling and testing and development of job mix formula (JMF) and all incidental work as required for the full depth reclamation with emulsified asphalt stabilization.

ITEM 470.2 HMA BERM, TYPE A - MODIFIED FOOT

The work under this Item shall conform to the relevant provisions of Subsection 470 of the Standard Specifications and the following:

Hot mix asphalt berm, type A - modified, shall be constructed by means of an approved extrusion machine in conformance with the dimensions and at the locations shown on the plans. Prior to placing the HMA berm, the surface shall be swept clean and RS-1 asphalt emulsion shall be applied to the surface.

METHOD OF MEASUREMENT

Item 470.2, HMA Berm, Type A - Modified will be measured for payment by the FOOT, complete in place, along the gutter line.

BASIS OF PAYMENT

Item 470.2, HMA Berm, Type A - Modified will be paid for at the Contract unit price per FOOT, which price shall be full compensation for all labor, materials, equipment, and incidental costs required to complete the work.

ITEM 504.2 GRANITE CURB TYPE VA4 - SPLAYED END EACH

The Work under this Item shall conform to the relevant provisions of Subsection 501 of the Standard Specifications and the following:

The work shall include furnishing and installing curb transition sections at the locations shown on the plans to match into the proposed or existing edge. The curbing shall be type VA-4 and shall have a minimum length of six foot- six inches (6'-6"). The curb shall be sawcut to match into the proposed adjacent granite curb at one end and the opposite end shall match into the proposed HMA berm as shown on the plans.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 504.2, Granite Curb Type VA-4 - Splayed End will be measured for payment as a unit EACH complete in place.

Item 504.2, Granite Curb Type VA-4 - Splayed End paid for at the Contract unit price per EACH, which price shall be full compensation for all labor, materials, equipment, sawcutting and incidental costs required to complete the work.

ITEM 590. CURB REMOVED AND STACKED FOOT

The work under this Item shall conform to the relevant provisions of Subsection 501 of the Standard Specifications and the following:

Existing granite curb not suitable or needed to be reset, shall be removed and stacked at the following locations by Town the curb originated in:

- Dennis - DPW facility at 120 Theophilus F Smith Road in South Dennis
- Harwich – DPW facility at 273 Queen Anne Road in Harwich

Curb shall be stacked unless, in the judgment of the Engineer, they are unsuitable for salvage. Unsuitable granite curb become the property of the Contractor and shall be disposed of off the site.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Items 590. will be measured and paid at the Contract unit price per FOOT, which price shall be full compensation for all labor, materials, equipment and incidental costs required to complete the work.

No separate payment will be made for storage, transporting and handling of existing curb to be removed, stacked and other incidental work, but all costs in connection therewith shall be included in the unit prices bid for this Item.

Removal and disposal of curbing unsuitable for salvage shall be paid for under Item 594.

ITEM 697.1 SILT SACK EACH

The 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.

CONSTRUCTION

Silt sacks shall be installed in 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 required 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 Subsection 227 of the Standard Specifications.

COMPENSATION

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.

ITEM 706.5 FIELD STONE WALK REMOVED AND RESET SQUARE YARD

The work under this Item consists of removing, stacking and resetting a field stone walk as shown on the drawings or as required by the Engineer.

Field stones shall be placed on a concrete mortar setting bed. The setting bed shall be placed on a Class D (4000 psi, ¾ in., 610) cement concrete base course over a gravel base course subbase. Work shall be done to the required lines and grades shown on the plans.

MATERIALS

Cement

Cement for mortar shall be American Portland Cement conforming to ASTM Standard Specification C-150-73a, Type I or II.

The cement shall exhibit no efflorescence when cast into the form of 2-inch by 7-inch by 1/2-inch slabs comprising the cement under test. Ottawa plastic mortar sand and distilled water (in proportion of 1:2 by weight with water added to produce 100 percent flow) and subjected to a seven-day "wick test" in general conformity with the methods described in ASTM Designation C67-66.

Sand

Sand shall be clean, washed, uniformly well-graded masonry sand conforming to the requirements of ASTM Specification C 144 and Subsection M1.04.0 Type b of the Mass. Highway Department Standard Specifications with the further requirement that the fineness modulus shall be maintained at 2.25 plus/ minus 0.10. Sand shall be from a single source meeting these requirements and as approved by the Engineer after laboratory test. Source of supply shall not be changed during the course of job without written consent of the Engineer.

Lime

Lime shall be plastic hydrate, conforming to ASMT Specifications C207, 49-68 Types (only).

Setting Bed Mortar

Setting bed mortar shall consist of the following proportions:

· 94 lbs. (1 bag) ASTM C150, Type II cement
· 160 lbs. specified sand
· 2 gallons latex liquid additive
· 7 gallons water to which not more than 25 lbs. hydrated lime may be added

ITEM 706.5 (Continued)

METHOD OF CONSTRUCTION

A 4-inch Class D (4000 psi, ¾", 610) Cement Concrete Base shall be installed on the prepared gravel base course. The concrete shall be struck-off and float finished to the grade required to bring the field stones, when laid in a 1-inch setting bed, to the proposed finished grade. Protection and curing shall be as required in Section 901.

The setting bed shall not be placed on the cement concrete base until at least 24 hours after the final curing period of the base course.

All field stone work shall be laid by skilled workmen under adequate supervision and shall be laid true to lines and levels with joints of uniform thickness, all surfaces true and corners straight and plumb. Field stone patterns shall match existing conditions.

The field stones should be laid to provide adequate drainage at all points. If any condition is encountered between given elevations where drain-off is questionable, the Contractor shall notify the Engineer thereof and not proceed with the work until instructions are given. The finished work shall not deviate from the given elevations more than +1/8-inch in 10-feet, laterally.

Before commencing the mortar bed, the concrete base shall be thoroughly cleaned of all dust, dirt and foreign matter.

Mortar Setting Bed

Masonry work shall not be laid in temperatures below 40 deg. F unless provisions are made to adequately protect the masonry materials and the finished work from frost by heating materials, enclosing the work and heating the enclosed spaces and contact surfaces. All masonry materials used in freezing weather shall be at a temperature between 50 and 90 deg. F. Protect masonry against freezing for at least 48 hours after being laid. Frozen material shall not be built upon. Any complete work found to be affected by frost shall be taken apart and rebuilt.

Prior to placing setting bed, thoroughly moisten all surfaces of the concrete base. Spread setting bed mortar and screed to provide a 1-inch thickness of bed. Dip field stones in solution of 50 percent latex liquid additive to 50 percent water immediately prior to installation, taking every precaution to insure that the exposed face is not wetted.

Field stones shall be pressed firmly into the bed and tamped with wood blocks to obtain a smooth and uniform surface Tamping shall be completed within one hour after placing of field stones. Adjust work out of line within this period. The Contractor shall be responsible for protection of the surface from pedestrian traffic to avoid damage to field stones until mortar has set.

ITEM 706.5 (Continued)

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 706.5 will be measured for payment by the SQUARE YARD of finished surface, complete in place.

Item 706.5 shall be paid for at the Contract unit price per SQUARE YARD, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

No separate payment will be made for the cement concrete.

Gravel borrow will be paid for under Item 151.

ITEM 706.7 BRICK WALK WITH CONCRETE BASE SQUARE YARD

The Work under this Item shall conform to the relevant provisions of Subsection 701 of the Standard Specifications and the following:

The work under this Item shall consist of the furnishing and installation of brick walk at locations called for on the Plans. Bricks shall be placed on a concrete mortar setting bed. The setting bed shall be placed on a Class D (4000 psi, ¾ in., 610) cement concrete base course over a gravel base course subbase. Work shall be done to the required lines and grades shown on the Contract drawings.

The Contractor shall submit shop drawings and manufacturer's product specifications to the Engineer for approval.

No work shall be commenced by the Contractor until approval of the drawings in writing has been received 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 required by the Plans and these Specifications.

MATERIALS

a. Brick Pavers—The brick shall be for exterior paving, manufactured from extruded fire clay, from shale and shall be fired to produce a dense paver and shall meet the requirements of ASTM C902 Standard Specification for Pedestrian and Light Traffic Paving Brick, Class SX, Type I, with water absorption not more than 5 percent with five-hour submersion in boiling water. Laminated brick will not be accepted. Standard face brick will not be acceptable.

   All brick shall be batched type burned to provide the various colors by controlled atmosphere and temperature conditions, required to obtain a rustic blend (70 percent red and 30 percent brown to black). The brick shall be highly resistant to abrasion and shall have an average compressive strength of 8,000 or more psi over a 100-cycle freeze-thaw test.

ITEM 706.7 (Continued)

The brick shall be wire cut to a size of 4 by 8 by 2-1/4 inches. Brick shall be delivered to the site on pallets or in packages with a pre-waxed surface using a parafin wax with a melting range of 130 deg. F (55 deg. C) to 170 deg. F (77 deg. C). Waxed surfaces shall be protected by paper separators facing each other. Waxed brick shall be stored protected from the sun.

b. Cement—Cement for mortar shall be American Portland Cement conforming to ASTM Standard Specification C-150-73a, Type I or II.

The cement shall exhibit no efflorescence when cast into the form of 2-inch by 7-inch by 1/2-inch slabs comprising the cement under test. Ottawa plastic mortar sand and distilled water (in proportion of 1:2 by weight with water added to produce 100 percent flow) and subjected to a seven-day "wick test" in general conformity with the methods described in ASTM Designation C67-66.

c. Sand—Sand shall be clean, washed, uniformly well-graded masonry sand conforming to the requirements of ASTM Specification C 144 and Subsection M1.04.0 Type b of the Mass. Highway Department Standard Specifications with the further requirement that the fineness modulus shall be maintained at 2.25 plus/ minus 0.10. Sand shall be from a single source meeting these requirements and as approved by the Engineer after laboratory test. Source of supply shall not be changed during the course of job without written consent of the Engineer.

d. Lime—Lime shall be plastic hydrate, conforming to ASTM Specifications C207, 49-68 Types (only).

e. Water—Water shall be potable and free of injurious contaminants.

f. Setting Bed Mortar—Setting bed mortar shall consist of the following proportions:

- 94 lbs. (1 bag) ASTM C150, Type II cement
- 160 lbs. specified sand
- 2 gallons latex liquid additive
- 7 gallons water to which not more than 25 lbs. hydrated lime may be added

g. Material Storage—All materials shall be delivered, stored and handled to protect them from wetting, staining, chipping or other damage. Cement and similar perishable materials shall be stored in watertight sheds with elevated floors. Bricks shall be stored off ground and under watertight covers. Any materials showing evidence of water or other damage will be rejected.

h. Sample Materials and Panels—Prior to ordering materials, the Contractor shall submit to the Engineer for approval, samples of brick and of masonry accessories. Samples of other materials to be used and samples for testing shall be submitted as requested by the Engineer. Pavers shall be submitted in whole straps to show color range.

ITEM 706.7 (Continued)

METHOD OF CONSTRUCTION

A 4-inch Class D (4000 psi, ¾", 610) Cement Concrete Base shall be installed on the prepared gravel base course. The concrete shall be struck-off and float finished to the grade required to bring the bricks, when laid in a 1-inch setting bed, to the proposed finished grade. Protection and curing shall be as required in Section 901.

The setting bed shall not be placed on the cement concrete base until at least 24 hours after the final curing period of the base course.

All brick work shall be laid by skilled workmen under adequate supervision and shall be laid true to lines and levels with joints of uniform thickness, all surfaces true and corners straight and plumb. Paving patterns shall be as shown on the Plans. Alignment of decorative bands of brick must be true. Any patterns in which the alignment is not acceptable will promptly be removed and reset to conform to this specification.

The brick paving has been designed to provide adequate drainage at all points. If any condition is encountered between given elevations where drain-off is questionable, the Contractor shall notify the Engineer thereof and not proceed with the work until instructions are given. The finished work shall not deviate from the given elevations more than +1/8-inch in 10-feet, laterally.

Before commencing the mortar bed, the concrete base shall be thoroughly cleaned of all dust, dirt and foreign matter.

Coursing shall be laid out so that at end conditions of brick panels, brick will not have to be cut to a width less than 1-1/2 inches. End joints over 1/2-inch will not be accepted.

The brick pavers shall be placed with hand tight joints (from 0 inches to a maximum 1/4-inch). Sweep a dry mixture of one part cement to match color of brick pavers and three parts sand until joints are completely filled. Fog lightly with water. Cement stains that remain shall be removed with a 10 percent solution of muriatic acid or mortar cleaner, or by sweeping with moist sand.

MORTAR SETTING BED

Masonry work shall not be laid in temperatures below 40 deg. F unless provisions are made to adequately protect the masonry materials and the finished work from frost by heating materials, enclosing the work and heating the enclosed spaces and contact surfaces. All masonry materials used in freezing weather shall be at a temperature between 50 and 90 deg. F. Protect masonry against freezing for at least 48 hours after being laid. Frozen material shall not be built upon. Any complete work found to be affected by frost shall be taken apart and rebuilt.

The bricks shall have a low rate of suction at the time they are laid, and to secure this low rate of suction, the brick shall be properly wetted and not allowed to dry out.

ITEM 706.7 (Continued)

Prior to placing setting bed, thoroughly moisten all surfaces of the concrete base. Spread setting bed mortar and screed to provide a 1-inch thickness of bed. Dip pavers in solution of 50 percent latex liquid additive to 50 percent water immediately prior to installation, taking every precaution to insure that the exposed face is not wetted.

Pavers shall be pressed firmly into the bed and tamped with wood blocks to obtain a smooth and uniform surface. All pavers shall be properly aligned with straight, hand tight joints. Install wire mesh reinforcing about 12 inches wide and imbed in setting mortar around all openings in paving. Tamping shall be completed within one hour after placing of pavers. Adjust work out of line within this period. Provide expansion joints as indicated on the drawings. All expansion joints shall be clear of grout to receive specified filler and sealant.

The Contractor shall be responsible for protection of the pavement from pedestrian traffic to avoid damage to paving until mortar has set.

In case the continuation of the work is suspended, the Contractor shall terminate the paving against temporary wood blocking. The bricks along this blocking shall be set in sand to allow removal and toothing of the bricks in the work when later continued.

Contractor to provide expansion joints around hydrants, utility poles, street lights, pull boxes, sign posts, etc.

METHOD OF MEASUREMENT

Item 706.7, Brick Walk with Concrete Base will be measured for payment by the SQUARE YARD of pavement surface, complete in place.

BASIS OF PAYMENT

Item 706.7, Brick Walk with Concrete Base will be paid for at the Contract unit price per SQUARE YARD, which price shall be full compensation for all labor, materials, mortar bed, concrete base, equipment and incidental costs required to complete the work.

Excavation, fine grading and gravel borrow will be paid for separately under their respective Items.

ITEM 707.1 PARK BENCH EACH

The work under this Item shall consist of supplying and installing materials for ornamental benches as shown on the Plans, in accordance with these specifications, and/or as directed.

MATERIALS

Bench

Bench provided shall be:

- Dumor bench #88 series in “cedar” color
- Landscape Forms “Gretchen” 6’ bench, Polysite slats
- Victor Stanley “F-50” 6’ bench, recycled plastic slats, color brown

Bench shall be made of: steel bar, minimum thickness of bar shall be ¼" and steel pipe minimum diameter shall be 1-15/16" tubular steel.

Supports: Cast Iron

Fasteners: Stainless steel.

Finish: Polyester powder finish, color shall be black

Bench Slats: Bench slats shall be as provided by the manufacturer.

Anchor Bolts

Benches shall be secured to the cement concrete walkway with adhesive anchors conforming to the following:

Threaded Rod:

ASTM F593 stainless steel threaded rod, diameter shall be 1/2 inch or as recommended by the bench and trash receptacle manufacturer.

Minimum depth of embedment shall be 3 inches.

Clean and free of grease, oil, or other deleterious material.

Adhesive:

Disposable, self-contained cartridge system capable of dispensing both components in the proper mixing ratio and fitting into a manually or pneumatically operated caulking gun.

Two-component, designed to be used in adverse freeze/thaw environments, with gray color after mixing.

Cure Temperature, Pot Life, and Workability: Compatible for intended use and environmental conditions.

Nonsag, with selected viscosity base on installation temperature and overhead application where applicable.

ITEM 707.1 (Continued)

Manufacturers and Products:

ITW Ramset/Red Head, Wood Dale, IL; Epcon Ceramic 6 Epoxy or A7 Adhesive Anchor System. (Use only Epcon A7 Adhesive System for hollow masonry.)

Hilti, Inc., Tulsa, OK; HIT Injection Adhesive System, HIT HY 150 (HIT HY 20 for hollow masonry).

Powers Rawl, New Rochelle, NY; Power Fast Epoxy Injection Gel Cartridge System.

Simpson Strong-Tie Co., Inc., Pleasanton, CA; Epoxy-Tie Adhesive ET.

Covert Operations, Inc., Long Beach, CA; CIA-Gel 7000 Epoxy Anchors.

Unitex, Kansas City, MO; Pro-Poxy 300 and Pro-Poxy 300 Fast Epoxy Adhesive Anchors.

Adhesive Threaded Inserts:

Stainless steel, internally threaded insert.

CONSTRUCTION METHODS

Install bench at locations shown on the Drawings or as directed. Anchor bolts shall be installed only after concrete or masonry to receive anchors has attained design strength. Use only drill type, bit type, and diameter recommended by anchor manufacturer. Clean hole of debris and dust with brush and compressed air.

Do not install adhesive anchors when temperature of concrete is below 40 degrees F or above 100 degrees F. Remove any standing water from hole with oil-free compressed air. Inside surface of hole shall be dry where required by manufacturer's instructions. Do not disturb anchor during recommended curing time. Do not exceed maximum torque as specified in manufacturer's instructions. Provide anti-seizing lubricant for use on all stainless-steel threads. Tack weld the nut to the bolt following the installation of the bench or trash receptacles.

METHOD OF MEASUREMENT

Item 707.1, Park Bench will be measured for payment per EACH installed complete in place.

BASIS OF PAYMENT

Item 707.1, Park Bench will be paid for at the Contract unit price per EACH, which price shall be full compensation for all labor, materials, equipment and incidental costs required to complete the work. No separate payment will be made for the anchoring system, but all costs in connection therewith shall be included in the Contract unit bid price.

The concrete pad underneath each bench shall be paid for separately under Brick Walk with Concrete Base, Item 706.7.

ITEM 710.4	**BOUND - PLAIN GRANITE**	**EACH**
ITEM 711.	**BOUND REMOVED AND RESET**	**EACH**
ITEM 712.2	**BOUND REMOVED**	**EACH**

The work under these Items shall conform to the relevant provisions of Subsection 710 of the Standard Specifications and the following:

The work shall include the furnishing and installation of granite bounds, the removal & resetting of granite bounds and the removal and discarding of existing bounds affected by construction.

All layouts for new bounds shall be made or directed by a Professional Land Surveyor registered in Massachusetts. The layout method shall be the responsibility of the Land Surveyor, subject to the Engineer's approval.

Existing bounds to be removed and reset in the same location shall be offset staked prior to removal.

Existing bounds to be removed shall be discarded by the Contractor.

METHOD OF MEASUREMENT

Items 710.4, 711 and 712.2 will be measured for payment as a unit, per Subsection 710.80.

BASIS OF PAYMENT

Items 710.4, 711 and 712.2 will be paid per Subsection 710.81.

No separate payment will be made for Professional Land Surveyor, storage, transporting and handling of existing bounds to be discarded, but all costs in connection therewith shall be included in the Contract unit prices bid for the respective Items.

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:

Two (2) computer systems and a 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 able to perform 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.

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 penalty 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.

ITEM 756. (Continued)

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.

Included in the CGP conditions is the requirement for inspection of all erosion controls and site conditions on a weekly basis as well as after each incidence of rainfall exceeding 0.25 inches in twenty-four hours. For multi-day storms, EPA requires that an inspection must be performed during or after the first day of the event and after the end of the event. 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 condition and shall consider replacement of erosion controls for each construction season.

This Item addresses acceptable completion of the SWPPP, any revisions/amendments required during construction, and preparation of monthly reports. 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.

COMPENSATION

Payment for all work under this Item shall be made at the contract unit price, LUMP SUM, which shall include all work detailed above, including Plan preparation, required revisions, revisions/addenda during construction, monthly reports and filing fees.

Payment of fifty (50) % of the contract price shall be made upon acceptance of the NPDES Stormwater Pollution Prevention plan. Payment of forty (40) % of the contract price shall be made in equal installments over the expected duration of stormwater pollution prevention measures. Payment of the final ten (10) % of the contract price shall be paid upon satisfactory submissions of a Notice of termination (NOT) when final stabilization has been achieved.

ITEM 765. SEEDING SQUARE YARD
ITEM 765.411 SHORT GRASSLAND MIX SQUARE YARD

The purpose of these Items is to provide and install seeding for the side slopes and disturbed areas along the roadsides. There will be two types of seeding for this project. Item 765. shall be used for grass slopes flatter than 2:1. Item 765.442 shall be for the riverbank drainage pipe slope as specified on the Plans.

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 wood fiber hydromulch as specified below and shall be incidental to this Item.

Work under this Item shall consist of furnishing the mix(es) specified below in the required quantity.

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 the Engineer.

2) Pre-Verification of Seed Availability. Within 30 days after the Notice to Proceed, the Contractor shall submit to the Engineer the supplier's verification of availability of seed species in the required quantities and for the anticipated date of seeding. Verification shall be on the supplier's letterhead and notarized by the supplier's notary. Species not expected to be available should be noted and substitutions recommended.

3) Final Verification of Seed Availability. No earlier than 21 days prior to ordering, the Contractor shall submit to the Engineer the supplier's verification of availability of seed species and in the required quantities. Verification shall be on the supplier's letterhead and notarized by the supplier's notary. A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section. Substitutions or changes in the mix at this time must be approved by MassDOT Landscape Design Section.

ITEMS 765. and 765.411 (Continued)

4) Seed Worksheet provided herein shall be submitted to the Engineer prior to ordering seed to determine the number of pounds of Pure Live Seed required.

5) Seed Tags. The Contractor shall submit original seed tags from each bag of seed used on the project or ensure that each tag is photo documented by the Engineer while on the unopened bag.

   Number of tags submitted must correspond to number of bags delivered.

   Species listed on the seed tag shall match the Final Verification of Seed Availability (Submittal #2) unless approved otherwise. Tag must include: variety and species name; lot number; purity; percentage of inert matter; percentage of weeds, noxious seeds, and other crop seeds; germination, dormant or hard seed; total viability; origin of seed; germination test date, net weight, and name and address of seller. The origin of seed must be listed on the seed tag for all species in the mix to provide verification of original (generation 0) seed source. The smallest known geographic area (township, county, ecotype region, etc.) shall be listed. Ecotypes and cultivars shall be as close to Massachusetts as possible and appropriate to the site conditions.

   A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section.

6) Verification of Seed Delivery. Prior to payment, Contractor shall submit the Seed Delivery Verification form contained within the contract or the Supplier's Verification on company letterhead or a bill of lading. Supplier verification must include all information requested on the Verification form within this contract. The bill of lading must include variety and species name, lot number, net weight shipped, date of sale, invoice, project or seeding location, and name and address of Supplier. All information must be filled in and complete for acceptance. Information must match the seed tags and quantity of seed used on the job. A copy of this submittal shall be forwarded to the MassDOT Landscape Design Section\

7) 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.

   Seed Sample. Contractor may be asked, prior to seeding, to submit a seed sample for testing. If requested or if seed is from a previously opened bag, the Contractor may be asked to submit to the Engineer a sample of seed from the seed bag (1-2 cups) at the time of seeding.

ITEMS 765. and 765.411 (Continued)

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 the Engineer.

- Product Certificates: For wood fiber mulch signed by product manufacturer and the Tackifier.

- Planting Schedule: Indicating anticipated planting dates for each type of planting.

QUALITY ASSURANCE

The Contractor must have experience or hire a qualified landscape Contractor whose work has resulted in successful grass and wildflower establishment. Prior to installing the seeding, the Contractor shall meet with the City's representative on site to review procedures for preparing the soil, hydroseeding and maintenance.

Methods of installation shall be reviewed and approved by the City's Representative prior to placement of material.

SEEDING SEASON

Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.

The appropriate seeding seasons are:

Spring: April 1 - May 15

Late Summer: August 10 to September 30

Seeding that occurs outside of these periods, shall be increased by 50%.

Fall: October 1 - December 1 for dormant seeding

Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.

ITEMS 765. and 765.411 (Continued)

PERMANENT SEED MIX(ES)

Calculating Pure Live Seed (PLS)

Quantities specified are PURE LIVE SEED. Greater quantities of ordered seed may be required to achieve actual specified seeding rates.

Pure Live Seed (PLS) is defined as a percentage calculated by multiplying the percent of pure seed by the percent of viable seed (total germination, hard seed, and dormant seed). For example:

If a seed label indicates 90% purity, 78% germination, 10% hard seed, and 2% dormancy, it is calculated to be 90% x [78 + 10 + 2]% = 81% PLS.

Therefore, each pound of PLS would need 1 pound / 0.81 = 1.2 pounds of seed with a 90% purity and 90% total germination

Seed Mix(es) shall be as specified below. Ecotypes and cultivars shall be as close to Massachusetts as possible and appropriate to the site conditions.

Grass seed shall be of the previous year's crop and in no case shall the weed seed content exceed 1% by mass. All Bluegrass, Fescue, and Ryegrass shall be within top 25% of either of two most recent National Turfgrass Evaluation Program reports. The grass seed shall conform to the requirements of the following tables:

ITEM 765 - GRASS SEED MIX

M6.03.0-1: GRASS SEED REQUIREMENTS FOR LAWN GRASS AREAS

	Percent Proportion	Percent Germination Minimum	Percent Purity Minimum
Creeping Red Fescue, Hard Fescue and/or Chewings Fescue	50	85	95
Tall Fescue	35	85	95
Manhattan Perennial Rye	5	90	98
Redtop	5	85	92
Dutch White Clover	5	85	96

ITEMS 765. and 765.411 (Continued)

765.411 SHORT GRASSLAND MIX

765.411 Short Grassland Mix	Common Name	% PLS by Weight
Botanical Name		
Grass		
Schizachyrium scoparium 'Albany Pine'	Little Bluestem 'Albany Pine'	57.00%
Elymus virginicus	Virginia Wild Rye	27.00%
Festuca rubra	Creeping Red Fescue	9.00%
Agrostis perennans	Upland Bentgrass	1.20%
Dichanthelium clandestinum 'Tioga'	Deertongue grass 'Tioga'	1.00%
Eragrostis spectabilis 'RI Ecotype'	Purple Lovegrass 'RI Ecotype'	1.00%
Herb/Forb		96.20%
Chamaecrista fasciculata	Partridge Pea	2.30%
Penstemon digitalis	Beard-tongue	0.50%
Solidago nemoralis	Grey Goldenrod	0.30%
Aster pilosus	Heath Aster	0.10%
Pycnanthemum tenuifolium	Slender Mountain Mint	0.10%
Oenothera fruticosa var. fruticosa	Sundrops	0.10%
Achillea millefolium	Common Yarrow	0.10%
Aster lateriflorus	Calico Aster	0.10%
Solidago bicolor	White Goldenrod	0.10%
Aster laevis NY Ecotype	Smooth Aster NY Ecotype	0.10%
		3.80%
		100.00%
Seeding Rate: 15.0 lbs PLS/Acre		

Grass Seed Mix: Per manufacturer's directions.

Any species substitutions shall be with a species having similar characteristics and function. Substitutions must be approved by MassDOT Landscape Design Section per the documentation submittal process.

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.

ITEMS 765. and 765.411 (Continued)

Mulch

Mulch for seeding and topdressing shall be incidental to this Item. Mulch to cover hydroseeded areas shall be fiber-processed from whole wood chips manufactured specifically for standard hydraulic mulching equipment. Fiber shall not be produced from recycled material such as sawdust, paper, or cardboard.

Moisture content shall not exceed 10%, plus or minus 3%, as defined by the pulp and paper industry standards. Fiber shall have a water holding capacity of not less than 900 grams of water per 100 grams fiber.

Mulch shall disperse into a uniform slurry when mixed with water. Mulch shall be nontoxic to plant life or animal life.

Mulch shall contain a non-petroleum based tackifier and a green dye for visual monitoring during application, but non-injurious to plant growth.

Fertilizer

Fertilizer composition and application rates shall be in accordance with soils testing lab recommendations submitted with the soil testing results.

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.

Track slopes by running a small bulldozer or other track machine to create continuous vertical tracks across the entire slope after topsoil is applies, creating a knuckled surface where the seed can fall into the groves and stop/slow erosion

Protect adjacent and adjoining areas from hydroseeding overspray.

Surface preparation shall be compensated for under Item 751.1 Loam for Lawns.

Surface preparation shall be approved by the Engineer prior to seeding.

ITEMS 765. and 765.411 (Continued)

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. 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.

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.

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.

50% Increase Adjustment for Field Conditions

Seeding under the following conditions requires a 50% increase in the permanent mix at the time of construction:

- Seeding out of season

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Items 765. Seeding and 765.411 will be measured for payment by the SQUARE YARD of Pure Live Seed delivered and complete in place.

Items 765. Seeding and 765.411 will be paid at the contract unit price per SQUARE YARD of Pure Live Seed installed upon approval of all Seed Submittal Documentation.

Overseeding required to correct poor germination or establishment shall be incidental to the Item.

Application and care of native seed mix will be paid for separately under Item 765.635 Seeding and Establishment.

ITEMS 765. and 765.411 (Continued)

NATIVE SEED WORKSHEET

Project Description: _____ Project No: _____

Contractor: _____ Contract No: _____

Seed Mix Number & Description: _____

Contractor: Complete Prior To Ordering

Pounds of Seed Required Per Contract:

_____lbs./acre for _____Acre(s) OR _____ SY

Additional 50% increase if required (out of season or seeding over compost blanket):

_____**lbs. Total Seed Required**

Calculated Quantity for **P**ure **L**ive **S**eed (PLS[1]):

_____ **Total Pounds PLS**

Engineer: Verification at Time of Application

Number pounds delivered to site[2]: _____ Date(s): _____

Actual Seed Bag Tag/s Received or photo documented by Engineer: _____

[1] *PLS=% pure seed x % viable seed (total germination, hard seed, and dormant seed).*

[2]*Quantity delivered should match pounds* ***Total Pounds PLS*** *and* ***Verification of Seed Delivery****. Pounds should be shown on each Seed Tag.*

ITEMS 765. and 765.411 (Continued)

SUPPLIER VERIFICATION OF SEED DELIVERY FOR MASSDOT PROJECTS

Date_____

We hereby certify that (*Seed Supplier*):_____

Furnished to (*Contractor*): _____

For use on: (*Project Description*) _____

Project #: _____ Contract #: _____

Pounds of Pure Live Seed: _____

Of Mix (*Description*): _____

Lot Number _____

The material was delivered on (*Date*)_____.

The labels and contents meet all State and Federal regulations. The mixture consists of the following species, including cultivars (as applicable) and ecotype region, and at the following percentages (may be attached separately):

Name (print): _____ Title: _____

Supplier: _____

Signature and Seal: _____

ITEM 765.635 SEEDING & ESTABLISHMENT SQUARE YARD

The Work shall conform to the relevant provisions of Subsections 765 and 767 of the Standard Specifications and the following:

The work under this Item shall consist of seeding, mowing, and other care to establish 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.

QUALIFICATIONS

Seeding shall be done by a company having a minimum of five years of experience with native seed establishment. Prior to beginning work, the seeding Contractor shall furnish proof of qualifications to the Engineer for approval. Proof of qualifications shall include providing documentation (photos and contacts) to demonstrate knowledge and expertise with native seeding and establishment and proof of having completed successful native seeding projects.

SEEDING SEASON

Seeding seasons for native mixes is April 1 - May 15 and October 1 - December 1 for dormant seeding. Written approval must be obtained for seeding outside the seeding season and, if approved, the permanent seed rate shall be increased by 50%.

Seeding season for cover crops shall be grain oats January 1 – July 31 and grain rye August 1 – December 1.

MATERIAL AND SUBMITTALS

Seed Mixes and Submittals shall be per the Item(s) for permanent and annual (cover crop) seed mixes.

Hydromulch shall be wood fiber or straw applied per the Standard Specifications and at the rates specified below and per the manufacturer. Hydromulch shall not be used with Roadside Riverbank Seed Mix.

A certified statement shall be furnished, prior to start of work, to the Engineer by the Contractor as to the number of pounds of hydromulch, tackifier, and seed, per 100 gallons of water and as applicable to products used. This statement should also specify the number of square yards of seeding that can be covered with the solution specified above.

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.

ITEM 765.635 (Continued)

SEEDING

Hand broadcast method shall be used for all areas smaller than half an acre and when specified on the plans for areas over half an acre. Roadside Riverbank Seed Mix shall be hand broadcast.

Seeding shall occur within 72 hours of placement of loam and final grading or the Contractor shall propose a reasonable, alternative schedule that shall be approved by the Engineer.

Surface Preparation

No seeding or soil preparation shall be done if soils are muddy or dry and compacted. 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 relatively smooth finish corresponding to the required grades.

When seeding over existing or compacted soil or soil that has sat bare for more than 30 days, surface will be prepared by tilling or raking to a minimum depth of 2 inches prior to seeding and prior to Compost Blanket application (when applied).

Surface preparation shall be compensated for under for loam placement or topsoil rehandled and spread as appropriate to the project.

Jute or coir mesh, when specified in the contract, shall be placed after seeding and per the Standard Specifications and the manufacturer's instruction.

Surface preparation shall be approved by the Engineer prior to seeding.

Seeding over Various Substrates

Loam: Seeding shall occur within 72 hours of loam placement to prevent loss of topsoil. Seed shall be manually broadcast for areas less than half an acre (each area, not cumulative area) and when specified on the plans. Broadcasting shall be immediately followed by hydromulching as specified below. When not specified on the plans, larger areas may be hydroseeded as specified below.

Seed Application

All seed shall be mulched as specified herein.

Seed application shall be by broadcast seeding or by hydroseeding as described below.

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 to achieve an even distribution. Seed shall not be broadcast when wind velocities are greater than 15 mph.

ITEM 765.635 (Continued)

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 (horizontally and vertically). To ensure seed to soil contact with broadcasting of seed, seeding shall be followed by rolling or tracking with equipment approved by the Engineer.

Broadcast seed shall be mulched with weed-free straw mulch unless seeding is done as part of Compost Blanket in which case it shall be as specified above under seeding with Compost Blanket application. Hydromulching shall be as specified under Hydromulching.

Hydroseeding and Hydromulching

Hydroseed and mulching shall be per the manufacturer's directions and as follows.

Hydroseeding shall only be used for sites over half an acre in size or with permission of the Engineer.

Tank and hoses shall be cleaned from all previous hydroseeding and hydromulching projects. Seed shall be mixed into the slurry immediately before application and slurry applied within 30 minutes after seeds have been placed in the tank. Once seed has been placed in the tank, tank shall be agitated only enough to mix the seeds and keep slurry from separating.

A 2-step process shall be used for seeding in conjunction with hydromulch. Seed shall be applied with 500 lbs/acre of hydromulch in the first pass. A second pass with 1,000 lbs/ acre of hydromulch shall be applied in a second pass. Each pass shall be applied in a different direction.

Once the seed has been added to the tank mixture a one-hour time limit is set for spreading the mixture on the soil. Once the one hour has passed the excess mixture must be discarded.

For broadcast seeding, hydromulch shall be applied immediately following seeding at a rate of 1,000 lbs/acre. Tank shall be cleaned from any previous hydroseeding.

CARE DURING GERMINATION AND ESTABLISHMENT

Contractor shall care for seeded areas as necessary for successful germination. Care will include watering and weed control as necessary to achieve establishment of the specified seeded species after one growing season as specified below.

The Contractor shall maintain the stand of grasses to ensure healthy growth of the seeded species. Work shall include mowing or weed-whacking for weed control, watering if necessary, and removal of invasive plants.

Watering shall be sufficient to achieve soil moisture to a depth of 2 inches or more and such moisture is uniform. Method of watering shall not erode or damage soil or grassed surfaces.

General Weed Control: Unless otherwise directed, mowing shall be as specified under Mowing for Weed Control for seed establishment. Weeds shall be mowed prior to weeds setting seed (by the end of July unless otherwise approved).

ITEM 765.635 (Continued)

Control of Invasive and Aggressive Weeds: Invasive and aggressive weeds, including but not limited to mugwort, ragweed, knapweed, foxtail, crabgrass, and chicory must be cut or treated prior to going to seed. Herbicide treatment must be coordinated with MassDOT. Undesired species (such as chicory) introduced due to use of incorrect seed mix shall be removed at the Contractor's expense.

MOWING FOR WEED CONTROL

Mowing for weed control shall be completed after weeds have sprouted and show leaf and bud growth, but prior to setting seed, generally between July 7th and August 1st, unless directed otherwise by the MassDOT Landscape Architect and the Engineer.

Mowing height shall be as needed for weed control, generally to a height of 8 inches and not below 4 inches, unless directed otherwise. Mowing shall be with a brush hog mower or string trimmer other approved equipment. Conventional lawn mowers which cannot achieve the appropriate cut shall not be used.

Contractor shall give 48-hour notice prior to mowing work. Mowing shall only occur in dry sunny weather. Litter pickup should occur prior to mowing in all areas. If required, cut grass shall be raked and removed. Litter pickup and raking and removal of grass shall be incidental to the work.

Mowing equipment shall be approved by the Engineer prior to work.

OVER-SEEDING

Areas of bare ground greater than 2-3 feet in diameter shall be over-seeded with the specified mix during the appropriate season for seeding. Where required for overseeding mowing shall be as close to the soil as possible. Soil that is compacted shall be raked or otherwise roughened prior to over-seeding.

Over-seeding rates and methods shall those specified above under Materials and Methods. Following over-seeding, soil shall be lightly tamped to ensure seed to soil contact and areas shall be mulched with straw mulch and watered with a fine mist to moisten soil to a depth of at least 2 inches.

Over-seeding, mulch, watering, and all work for over-seeding shall be incidental.

ITEM 765.635 (Continued)

DETERMINING SATISFACTORY GRASS ESTABLISHMENT

A well-established stand of the specified seeded species as determined by the Engineer and the MassDOT Landscape Architect will be required for Final Acceptance. The expectation is that an acceptable number and variety of the desired permanent seeded species (not the cover crop) will be visible. Generally:

- A minimum of 75% coverage by the specified permanent seeded species after one growing season. Of that percentage, generally, depending on the mix species:
  - At least 3 types of the permanent seeded grass species shall be visible.
  - At least 3 species of wildflowers shall be visible.
- There will be no significant gaps or bare soil (generally 2-3 feet in diameter or greater).
- There will be no more than 25% coverage by weed species.
- All soil shall be stabilized and there shall be no channeling or erosion.
- There will be no invasive or aggressive species within the stand at the time of acceptance.
- There shall be no evidence of seed from non-native mixes (i.e., clover) due to failure to clean the hydroseeding tank or using incorrect mix.

Invasive and aggressive weeds (such as mugwort, ragweed, knapweed, and chicory) must be cut or treated prior to going to seed for Interim Acceptance. Herbicide treatment must be coordinated with MassDOT.

A warm-season grass mix with perennials will not have uniform growth. A uniform stand of grass may indicate use of an incorrect mix.

ACCEPTANCE OF SEEDING AND ESTABLISHMENT WORK

Conditional Acceptance shall be based on proper application of seed as specified herein.

Interim Acceptance of Care. Seeding will be inspected by mid-July to assess germination and Establishment conditions as described above. When necessary for Interim Acceptance, areas shall be mowed prior to weed species producing seed and as specified above under Weed Control. ***Areas requiring weed control that are not mowed prior to weed seed dispersal will not be approved for Interim Acceptance.*** Seeding that shows good germination and is determined by the Engineer and Landscape Architect to not require weed control at time of inspection shall be accepted for Interim Acceptance payment.

Final Acceptance of Establishment shall be given upon satisfactory Establishment as described above.

If the seeded area fails to meet the requirements of Establishment by the end of the growing season, Contractor shall propose and implement remediations and site shall be inspected during the following growing season after July 1st. All remediation shall be at the Contractor's expense.

ITEM 765.635 (Continued)

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 765.635, Seeding & Establishment will be measured for payment by the SQUARE YARD, complete in place.

Item 765.635, Seeding & Establishment will be paid at the Contract unit price by the SQUARE YARD upon Conditional, Interim, and Final Acceptances as described above. This price shall include all submittals, seeding, rolling to ensure seed-to-soil contact, weed control other than mowing, water, over-seeding, labor, materials, equipment, and all incidental costs required to complete the work of establishing a satisfactory stand of grass.

Seed and cover crop mixes shall be compensated under the respective Items.

Site preparation, including raking, tilling, removal of debris and stones, and other work to the prepare site for seeding shall be compensated under loam placement or topsoil rehandled and spread as relevant to the project.

Mowing for weed control will be incidental to this Item.

Schedule of payment shall be as follows:

30% upon Conditional Acceptance

20% upon Interim Acceptance of Care, except this amount will be reduced to zero and final payment will be reduced accordingly when areas requiring weed control are not mowed as specified in the Interim Acceptance criteria.

50% upon Final Acceptance of Establishment

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 Subsections 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 Subsection 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.

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:

ITEM 767.121 (Continued)

- 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 required by the Engineer at the Contractors expense.

ITEM 772.336	**CEDAR - RED 5-6 FEET**	**EACH**
ITEM 777.328	**OAK - WHITE 2-2.5 INCH CALIPER**	**EACH**
ITEM 778.501	**JUNIPER-LOW #3**	**EACH**
ITEM 788.301	**BEARBERRY #1**	**EACH**
ITEM 789.433	**BEACH PLUM SHRUB 2-3 FEET / #3**	**EACH**
ITEM 794.345	**SUMAC - FRAGRANT 'GRO LOW' 18-24 INCH**	**EACH**
ITEM 796.762	**DAYLILY - 'ROSY RETURNS' 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 as indicated on the drawings.

METHOD OF MEASUREMENT

Items 772.336, 777.328, 778.501, 788.301, 789.433, 794.345 and 796.762 will be measured for payment per Subsection 771.80.

BASIS OF PAYMENT

Items 772.336, 777.328, 778.501, 788.301, 789.433, 794.345 and 796.762 will be paid per Subsection 771.81.

ITEM 802.408 4 INCH TELEPHONE CONDUIT – TYPE NM (8 BANK) FOOT

The work under this Item shall conform to the relevant provisions of Section 800 of the Standard Specifications 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 details and specifications. All work shall be performed by a Verizon approved Contractor. A representative from Verizon shall be present for all Telephone conduit installed.

For all conduits encased in concrete, use plastic spacers to maintain conduit spacing. Spacers shall meet Verizon 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 through 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

Item 802.408 will be measured for payment per FOOT of conduit installed, complete in place.

BASIS OF PAYMENT

Item 802.408 will be paid at the contract unit price per FOOT; which price shall be considered full compensation for all labor equipment and materials, excavation, backfill, conduit, warning tape, spacers, concrete encasement, etc.

ITEM 804.3 3 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC -(UL) FOOT

ITEM 804.333 3 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC - (UL) IN ROADWAY FOOT

The work under these Items shall conform to the relevant portions of Subsection 801 of the Standard Specifications and the following:

The work shall include the furnishing and installation 3-inch non-metallic conduit for the traffic signal and street lighting system in accordance with the plans and as requested by the Engineer. The length of conduit estimated under this Item is not guaranteed by the Engineer; it may be increased or decreased by the Engineer depending upon actual conditions encountered as provided for in Section 4.06 of the Standard Specifications.

Where new conduits are installed in existing grass areas outside the limits of grading, the work shall include the placement of a minimum of 6 inches of loam and seed to restore the disturbed areas to their original condition. No separate payment will be made for this work, but all costs in connection therewith shall be included in the unit price bid.

Where new conduits are installed in existing sidewalk or paved median areas to remain, the work shall include replacement of the gravel base material and the surface pavement to match preconstruction conditions. No separate payment will be made for this work, but all costs in connection therewith shall be included in the unit price bid.

Where new conduits are installed in existing roadway areas, the work shall include replacement of the gravel base material and the hot mix asphalt required to match preconstruction conditions. No separate payment will be made for the gravel borrow base material, but all costs in connection therewith shall be included in the unit price bid.

MATERIALS

Rigid Plastic Conduit

For the traffic signal system and street lighting system, the conduit material shall be Schedule 80 polyvinyl chloride (PVC) plastic conduit. Cement concrete shall be placed 3 inches around the conduit when the conduit crosses a roadway as shown on the construction plans and details.

Couplings And Fittings

Conduit couplings shall be constructed of polyvinyl chloride rigid plastic formed to fit the outside diameter of the conduit, to be used in conjunction with heavy-bodied solvent cement.

ASTM Specification D2564 Solvent Cements for PVC Plastic Pipe and Fittings.

Conduit Duct Bell Ends shall be polyvinyl chloride rigid plastic approved by Underwriter's Laboratories, Inc. for use on thread less rigid plastic conduit, to be used in conjunction with a heavy bodied solvent cement.

ITEMS 804.3 AND 804.333 (Continued)

Construction Methods

The PVC conduit shall be installed in a trench as described in Subsection 801.60 of the Standard Specification. Refer to trench details for backfill requirements and warning tape requirements above the PVC conduits.

A ¾-inch polypropylene pull rope shall be installed in all conduits.

Metallic warning tape shall be placed above the duct bank as shown on the Construction Details. Conduits entering concrete pull boxes/handholes or manholes shall be terminated 2 inches inside the wall of the pull box/handholes or manholes and shall have attached a bell end of the required size, using the solvent cement as called for in the specifications.

All conduit installed in pull boxes/handholes or manholes shall be installed in knockouts provided in the pull boxes/handholes or manholes. After the conduit has been installed in the pull boxes/handholes or manholes, the open space between the pull boxes/handholes or manhole and the conduit will be sealed with Class B Cement Concrete Masonry. Any conduit installed in such a manner as to block complete access to any other conduit shall be removed and reset.

When more than one conduit is to be installed in one trench, the with of the trench shall be increased by the sum of the outside diameters of the conduits plus 4 inches for each individual conduit.

METHOD OF MEASUREMENT

Items 804.3 and 804.333 will be measured for payment per the respective FOOT of conduit installed per Subsection 801.80 of the Standard Specifications.

BASIS OF PAYMENT

Items 804.3 and 804.333 will be paid per Subsection 801.81 of the Standard Specifications.

Hot mix asphalt trench patching will be paid for under Item 451. - HMA for Patching.

No separate payment will be made for sawcutting trench excavation, sand bedding, control density fill, gravel borrow backfill, compaction, furnishing and installing conduit, fittings, bends, clamps, couplings, backfilling, joint encasement, conduit caps, steel spikes, warning marker tape and pull ropes, but all costs in connection therewith shall be included in the Contract unit prices.

ITEM 811.121 TELEPHONE MANHOLE EACH

The work under this Item shall conform to the relevant provisions of Section 800 of the Standard Specifications, and the following:

Telephone manholes shall be in conformance with Verizon Standard Specifications.

Manholes shall be placed on a 6" layer of ¾" crushed stone in conformance with Material Specification M2.01.4 of the Standard Specifications.

A representative from Verizon shall be present for all telephone manhole installations. Utility work shall be performed by a Verizon approved Contractor.

METHOD OF MEASUREMENT

Item 811.121, Telephone Manhole will be measured for payment per EACH manhole installed, complete in place.

BASIS OF PAYMENT

Item 811.121, Telephone Manhole will be the paid at the contract unit price per EACH installed, which price shall be considered full compensation for all labor and equipment, including ground ring and rods for equipment grounding, cable racks, access ladder, frame and cover, and all incidental costs necessary to complete the work.

ITEM 811.22 ELECTRIC HANDHOLE – SD2.022 EACH

The work under this Item shall conform to the relevant provisions of Subsections 801, 813 and 820 of the Standard Specifications and the following:

The work shall include the furnishing and installation of open bottom, precast concrete electric handholes for the street lighting system and traffic signal system as shown on the plans and as directed. Handholes shall be in accordance with Standard Detail SD2.022 of the Standard Specifications.

Handholes shall be in accordance with Standard Detail SD2.022 of the Standard Specifications. The conduit ends shall have 45 degree sweeps with bell ends.

Handholes shall be bonded per MassDOT standards.

Handhole covers shall be set flush with the top of sidewalk and shall be positioned no closer than 12" to the edge of the concrete sidewalk. Set handholes on a 6" layer of ¾" crushed stone (M2.01.4) under the handhole for drainage.

A 5/8 " diameter x 10 ft long copper clad steel ground rod shall be installed in each handhole and connected to the equipment grounding conductors from all circuits entering the handhole. All covers shall be bonded to ground rod.

METHOD OF MEASUREMENT

Item 811.122 will be measured for payment per EACH electrical handhole installed complete in place.

BASIS OF PAYMENT

Item 811.122 will be paid for at the Contract unit price per EACH, which price shall be considered full compensation for all labor, materials, frame and cover, grounding, ground rods, splicing and incidental costs required for the work.

ITEM 811.28 ELECTRIC HANDHOLE- 24 INCH X 24 INCH EACH

The work to be performed under this Item shall conform to the relevant provisions of Section 800 of the Standard Specifications and the following:

The work shall include the furnishing and placement of a precast concrete electric handhole to the line and grade as shown on the plans, or as directed by the Engineer.

Handhole covers shall be set flush with the finished grade and shall be positioned as shown on the plans. Set handholes on a 6" layer of ¾" crushed stone (M2.01.4) under the handhole for drainage.

A 5/8 " diameter x 10 ft long copper clad steel ground rod shall be installed in each handhole and connected to the equipment grounding conductors from all circuits entering the handhole. All metal frames and covers shall be bonded to ground rod.

Handhole cover shall be bolt down type and labeled with notation "street lighting."

METHOD OF MEASUREMENT

Item 811.28 Electric Handhole – 24 Inch x 24 Inch will be measured for payment per EACH installed complete in place.

BASIS OF PAYMENT

Item 811.28 Electric Handhole – 24 Inch x 24 Inch will be paid ft the contract unit price per EACH, which price will be considered full payment for all labor, materials, frame and cover, grounding, ground rods, splicing and incidental costs required to complete the work.

ITEM 811.31 PULL BOX 12 x 12 INCHES – SD2.031 EACH

The 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 pull boxes, frames, and covers for the traffic signal system in accordance with the plans, MassDOT standards, and as directed by the Engineer.

Pull boxes shall be in accordance with Standard Detail SD2.031 of the Standard Specifications. As shown in the detail the conduit ends shall have 45 degree sweeps with bell ends.

Pull boxes shall be bonded per MassDOT standards.

Pull boxes associated with traffic signals shall have "TRAFFIC" embossed on the cover per MassDOT standards.

METHOD OF MEASUREMENT

Item 811.31 will be measured for payment per EACH installed complete in place.

BASIS OF PAYMENT

Item 811.31 will be paid for at the Contract unit price per EACH, which price shall be full compensation for all labor, materials, equipment, and incidental costs required to complete the work.

No separate payment will be made for excavation, back filling, gravel borrow, grounding but all costs in connection therewith shall be included in the contract unit price bid.

ITEM 812.09 LIGHT STANDARD FOUNDATION PRECAST EACH

The work of this Item shall conform to the relevant provisions of Subections 801, 813 and 820 of the Standard Specifications, and the following:

The work shall include the furnishing and installation of concrete light standard foundation for street lighting system as shown on the plans, in accordance with the light pole manufacturer, and as directed.

Refer to the plans for the details of the light standard foundations and bolt patterns for the two different lighting systems.

The concrete shall be 4000 psi, 3/4", 610 concrete for precast foundations.

All light standard foundations shall be constructed per Section 801.62 of the Standard specifications, except deviations may be required based on field conditions. All deviations must be approved by the Engineer prior to making any changes.

Light standard foundations should be placed per the plans and positioned using an approved grade. Precast concrete foundations shall include galvanized reinforcing rods and hoops, as shown on the plans, and per the manufacturer's Structural Engineer's recommendations. Confirm exact light fixture pole base anchor bolt requirements for size, length, projection, bolt circle diameter and pattern with the pole manufacturer prior to purchase and installation.

The diameter of the foundation shall be adjusted to exceed the diameter of the decorative base by 2" all around. Minimum foundation diameter shall be as indicated on the plans.

Furnish and install 2" galvanized rigid metal conduit in foundation with the coupling and 2" plastic type NM conduit stub out over to adjacent handhole, as shown on the plans.

The top of the foundation shall be set flush with the top of the sidewalk. Install a bond breaker between the foundation and any poured concrete walks.

Light standard foundation shop drawings shall be submitted concurrently with the light pole and luminaire shop drawing.

METHOD OF MEASUREMENT

Item 812.09, Light Standard Foundation Precast will be measured for payment per EACH foundation installed complete in place.

BASIS OF PAYMENT

Item 812.09, Light Standard Foundation Precast will be paid for at the Contract unit price per EACH installed, which price shall be full compensation for all labor, materials, cement mortar mix, galvanized reinforcing rods and hoops, galvanized anchor bolts, galvanized nuts and washers, 2" rigid metal conduit, 2" plastic Type NM conduit, elbows, sweeps, compaction and leveling, excavation (except rock), backfilling and all incidental costs required for the work.

ITEM 813.526 WIRE TYPE 10 NO. 6 GROUNDING FOOT

The work under thisItem shall conform to the relevant provisions of Subsections 813 and 820 of the Standard Specifications and the following:

Wire type 10 - No. 6 shall be bare and shall be used for a continuous equipment ground loop from the ground lug at each floodlight pole to the ground rods in the adjacent handholes and the ground connection at the load center enclosure.

Cables shall be new, on reels or in cartons, and shall not be more than six months old, showing date of manufacture on the nameplate tag.

Branch circuit conductors shall be installed from the load center enclosure to the poles without splices, except at electric handholes or at pole bases.

Lubricants such as Slikon, Wire-Lube or Pull-in shall be used to install cable in conduits. Materials having a deleterious effect on cable shall not be used. Pulling compounds shall be as manufactured by Burndy, Ideal, or Minerallic Company or equal.

Care shall be taken in handling cables so that the insulation is not bruised, broken, or cut. Kinks or sharp bends will not be permitted. Ends of cable shall be kept sealed except when connections are being made.

Cable shall be inspected for defects in the sheathing as it is being unreeled. Cable shall be pulled through conduits by using standard grips. All cables shall be installed in conduits directly from reels or cartons. Cables shall not be laid on earth or grass surfaces.

Ample slack shall be provided in all pole bases and handholes. One full loop of slack shall be allowed for each cable in all electric handholes.

All cable splicing shall be accomplished using mechanical or hydraulic indented connectors. Seepage of water or moisture into the joints shall always be prevented. Wire nuts and/or split bolt copper connectors are not allowed. Ample slack shall be provided at all cable entries. Grounded conductors shall be spliced with cadwelds.

All wire and cable shall be stranded soft-drawn copper and shall have a conductivity of not less than 98 percent of ASTM Standards for annealed copper. Aluminum conductors or copper-clad aluminum conductors shall not be allowed.

The new electrical wiring shall be tested for continuity, grounds, resistance to ground, insulation resistance, shorts and opens. This shall be done by means of a megohm-meter test.

After installation of the new wiring system, complete with the required splices, but prior to the final connection to the load center, the luminaire feeder taps shall be disconnected, and each circuit shall be tested with a 500-volt megger. Tests on each circuit shall be between each phase conductor and the uninsulated conductor. When the insulation resistance is less than 100 megohms between an insulated conductor and the uninsulated conductor, the Contractor shall locate the point or points at fault and make proper corrections and then demonstrate by further evaluating the elimination of such faults.

ITEM 813.526 (Continued)

These tests shall be performed in the presence of the Engineer.

The test results shall be submitted to the Engineer for further review and acceptance. If any results are questionable or inconsistent, the Contractor shall repeat the tests and make any necessary corrections at the request of the Engineer. No wiring system will be accepted until these tests are satisfactorily performed and approved.

The Contractor shall furnish the Engineer with a report of the megohm-meter readings for a permanent project record. All tests and any necessary repairs or replacements that are indicated by them to produce a fault-free system will be performed at the Contractor's expense.

METHOD OF MEASUREMENT

Item 813.526, Wire Type 10 NO. 6 Grounding will be measured for payment per FOOT installed complete in place.

BASIS OF PAYMENT

Item 813.526, Wire Type 10 NO. 6 Grounding will be paid for at the contract unit price per FOOT for the type and size wire specified, which price shall be considered full compensation for furnishing, installing, and connecting all wire and cable.

Wire No. 10 for luminaire wiring shall be paid for as part of the ornamental luminaries.

Wire No. 12 for Harwich master photocell shall be paid under the respective load center Item.

ITEM 813.60 EQUIPMENT GROUNDING LUMP SUM

This work under this Item shall conform to the relevant provisions of Subsection 813 of the Standard Specifications and the following:

Copper-clad ground rods (10' x ¾") shall be driven at each handhole. Ground rods that cannot be driven their full length due to rock or ledge shall be cut off six inches above grade (inside the handhole).

A No. 6 bare copper grounding conductor shall be run throughout the conduit system as shown on the plans. The grounding conductor shall be secured to each ground rod by a U.L. approved ground clamp. All metal conduit, ballast and transformer casings, metal poles, handhole frames, and metal cabinets shall be made mechanically and electrically secure to form a continuous system connected to the grounding conductor.

New ground rod shall be installed at the load centers and lighting handholes. All ground wires shall be connected to the load center ground.

BASIS OF PAYMENT

Item 813.60, Equipment Grounding will be paid for at the contract LUMP SUM price which price shall be considered full compensation for all labor, equipment, materials, and all incidental costs required to complete the work.

The No. 6 bare copper grounding conductor will be paid for under Item 813.526.

ITEM 813.80 SERVICE CONNECTION (OVERHEAD) LUMP SUM

The work under this Item shall conform to the relevant portions of Subsection 813 of the Standard Specifications and the following:

The work shall include the electric service connections from the utility company point of service to the Harwich lighting load center control cabinet for the new Harwich Street lighting system in accordance with the plans and as directed by the Engineer.

MATERIALS

Refer to the specifications provided herein for conduit, conductor and handhole requirements. Provide utility splice handhole at grade as required by Eversource. Size and configuration shall be as required by Eversource. Provide Eversource approved polymer concrete handhole set on a 6" layer of 3/4" Crushed Stone (M2.01.4) under the handhole for drainage. Service conduit and Wire Type 8 No. 1/0 Direct Burial shall be type RGS for the service cable.

CONSTRUCTION METHODS

Service Connections shall be coordinated with Eversource and shall meet all the requirements of Eversource.

Service connections shall conform to all utility company policies and practices. All back charges from the utility company to the Contractor shall be paid for by the Contractor and shall be included within this pay Item. Service connections shall be coordinated and installed in accordance with the local utility company requirements as provided by the utility company.

Each service shall include a three wire, single phase, solid neutral service conductors, conduits, conduit risers, bonding, ground rod, terminations and splicing connections required to complete the installation. Meters will be furnished and installed by the local utility company.

BASIS OF PAYMENT

Item 813.80, Service Connection (Overhead) will be paid for at the contract LUMP SUM price, which price shall be considered full compensation for all labor, material, tools and equipment, meter socket/bypass switch, conduit, conductors, sweeps, bends, couplings, connectors, splices, sealing and waterproofing, for furnishing and installing conductors in conduit and all incidental costs required to complete the work.

ITEM 816.01 TRAFFIC CONTROL SIGNAL RECONSTRUCTION LUMP SUM
LOCATION NO. 1

The work under this Item shall conform to the relevant provisions of Section 800 of the Standard Specifications, the 2009 Manual on Uniform Traffic Control Devices (MUTCD), and the following:

The work shall include the furnishing and installation of part or all of the following Items: ATC traffic signal controller and cabinet assembly with foundation and concrete pad(s); standard mast arm assemblies with anchor bolts and foundations; luminaires; signal posts with foundations; signal heads; backplates; single-point video detection; directional high gain antenna; field monitoring unit; emergency vehicle preemption; pedestrian signals with countdown timers; accessible pedestrian signal (APS) push buttons; all cable and wiring; ground rods; equipment grounding and bonding; service connection; and all other equipment, materials and incidental costs necessary to provide complete, fully operational traffic control signal system as specific herein and as shown on the plans. The location is:

- Main Street (Route 28) at Division Street/ Upper County Road

A list of major traffic signal Items required at this location is included on the plans.

Shop Drawings

Within 30 days after the date of Notice to Proceed, 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.

No work shall be commenced 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 and specifications. The Contractor shall deliver to the Engineer a certificate of compliance with the manufacturer for all materials purchased from the manufacturer.

Existing Installation

The existing signal installation to be reconstructed under this Item shall be maintained in operation throughout the construction period and until the modified signals are ready for operation. The Contractor may use temporary supports for signal heads as necessary to allow construction activities.

Any temporary installations shall be in conformance with the MUTCD at all times.

Once construction is completed and the reconstructed signals are in operation, unused Items of the old signals shall be completely removed and stacked as directed by the Engineer in accordance with Section 815.65. Old cable and unusable materials shall be disposed of by the Contractor.

The Contractor shall carefully remove, transport and stack all material that, in the opinion of the Engineer, is salvageable to MassDOT District 5 Mainternance Facilitity. The Contractor shall coordinate with the Engineer to schedule drop-off time a minimum of 48-hours in advance.

ITEM 816.01 (Continued)

Signal Turn-On

Prior to initial turn-on of the new signal, equipment, signal displays, and vehicle detection as shown on the plans and called for in these special provisions, shall be installed and operable. Applicable signs and pavement makings shall also be in place when the signals are put into operation. Refer to the FINE TUNING, ADJUSTMENT, AND TESTING PERIOD and FINAL INSPECTION AND ACCEPTANCE sections in the upfront portion of this document for additional information.

Service Connection

Service connection shown on the plans is approximate only. The Contractor shall determine exact location from the servicing utility, arrange to complete the service connection, and be responsible for all charges incidental thereto. The respective utility is responsible for making the connection from the respective riser to the overhead wires.

Testing of Grounding System

The Contractor shall perform testing of the equipment grounding system in the presence of the Design Engineer in accordance with MassDOT Standard Specifications.

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 the MUTCD.

Bench Testing

Prior to installation in the street, the Contractor shall perform bench testing of the proposed completed controller/cabinet assembly in the presence of MassDOT and the Design Engineer at the Contractors facility prior to installation in the field. Refer to Document A00810 for the ATC/ATCC test plans to be executed by the Contractor in the presence of the Engineer. Any issues identified during the testing will be successfully mitigated by the Contractor prior to installation.

The Vendor/Manufacturer shall provide this testing facility within New England. In order for the Vendor/Manufacturer's facility to be acceptable for testing, it must be clean, air conditioned/heated, have signal displays and other equipment needed for simultaneous testing of the controller/cabinet assembly supplied as part of this project.

The Vendor/Manufacturer shall set up the controller to operate test displays on all field signal circuits used for the signal sequence shown on the plans. The Vendor/Manufacturer shall make available to the Engineer complete and accurate copies of the as-built wiring diagrams for the cabinet assembly prior to inspection. In addition, a hard copy of all programming data resident in each of the devices at the time of inspection shall be furnished to the Design Engineer. The services of a test Engineer shall be made available by the Contractor during the entire test process at no additional cost.

ITEM 816.01 (Continued)

Single-point Video Detection System

The Contractor shall furnish and install single-point video detection and monitoring system (SPVDMS) as specific herein and shown on the plans.

The SPVDMS shall detect vehicles on a roadway by processing images sent from an IP 360-degree camera to an interface unit with detector outputs that can be received by the traffic signal controller. The SPVDMS shall consist of but not limited to the following Items: IP 360-degree camera with fisheye lens, video processor unit, surge suppression, and cables.

No additional hardware, software Items and/or subscription fees/costs shall be needed/allowed to satisfy the requirements as defined in these specifications for the life of the project, and shall meet the following requirements:

1. The SPVDMS shall include all licenses for traffic data collection, data reporting, and unlimited web-based video streaming.
2. The SPVDMS shall stream the detection video camera via the FMU manufacturer's web interface. The use of an external VPN connection shall not be required or allowed.
3. The SPVDMS shall collect all turning movement counts in perpetuity, 24 hours a day 7 days a week, and provide volume occupancy reports as needed.
4. The SPVDMS shall not require the use of a data plan to collect and store traffic data.
5. THE SPVDMS shall not use a web-based configuration software.
6. The SPVDMS shall be equipped with a variable video stream bit rate, to allow streaming video via the FMU.

The SPVDMS shall allow for the configuration of all settings within the SPVDMS without the need for an outside internet connection.

The SPVDMS shall be supplied with a software client program that will be used to configure all settings. The use of a web-based software shall not be allowed.

The SPVDMS shall include a user configurable object masking system to improve detection, by removing unwanted areas of interest.

ITEM 816.01 (Continued)

Components of the SPVDMS shall all be the same make and model. As a minimum, the SPVDMS system shall be supplied and installed with the following functionality:

- Shall have the capability of remotely displaying live video streams all IP video detection units installed at the intersections. The setup of detection zones shall be available via remote access. The system shall log which user made any changes to the detection zone configurations.
- Shall acquire and record phase, channel, detector, pedestrian detector, pre-emption, alarm and overlap statuses at a frequency of no less than 10 times per second including whether a phase is next or has a call for service on it.
- Video detection shall consist of an IP based camera assembly and a digital video detection system. Analog cameras with separate video encoders shall not be allowed.
- Every vehicular approach at every project intersection shall be included in the vehicle detection system, as shown in the Plans.
- Shall be supplied with the ability to automatically collect and process data based on the classification of vehicles.
- Shall provide 24/7 turning movement count reports at no additional cost for the life of the project.
- Shall support local configuration of detection zones and system settings via manufacturer software.
- Shall allow for configuration at the roadside, by a laptop computer connected via ethernet to the Video Processing Unit and Software.
- Shall support the configuration of entries, exits, and turning movements for additional traffic analytics.
- All configuration files shall be stored locally at the traffic control cabinet.
- Installer shall follow all manufacturer written instructions/recommendations and requirements related to the install. Installer shall also submit a list of personnel that will be involved in the installation and provide certification that the technician has received factory approved/authorized training.
- Shall support a minimum of 100 unique video detection zones.
- Shall support real-time detection of vehicles, cyclists, and pedestrians in configurable detection zones per camera.
- Shall support identification of unacceptable video feed, including interrupted video signal.
- Shall support directional detection zones to reduce false detections from objects traveling in other directions.
- Shall support the tracking of vehicles and pedestrians for video analytics applications.

ITEM 816.01 (Continued)

Construction Methods - The SPVDMS shall be installed in accordance with the manufacturer's recommendations. Size and locations of the video detection zones shall be positioned/repositioned in the field to provide accurate vehicle detection on each approach as directed by the Engineer/ MassDOT. The SPVDMS shall be programmed by the Contractor to ensure that detection zones are established to cover the approach width and that the detection system is functioning to the satisfaction of MassDOT. Once the new camera(s) is in place and active, the Contractor shall verify that accurate, stable detection is occurring by observing vehicle presence/movement along with the video image on each approach.

The Contractor shall supply and install extension brackets to support proposed the vehicle detection system camera(s).

The extension bracket length and attachment heights shall be verified by the Contractor based on existing grade at the site. The Contractor shall be responsible for selecting the proper length of bracket and achieving the proper orientation of the extension brackets and may be required to field adjust the location of the extension brackets in the presence of the Engineer/ MassDOT to properly align vehicle detection sensors and for strategic placement of any blind spot created by the extension bracket.

The SPVDMS cable shall be supplied and installed per the manufacturer's recommendations.

The Contractor shall be responsible for furnishing all training, labor, materials, cables, connectors, tools, equipment, shipping, and incidental Items necessary to complete the installation and make the SPVDMS fully operational.

The Contractor shall install the SPVDMS system software on computers/systems as required by the Engineer to allow visual confirmation of the detection zones as shown on the plans. All equipment shall be installed and wired in a neat and orderly manner in conformance with the manufacturer's instructions. The detector assembly(s) shall be affixed to the support structure in accordance with the manufacturer's instructions to provide the optimal field of detection.

Installation - The manufacturer of the SPVDMS, or their representative, shall design sensor layout, placement, and lens size, and supervise the installation and testing of the equipment. The Contractor may be required to adjust and readjust the location of existing and proposed vehicle detection zones in the presence of the Engineer, at no additional cost, to properly set the detection areas. A factory certified representative from the supplier shall be on-site for a minimum of one day.

Installation will be considered complete when the Contractor shows the system successfully and consistently places a request to the controller to call and extend the appropriate phase based on a vehicle detected in the detection zone.

The manufacturer shall provide 3 complete sets of maintenance manuals for the installed equipment. These manuals shall have complete set-up, maintenance and troubleshooting procedures presented in an organized format.

ITEM 816.01 (Continued)

Warranty, Maintenance and Support - The traffic cameras shall be warranted by its supplier for a minimum of ten (10) years.

The SPVDMS shall be warranted by its supplier for a minimum of two (2) years.

During the warranty period, the supplier shall provide technical support by telephone during normal business hours and request for support by telephone shall be answered by factory certified personnel within one (1) hour.

During the warranty period, certified personnel from the supplier shall be on site within seventy-two (72) hours if required.

Vehicle Detection Communications Cable

The vehicle detection communications cable shall be supplied and installed per the manufacturer's recommendations.

Vehicle Detection Management System Software Integration

The Contractor shall connect the video detection system to MassDOT existing Vehicle Detection Management System Software. The Contractor shall coordinate with MassDOT and or the Engineer for remote access to the existing Vehicle Detection Management System Software.

Video Detector Unit Assemblies

The video detector assemblies shall conform to ATCC 5301 v02 and NEMA TS2 Type 1. All vehicle detection and preemption cards shall be mounted either in the cabinet's detector rack, single, stand-alone detector rack; or installed on the cabinet shelf and shall communicate with the ATC controller providing vehicle detector data. Installing detector cards directly into the traffic controller chassis is not allowed.

Advanced Transportation Controller (ATC)

The controller shall be shelf-mounted, solid state, menu driven, keyboard unit conforming to the ATC 5201 v06.25 Advanced Transportation Controller (ATC) Standard. The controller shall be supplied with all necessary interfaces needed to support Advanced Transportation Controller Cabinet (ATCC) / Serial Interface Unit (SIU) communications. The controller shall be supplied with an internal real-time clock/calendar capable of daily, weekly, and yearly events time programming. The controller shall be designed and supplied to provide the number of phases and sequencing as shown on the plans without any auxiliary equipment. The controller shall be supplied as follows:

ITEM 816.01 (Continued)

- Contain ATC API operational software conforming to ATC 5401 Standard v02.
- Be configured to operate in an ATCC 5301 v02 cabinet platform.
- Be supplied with the appropriate version of the Linux operating system, Board Support Package (BSP) and internal processing levels necessary to support connected vehicle (CV) as well as local and system operations.
- Shall include all licenses to support CV applications (SPaT), SPM, and Transit Signal Priority (TSP). These licenses shall be included with the controller.
- Shall include all licenses to allow for use of graphical user interface as well as standard display.
- Shall be fully compliant with NTCIP 1201, 1202, and 1211 standards.
- Shall support a minimum of 8 vehicle/pedestrian phases and 8 overlaps.
- Include a minimum of 3 High Speed USB 2.0 ports.
- Include a minimum of 3 10/100BaseT, RJ45 Ethernet connector ports.
- Shall be supplied with 2 SDLC ports, at a minimum.
- The SDLC ports shall be fully functional and operate simultaneously with all other ports.
- The SDLC ports shall support the following baud rates:
  - SDLC Port
    - Asynchronous Rates (bps) 1200 / 2400 / 4800 / 9600 / 19.2k / 38.4k / 57.6k / 115.2k / 230.4k
  - SDLC (Port SIU)
    - Synchronous Rates (bps) 153.6k / 614.4k
- All data communication connectors shall be supplied and installed with an outer boot molded cover designed specifically for the connector to ensure physical protection for the connector wire terminations. There shall be no exposed wires visible between the connector and the cable insulated jacket.
- Shall contain real-time context sensitive HELP screens.
- Shall include a time-of-day, day-of-week, week-of-year scheduler.
- Shall include dedicated phase detection inputs, pedestrian detection inputs, and system detection inputs.
- Shall be supplied with the ability to provide 12 unique preemption/priority inputs.

ITEM 816.01 (Continued)

- Shall contain the ability to alter the controller unit's internal database using a built-in front panel keyboard, using a computer connected to the controller unit with a USB cable or an Ethernet cable, and remotely using a central management system application. In addition, a remote access system shall be provided using SSH and/or HTTPS.
- Shall include an internal database which stores all configurable parameters, including but not limited to phase timings, phase sequencing, overlaps, coordination parameters, preemption and priority parameters, time base parameters, communications parameters, detection parameters, flashing operation parameters, and security parameters.
- Shall include detector failure algorithms that initiates user defined actions when user defined criteria are met.
- Shall be supplied with the ability to generate user defined alarms and alerts.
- Shall be supplied with programming documentation fully defining the coding (compiler and C libraries) used to create the ATC controller applications residing in the unit.
- Shall be supplied with the source code used to produce and support the Linux kernel environment (Board Support Package).
- Shall be supplied with a manufactures Software Development tool Kit (SDK) for supplied firmware version to allow for future system modifications/expansions.
- -40ºC to 74ºC operating temperature range
- -40ºC to 85ºC storage temperature range
- 10% to 95% relative humidity (non-condensing)
- 89 VAC to 135 VAC, 60 Hz
- No additional hardware, software Items and/or subscription fees/costs shall be needed/allowed to satisfy the requirements as defined in these specifications
- Meet the functional requirements of the NEMA TS-2, 2016 Standard, including all amendments.
- Shall have connectors for all external input/output functions that are rigidly defined by the ATC, NTCIP and applicable national standards required to be supplied as part of the specification.
- Based on application, connectors for external input/output functions shall be identical in quantity, size, type, configuration, and pinout for all manufacturer's units used in the project.

ITEM 816.01 (Continued)

- Shall be supplied with all necessary hardware and software elements needed to fully support Connected Autonomous Vehicle (CAV) operations utilizing dual mode DSRC/5G communications.
- Shall be supplied with all necessary ATC hardware, software elements and instruction procedures needed to facilitate the extraction and processing of the SPM data.
- Support Flashing Yellow Arrow (FYA) and Flashing Red Arrow (FRA) operation with the ability to provide a minimum of 6 flashing pairs.
- Contain the ability to alter the controller unit's internal database using a built-in front panel keyboard, using a computer connected to the controller unit with a USB cable or an Ethernet cable, and remotely using the central management system application.
- Be supplied and installed with the ability to collect, store, and report various measures of effectiveness (MOE's).
- Shall collect and process all 255 high resolution enumerations as defined in the report entitled "Indiana Traffic Signal Hi Resolution Data Enumerations", dated 2019. This data will be processed in the controller and available via download from the controller USB Ethernet port or, if available, via system communications. At a minimum, the controller shall be set up to provide the following performance reports:
    - Approach delay
    - Preemption events
    - Transit Priority Events
    - Split Monitor
    - Approach Volumes
    - Arrivals on Red
    - Arrivals on Green
    - Phase Termination
    - Pedestrian Delay
- Shall be able to backup and restore ATC programing data to a USB memory device connected to the front of the controller. No additional software shall be required to perform this function.

ITEM 816.01 (Continued)

- Shall be able to upgrade the ATC firmware via USB memory device connected to the front of the controller. No additional software shall be required to perform this function.
- The Contractor at time of submission shall submit from the manufacturer the latest ATC firmware release notes as part of the shop drawing submission.
- The ATC unit shall be supplied with the same latest firmware. The use of older firmware shall not be allowed unless directed by the Engineer.
- The controller supplied and installed as part of this project shall be provided with Transit Signal Priority (TSP) operation without the need for additional software, hardware, data key device or any recurring licensing fees. The TSP algorithm shall be fully programmable to extend a phase or reduce a vehicle phase depending on user defined settings. This function shall be available for operation during both coordinated and free operation, and shall include the following:
    - TSP shall support a minimum of six priority routines.
    - The TSP program shall be capable of extending the priority phase green time and truncating the non-priority phase(s) green when a priority call is received by the ATC unit.
    - TSP operation shall not cause the ATC unit to skip any phases that have active vehicle/pedestrian demand.
    - Rail and emergency vehicle preemption (EVP) shall override TSP operation.
    - The TSP program shall have the ability to delay and/or extend priority calls.
    - The TSP program shall have the ability to support user defined time periods between servicing valid priority calls.
    - All TSP events shall be logged (time/date stamped) in the ATC unit.
    - The TSP algorithm shall allow for non-TSP phases to be conditionally truncated based on the absence of a concurrent pedestrian service of the non-TSP phase.
    - It shall be possible to user define in the traffic controller a minimum time between responses to priority calls.

TSP Coordinated Operation **(Future Use) –** Under coordinated operation, the controller shall modify existing signal operation to accommodate a priority call. This may include modification to per phase termination points established under normal coordinated control. During a priority event, per phase coordination modes shall remain in effect. Priority and non-priority phase duration shall be user programmable per coordination pattern.

ITEM 816.01 (Continued)

TSP Non-Coordinated (Free operation) **(Future Use)** – Upon receipt of a valid priority call, the controller shall either extend the priority phase or reduce the non-priority(s). These settings for the adjusted green times shall be user defined, on a per phase basis, and adjustable on a time-of-day basis.

ATC Cabinet Enclosure

The cabinet 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 cabinet 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 cabinet 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 cabinet 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 the cabinet.

The cabinet 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 cabinet shall be supplied with a GFCI duplex outlet, as well as a multi-outlet strip. All AC+ line cords shall contain a white flexible label with black 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 cabinet 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 Cabinet. 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 cabinet in close proximity to the field output terminals (phoenix connectors). The neutral conductor for all signal cable shall be properly terminal on the AC-buss within the cabinet; direct connection of the signal cable's neutral conductor to the cabinet's electrical ground buss is not allowed.

ITEM 816.01 (Continued)

The cabinet shall be equipped 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 various in cabinet devices shall be permanently labelled as to which device it is connected to. This label shall be white in color with black lettering and 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 cabinet 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 cabinet 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 doors shall be defined as the "primary" doors; 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:

a. Center of the cabinet (lock)

b. Top of the cabinet – controlled by door handle

c. Bottom of the cabinet – controlled by door handle

ITEM 816.01 (Continued)

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.

The cabinet 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 cabinet shall have a pliable seal composed of caulking compound or mastic installed between the cabinet base and the concrete foundation and in between the riser base and the cabinet to prevent dust and dirt from entering the cabinets.

Extension Bases – The cabinet 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 cabinet 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 cabinet 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 cabinet 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 accidental 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.

ITEM 816.01 (Continued)

There shall be two intake vents provided with the cabinet, one in each front door.

Cabinet Switches/Manual Control – The cabinet 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 cabinet 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 cabinet shall contain a pull-out drawer, 19" wide with sufficient strength to hold a laptop computer. The cabinet detail included in the contract drawings show the location of the pull-out drawer.

Spare Lateral Rack (SLR) – The cabinet 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.

ITEM 816.01 (Continued)

Electric Meter Trim - The cabinet shall be supplied and installed with an electric service meter socket trim and electrical service disconnect switch mounted on the exterior of the cabinet. The meter and disconnect switch shall be installed centered on the side of the cabinet 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 cabinet 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 interior 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 cabinet shall be supplied with a laminated door stickers. These stickers 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/ 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 door 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 door. 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 cabinet shall be supplied with 32 output channels and 48 input channels. The input channel rack assemblies shall consist of two (2) 24 channel units.

ITEM 816.01 (Continued)

Output Channel Assignments – The cabinet shall be configured to provide the following output channel assignments:

Channel	Outputs (32 Channel)	Outputs (16 Channel)
Channels 1 – 8	Phases 1 -8	Phases 1 -8
Channels 9 – 12	Flashing Yellow Arrow	Flashing Yellow Arrow/Overlaps/ Confirmation Strobe / As needed
Channels 13- 16	Pedestrians	Pedestrians
Channels 17 – 20	Overlaps	N/A
Channels 21 +	As needed	N/A
Channel 32	Confirmation strobe if required	N/A

Detector Test Switch Panels – The cabinet 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 the cabinet. 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. The Contractor shall program the Datakey with data entries appropriate for the intersection. The CMU shall be programmed to activate current load monitoring on all active vehicle and pedestrian circuits. The CMU shall be programmed using the set-up wizard supplied with the CMU. The Contractor shall supply documentation stating that the set-up wizard was used for the CMU programming. Any deviations made by the Contractor to the CMU programming data generated by the set-up wizard shall be documented with reason(s) why the deviations were required; these deviations shall be documented and included with the cabinet. All programing resident on the Datakey shall be included in the hardcopy.

ITEM 816.01 (Continued)

A cabinet power supply shall be supplied and installed in the cabinet. The cabinet power supply shall comply with ATCC 5301 v02.

The Contractor shall reconfigure the default username and passwords on all communications / control equipment within the ATC Controller and Cabinet. This includes but is not limited to the ATC traffic controller, ATC ancillary equipment, video detection equipment, Ethernet switches, and routers. The new username and passwords shall be created in coordination with the agency IT staff and or as directed by the Engineer; no manufacture default level passwords shall be allowed.

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.

The Contractor shall utilize network communications encryption settings on all forms of wired Ethernet data paths. No "in the clear" communications shall be allowed. At a minimum all wired Ethernet connections shall meet 802.1AE standards. The Contractor shall supply and configure a Cyber Intrusion and Prevention Device (CIPD) in each ATC cabinet. The CIPD shall prevent any unauthorized access / connections to the traffic control system. Upon detection of unauthorized attempts, the CIPD shall notify the agency via SMS message and or email and log the event. The CIPD shall be installed prior to any remote access device.

The Contractor shall coordinate with the agencies Information Technology and Operational Technology (IT/OT) staff and or the Engineer for finale configuration of the CIPD. No direct access to the traffic system shall be allowed without the installation of a CIPD and or Router/Firewall.

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 cabinet 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.

ITEM 816.01 (Continued)

Spare Traffic Signal Equipment

The Contractor shall furnish and provide the following spare equipment in the of the proposed ATC cabinet:

- 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.
- Thirty-two (32) additional Phoenix connectors.
- One (1) additional CMU USB datakey programmer tool with software.
- A second separate GFI protected duplex outlet mounted on the side wall of the cabinets for servicing other devices. The main cabinet circuit breaker shall be rated at 30 amps.
- Two (2) spare service power panel assemblies.

All spare equipment required to be supplied with the cabinet 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 foundation.

Cabinet Documentation (Hard copy. Flash Drive)

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.”

Operating and maintenance manuals for all in-cabinet devices shall be provided in both electronic format as well as hard copy.

ITEM 816.01 (Continued)

4G LTE Directional High Gain Antennas

The Contractor shall furnish and install a 4G LTE Directional High Gain Cellular Antenna (DHGCA) which shall be used for communication between the FMU and MCOMMS for all access to the traffic signal equipment, as shown in the Plans.

All active components shall be UL listed and the network installation shall conform to the NEC/ EIA/TIA, and any other applicable standards and codes.

Antenna Requirements

- The Contractor shall provide and install an external high gain directional antenna at all locations as shown on the plans.
- The antenna shall have a gain of at least 15 dB.
- The external antenna shall be on a protected mount, weatherproof and of the type that is specifically designed for outdoor applications. It shall include a weatherproof covering that protects the antenna elements from snow and ice buildup.
- The antenna shall be mounted to the traffic signal pole or strain pole.
- The mounting method and hardware shall be as recommended and approved by the antenna manufacturer.
- The mounting method and hardware shall be as recommended and approved by the antenna manufacturer.

The Contractor shall position the antennas in a manner that yields the maximum achievable signal strength at each location.

The Contractor shall rotate the antenna through a full 360 degrees of rotation while monitoring the received signal strength. The antenna shall be permanently secured at the rotational position that yields the maximum signal strength.

The lead-in cable between the external antenna and the cabinet shall be an ultra-low-loss coaxial cable as specified by the antenna manufacturer. The antenna cable shall be suitable for installation in an outdoor conduit enviroment. The cable loss shall not exceed 4 dB per one hundred (100) feet of length. The Contractor shall use two (2) antenna cables between the DHGCA and the FMU. The Contractor shall provide and install a coaxial surge protector in the antenna lead-in cables.

The surge protector shall be properly grounded as recommended by its manufacturer. The surge protector shall be ground to a ground bus bar in the traffic control cabinet. Grounding to the 19” rack rails shall not be allowed.

Any adapters needed to interconnect the FMU, surge protector, and antenna shall be supplied by the Contractor.

ITEM 816.01 (Continued)

Field Monitoring Unit (FMU

In the cabinet the Contractor shall furnish and install a Field Monitoring Unit (FMU) and software, as well as all needed accessories required for a full and complete installation, including but not limited to power adapters, Ethernet cables, and interface cables, as described herein.

The FMU shall be manufactured by Applied Information (AI), ThruGreen or Mio Vision with 4G Video streaming support and a 4-Port Ethernet Switch. The Contractor shall request from MassDOT and or the Engineer the IP addresses for each device connected to the FMU. All devices with Ethernet ports within the controller cabinet shall be connected to the FMU.

The FMU shall be integrated into MassDOT existing MassDOT Critical Operations Multi-jurisdictional Modular System (MCOMMS) cloud-based management system.

The FMU shall be configured to connect to MassDOT existing traffic signal network as directed by the Engineer.

This work shall consist of furnishing, installing, configuring, and testing an FMU that meets the following requirements:

A. The FMU shall operate independent of the brand/type of intersection controller, video or thermal detection system and battery backup system (if applicable) deployed in the traffic cabinet.

B. The FMU shall function correctly between -34 degrees C and +74 degrees C.

C. The FMU shall have at least five (5) other FMU installations within the New England area.

D. The FMU shall be provided with appropriately rated connectors that allows the FMU to be exchanged by unplugging connectors, without tools.

E. The Contractor shall develop a test plan that fully demonstrates that all requirements as defined in these specifications have been met. The test plan shall define in detail each test, and the expected result of each test. The test plan shall be submitted as part of the shop drawings and shall be subject to revisions based on review and comment by the agency and the design consultant. Where applicable, the Contractor shall provide manufacturer certificates of compliances to verify that the unit supplied meets a specific requirement.

F. The FMU shall monitor and log all Controller and cabinet faults and/or alarms.

G. The FMU shall be wired directly to the cabinet.

ITEM 816.01 (Continued)

H. The FMU shall have an internal cellular modem running at 4G LTE.

- The Cellular modem shall be designed to be replaced / upgraded to 5G service when available.

I. The FMU shall incorporate an integrated GPS and cell modem.

J. The configuration of the FMU shall be accomplished by accessing the internal web server with a browser. It shall be possible to configure the FMU without any special software.

K. The FMU shall be powered via a standard 120 VAC input power.

L. The FMU shall allow for the routing of the controller configuration packets to and from the controller by Ethernet for any type of controller utilized by the agency. In this way, it shall be possible to configure the controller and utilize the controller specific software to interrogate the controller, and the FMU shall provide the redundant communications pipeline (where applicable) which allows this to be accomplished.

M. The FMU shall be connected via a RJ-45 Ethernet cable to the Ethernet Switch (if applicable).

N. The FMU shall be configured to allow for the remote display and control of the connected traffic signal controller via the FMU manufacturer cloud hosted web-based software. This feature shall not require the end user to create a separate VPN connection to the FMU.

O. The FMU shall be configured to provide access to view the detection system, including the video image of each approach, via the FMU web-based software. This feature shall not require the end user to create a separate VPN connection to the FMU.

- The remote streaming of the video detection camera shall be done via the FMU manufacturer's website. The streaming shall be able to stream at 10 frames per section or greater.

P. The FMU shall perform a load test of the connected Battery Backup System (BBS) batteries on a scheduled or on demand basis (if applicable).

Q. The FMU shall, within the size limitations above, include a battery and battery charging/monitoring circuit to allow the FMU to function correctly even when all power to the intersection has failed. The battery shall continue to power the FMU for a minimum of 5 hours after all power has failed to the intersection.

R. The FMU shall incorporate an integrated GPS which will allow the FMU to geo-locate itself on the FMU management software map, without configuration.

ITEM 816.01 (Continued)

S. The FMU shall be connected to the traffic signal controller to provide for GPS time sync pulse for the traffic signal internal clock.

T. The FMU shall operate without requiring a static IP address. The only configuration required at the FMU is to enter the URL of where the FMU management software is hosted.

U. In the event that the cell service is interrupted or is not available, the FMU shall store any events that occur in its internal memory and forward these events automatically to the FMU management software when the cell service is restored. In this way, a complete record of events at the device can be maintained even if cell service is interrupted for a period of time. The system shall store 5,000 events.

V. The FMU shall utilize HTTP and HTTPS protocols, and XML data structures, for communication with the FMU management software. In this way the data shall be scalable for future expansion and competition. The use of custom proprietary protocols is not permitted.

W. The FMU shall include Ethernet communications via an Ethernet Port with RJ45 connector.

X. The FMU shall include an integrated four port Ethernet switch.

Y. The FMU shall be supplied and installed to include weatherproof antennas to support operations.

Z. The FMU shall be supplied, installed, and configured by the Contractor with map display management software that has the following features:

- The FMU shall include a scrollable, zoomable map display, with the intersections and other monitored devices shown as representative icons on the map. The map shall include the ability to see the intersections using Google Streetview or similar.
- The alarm status of the intersection shall be clearly indicated on the icon on the map so that the user can see at a glance which intersections are in an alarm condition.
- The map display shall also include a list of intersections, with the number and priority of alarms indicated on the list. Intersections in high priority alarm shall be moved to the top of the list, followed by medium priority, low priority and then finally by intersections not in an alarm state.
- The icons shall dynamically change to be able to clearly indicate if an intersection is offline.
- Clicking on the icon on the map shall expose a display window with the current parameters of the intersection shown.

ITEM 816.01 (Continued)

- The default map display position and zoom shall be configurable by user so that the user's view will default to show the intersections that the user is responsible for managing.
- The map view shall have the ability to show Google traffic overlays on the map.

AA. The FMU shall be supplied, installed, and configured by the Contractor with intersection detail display management software that has the following features:

- It shall be possible to drill down, either from the map icon or from the list, to a device level detail for the intersection. The cabinet shall be fully wired to support the following parameters that shall be monitored and displayed:
    - The alarm status, with priority indicated, and a text description of the alarm (if an alarm is present for this device).
    - The time since the last communication with the device.
    - The following parameters (real time values, minimum for the day values, maximum for the day values, and average for the day values).
        - The AC mains voltage (value)
        - The battery back-up voltage (value)
        - The cabinet temperature (value)
        - The cabinet humidity (value)
        - The presence of AC power (OK or Fail)
        - The flashing status of the intersection (OK or Flashing)
        - Stop Time status (OK or Stop Time Active)
        - The cabinet door status (Open or Closed)
        - The intersection fan status (Fan on or Fan off)
- It shall be possible to view graphs of each of the value parameters in graphical form over the most recent two-week period. This includes real time graphs of:
    - The AC mains voltage
    - The battery back-up voltage
    - The cabinet temperature
    - The cabinet humidity

ITEM 816.01 (Continued)

BB. The FMU shall be supplied, installed, and configured by the Contractor with a diagnostics and log display management software that meets or exceeds the following:

- From the device level detail within the FMU management software, it shall be possible to drill down to get the raw data; the error logs; and the communications logs to allow a technician to fault-find problems.
- It shall be able to filter the logs by Device; by Device Type and/or by Group as well as between dates.
- It shall be able to print these selected logs to a local printer or a PDF file.
- It shall be able to export these logs to Excel on the local computer for further analysis.

CC. The FMU shall be supplied, installed, and configured by the Contractor with an alarm management software that meets or exceeds the following:

- The FMU management software shall have a comprehensive alarm generation capability.
- It shall be able to configure alarms to be generated on any parameter that indicates a value that is out of tolerance, including analog values, digital values, and enumerated values.
- Alarms shall be configurable to be of Low, High or Critical Priority.
- The alarm priority shall be displayed throughout the FMU management software, on all displays using color codes such as red-critical; yellow–high; and amber-low to indicate the priority of the alarm.
- The current active alarms shall be accessible for viewing via an expandable window, to observe which alarms are active and when the alarm occurred. The highest priority alarms shall rise to the top of the list.

DD. The FMU shall be supplied, installed, and configured by the Contractor with alerts management software that meets or exceeds the following:

- The FMU management software shall have a comprehensive alerting function to enable the response personnel to be notified when an abnormal situation has occurred.
- It shall be able to configure alerts to one or more personnel for each alarm. This will cause, as selected, an SMS and/or an email to be sent to the person when an alarm occurs.
- The alert notification system shall be configurable by the system user to optionally send via email and/or via SMS message when an alarm clears.

ITEM 816.01 (Continued)

- The SMS and email alerts shall be issued within 30 seconds of the occurrence of an event which results in an alert being issued.

EE. The FMU shall be supplied, installed, and configured by the Contractor with connectivity and server management software that meets or exceeds the following:

- The Contractor shall supply the FMU with 10 year data for Connectivity and Service including video streaming, as part of the purchase price. The Connectivity and Service agreement shall include at a minimum:
  - Cellular Connectivity
  - No cellular overage charges
  - Video Streaming via the manufacturer's web-based interface
  - Extended warranty on the hardware for the period of the Connectivity and Service Agreement
  - Over-the-air software updates
  - Over-the-air security updates
  - Remote Front Panel of the connected traffic signal controller
  - SPaT message broadcast to mobile device application
  - Future Connected Vehicles Service

FF. The FMU shall be configured for SPaT data.

GG. The FMU shall be supplied with the unlimited video/data streaming service.

HH. The FMU shall be configured with Traffic Signal Controller remote front panel access.

II. The FMU shall be configured to supply streaming video from the detection system.

JJ. At the time of the shop drawing submittal, Contractor shall supply a detailed list of available FMU functions for the agency consideration.

ITEM 816.01 (Continued)

Emergency Preemption

The emergency vehicle preemption system shall be installed in the same cabinet as the controller.

The emergency vehicle preemption control system shall consist of a data-encoded phase selector to be installed within the traffic control cabinets in the detector racks. These units 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 optical detectors shall be single input, single output units used to control one approach. All traffic signal installations shall be supplied with a minimum of two optical detectors unless otherwise noted in the major Items list.

The phase selectors shall be a rack-mounted plug-in two and/or four channel, dual priority device, as noted on the plans. The phase selectors shall plug into an empty slot in the detector rack. Programming the phase selectors shall be via a PC-based computer utilizing unit specific software. One copy of software on CDs shall be supplied and licensed to the applicable MassDOT. A hard copy of final programming data shall be left in the control cabinet. A complete set of interface cables for phase selectors to laptop connection shall be supplied in the cabinet.

The Contractor shall install confirmation strobe(s) as shown on the plans. The confirmation strobe shall serve to validate to the driver of the emergency vehicle that the traffic signal has recognized the preemption call and will initiate the proper preemption sequence. The confirmation strobe shall be a white lens.

The Contractor shall be responsible for the proper programming of the phase selector, orientation of the optical detectors, and all other work necessary to provide a complete and operating emergency vehicle preemption systems. The Contractor may be required to field adjust the location of the optical detectors in the presence of the Engineer to properly detect preemption calls from approaching vehicles. Upon final inspection and testing, any discrepancies or failures to properly preempt the traffic signals will necessitate a complete replacement on any non-compatible equipment.

Signal Housing Brackets

All signal housing brackets must be installed to manufacturer's specifications and must be properly torqued. The brackets shall utilize galvanized cables, hardware, and all miscellaneous materials necessary to fix mount the signal heads to the mast arms. Banded clamps and stainless-steel clamps shall not be used. Any bracket that does not meet MassDOT approval will not be accepted. No separate payment will be made to correct the bracket.

ITEM 816.01 (Continued)

Signal Heads

Signal heads mounted on mast arms shall be rigidly attached to the mast arms. All signal heads mounted overhead on mast arms shall be installed, with the bottom of the signals at the same height. All traffic signal lenses shall be 12 inches in diameter. All signal heads shall be equipped with ball and/or arrow light emitting diode (LED) modules. Five (5) inches non-louvered backplates and tunnel visors shall be provided on all signal heads.

All backplates shall include 3-inch wide, yellow reflective micro-prismatic retroreflective sheeting conforming to ASTM D4956 Type VIII of better on the outside edge of the backplates.

Traffic Signal LED Modules

All signal and pedestrian displays shall be equipped with LED signal modules. All red, amber, green, and pedestrian signal housings with the exception of optically programmed and fiber optic housings and shall conform to the following where applicable:

- ITE's Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Arrow Traffic Signal Supplement, Dated July 1, 2007
- ITE's Vehicle Traffic Control Signal Heads – Light Emitting Diode (LED) Circular Signal Supplement, Dated June 27, 2005.
- ITE's Pedestrian and Countdown Signal Modules Compliant to PTCSI - Part 2 Light Emitting Diode (LED), Dated, February 2011
- On the MassDOT Traffic Signal Approved Equipment List

For an LED module to installed on this project, the LED module shall have approval from the MassDOT Traffic Control Products Approved Equipment Committee and be included on the Traffic Control Products List prior to the date of this proposal

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

ITEM 816.01 (Continued)

Pedestrian Heads with Countdown Timers

All pedestrian heads shall be 16-inch, single units, with countdown timers. Pedestrian head indications shall be illuminated L.E.D. type displaying graphical symbols of a walking person and/or upraised hand. The countdown module shall display the number of seconds remaining throughout the pedestrian "WALK" interval, continue counting down through the flashing "DON'T WALK" interval, and blank out during the steady "DON'T WALK" interval. The countdown module shall be automatically set by the intersection controller based upon the "WALK" and "DON'T WALK" signal intervals only. The countdown module shall continuously monitor the intersection controller for any changes to the pedestrian phase timing, and reprogram itself automatically. All LED indications on the pedestrian signal shall have an automatic dimming circuit for night illumination to reduce long-term degradation to the LEDs.

Accessible Pedestrian Signal Pushbuttons

The Accessible Pedestrian Signal (APS) pushbuttons shall provide information in non-visual formats (such as audible tones, speech messages, and/or vibrating surfaces). The APS pushbuttons shall be compliant with the 2009 MUTCD. At a minimum the APS pushbuttons shall be provide with the following features:

- Pushbutton locator tone
- A visible and audible indicator that the button press has occurred
- A vibro-tactile arrow
- A speech walk message for the "WALKING PERSON" indication

The APS pushbuttons shall provide visually disabled pedestrians with a locator tone that will allow them to find the pushbutton to activate the walk signal. Once the pushbutton call has been placed, the signal will provide both an audible and tactile response during the related "WALK" portion of the cycle. A sunlight visible LED latches "ON" to confirm the button has been pushed. The audible response shall be a speech message, indicating the name of the street crossing, and when the phase is started.

Housing and Pushbutton Unit – Shall meet the following minimum requirements:

- Constructed of cast aluminum with a powder coated finish.
- Highly vandal resistant and pressure activated with essentially no moving parts.
- Pushbutton must be able to withstand an impact from a baseball bat or hammer.
- Operating temperature range -34 degrees Celsius to 65 degrees Celsius.
- Operating voltage range 12 to 36 VDC.
- Button cap must be made of solid 316 stainless steel.
- Pushbutton must activate with 5 lbs of force or less.

ITEM 816.01 (Continued)

- Unit must have an LED display to give indication that of pushbutton being pushed.
- Pushbutton must fully operate immediately after being completely immersed in water for 5 minutes (electrical terminals isolated from water).
- Pushbutton must not allow ice to form such that it would impede function of pushbutton or pushbutton cap.
- All switch electronics must be sealed within the housing.
- All sounds shall emanate from the back of the APS pushbutton unit via a weatherproof speaker that is protected by a vandal resistant screen.

Tactile Arrows and Locator Tones – Shall meet the following minimum requirements:

- APS pushbuttons shall incorporate a locator tone at the pushbutton the locator tone, measured at 3 feet from the APS pushbutton, shall be 2dB minimum and 5dB maximum above ambient noise level in standard operation and shall be responsive to ambient noise level changes. Tones shall consist of multiple frequencies with a dominant component of 880Hz. The duration of the locator tone shall be 0.15s and shall repeat at intervals of 0.15s.
- APS pushbuttons shall be a minimum of 2 inches across in diameter and shall contract visually with their housing and mounting.
- APS pushbuttons shall include a vibro-tactile arrow aligned parallel to the crosswalk direction. The arrow shall be raised 0.03 inches minimum and shall be 1.5 inches minimum in length. The arrow head shall be open at 45 degrees to the shaft and shall be 33 percent of the length of the shaft. Stroke width shall be 10 percent minimum and 15 percent maximum of arrow length. The arrow shall contrast with the background.
- The arrow shall vibrate during the “WALK” portion of the cycle.

Speech Walk Message – The speech walk message shall be audible from the beginning of the associated crosswalk. The speech walk message and associate APS pushbuttons shall be as follows:

PEDESTRIAN PUSHBUTONS	SPEECH WALK MESSAGE
ALL	Walk sign is on to cross street

Mounting Requirements - A maximum mounting height of 42 inches above the finish sidewalk grade shall be used for APS pedestrian pushbuttons. Minimum mounting height shall be 27 inches.

ITEM 816.01 (Continued)

The Contractor is hereby notified that they are ultimately responsible for constructing all pedestrian push button elements (clear ground space, forward and side arm reaches) in strict compliance with the current AAB rules, regulations and standards.

All construction elements in this project associated with pedestrian push buttons are controlled by 521CMR – Rules and Regulations of the Architectural Access Board.

The Contractor shall establish clear ground space at all pedestrian push button locations, and shall set arm reach lengths according to the AAB rules (or to the details shown on the plans).

The project has been designed to conform to all AAB rules, and the Engineer is not aware of any required variances for the work presented on the design plans. The Contractor shall notify the Engineer of any project element related to the pedestrian push buttons that will not comply with 521 CMR prior to constructing said pedestrian push button elements.

Installation - The APS pushbuttons shall be installed by Contractor and as recommended by the manufacturer and documented in installation materials provided by the manufacturer. The Contractor shall be responsible for the proper programming of the APS pushbuttons, orientation of the pushbuttons, and all other work necessary to provide a complete and operational APS pushbutton system. The Contractor may be required to adjust volume levels as directed by the Engineer. When the setup is complete and the APS pushbuttons are ready for operation, the values of all parameters that were set during the process shall be delivered to the Engineer in printed and computer-readable form.

Warranty - Each APS pushbutton shall be warranted free from defects in material and workmanship for a period of at least 2 years from the date of installation by the Contractor and acceptance from the owner.

During the warranty period, technical support shall be available from the supplier to owner 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 without charge.

Posts and Bases

Signal posts and bases shall be aluminum shafts with transformer bases.

Signal base foundations shall not obstruct a sidewalk or crosswalk so that passage by physically challenged persons is impaired.

Mast Arms, Poles, Luminaires, and Foundations

The mast arm poles shall be fabricated and constructed in conformance with the MassDOT December 2015 *Overhead Signal Structure & Foundation Standard Drawings* for 130 mph wind speeds and as stated below.

ITEM 816.01 (Continued)

All mast arm poles shall be Type 2 galvanized steel monolevers with shoe bases.

Acceptance of Type 2 mast arm poles will be contingent upon review and approval of shop drawings submitted by the Contractor. Longhand design calculations shall be submitted by the Contractor with the shop drawings for all Type 2 mast arm poles.

The Contractor shall provide a set of calculations, stamped by a Structural Engineer registered in the Commonwealth of Massachusetts, along with plans and specifications for review by the Engineer.

Luminaire arms shall be 8’ in length mounted 28’ above finished grade per MassDOT standard.

Luminaires shall be equipped with LEDs, and at a minimum shall meet the following requirements:

- Manufacturer – American Electric MODEL ACC P152 R3 3K or approved equal by Philips or Cooper Lighting.
- Cat. Number – ACC P152 R3 3K
- Description – AutoConnect ACC Compact Roadway Cobra Head
- Lumens per lamp – 3200
- Light Loss Factor – 0.9
- Wattage - 22
- Photocell - Yes
- Finish – Gray

Note: The controller cabinet shall include an extra 2-pole 20 amp circuit breaker for the luminaries.

All mast arm pole foundations shall be cored pier foundations and constructed in conformance with MassDOT Standard Drawings and priced per Table 2 provided below.

ITEM 816.01 (Continued)

TABLE 2

Boring Log No.	ARM LENGTH	STA.	OFFSET	SOIL TYPE	FND. DIA.	FOUND. DEPTH	VERT. BARS	TIE BARS
N/A	20’	10+49.5	18.5’ LT	-	3’-6“	11’-6”	18-#8	5-#12
B1	20’	10+77.0	22.5’ RT	Wet Sand (Loose)	3’-6“	11’-6”	18-#8	5-#12
N/A	20’	4+50.5’	26.0’ RT	-	3’-6“	11’-6”	18-#8	5-#12
B2	35’	12+18	40.5’ LT	Wet Sand (Loose)	3’-6“	17’-0”	18-#8	5-#8
N/A	25’	12+27.0	27.0’ RT	-	3’-6“	13’-6”	18-#8	5-#12
N/A	20’	12+73.5	33.5’ LT	-	3’-6“	11’-6”	18-#8	5-#12
B3	25’	12+77.5	28.5’ RT	Wet Sand (Loose)	3’ 6”	13’-6”	18-#8	5-#12

If ledge or unsuitable soil is encountered (i.e. on which does not apply to the design tables shown in MassDOT’s standard drawings), an alternative design shall be provided by the Design Engineer. If utilities or other underground obstructions are encountered, the Contractor shall backfill the area to its original condition until an alternate design has been provided by the Design Engineer and approved by MassDOT.

No separate payment will be made for work considered incidental to the excavation, including but not limited to, mast arm foundations, dewatering, etc. but all costs in connection therewith shall be included in the lump sum bid price.

Foundations shall not obstruct a sidewalk or crosswalk so that passage by physically challenged person is not impaired.

Mast Arm Sign Support Assembly

Sign brackets for mast arms shall be used in all locations where a sign is to be mounted to the mast arms. Mast arm sign 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 hardware, and all miscellaneous materials necessary to fix mount the signs to the mast arms.

Signs shall be bolted through the sign face.

Vertical support tubes shall be of sufficient length to allow mounting of the signs to within 3 inches of the top and bottom of the signs.

Any sign bracket that does not meet MassDOT approval will not be accepted. No separate payment will be made to correct the sign bracket.

ITEM 816.01 (Continued)

Software

All ATC controller, cabinet monitor unit, vehicle detection, and license 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 traffic signal installations.

Data Base Programming

Each programmable local hardware component (i.e., controller, cabinet monitor unit, vehicle detection, preemption unit, communications devices) shall be initially programmed by the Contractor based on information contained on the plans. Electronic copies and three sets of hard copy programming per device shall be supplied by the Contractor.

Manuals and Keys

The Contractor shall supply two (2) copies of operating and maintenance manuals (i.e., controller, malfunction management unit, preemption unit) and two (2) sets of cabinet keys to MassDOT.

Ownership and Maintenance

Upon acceptance of the traffic signal system by MassDOT, the Contractor shall turn over all guarantees and warranties to MassDOT. In turn, MassDOT shall assume ownership and maintenance of the signal system.

BASIS OF PAYMENT

The work under Item 816.01 will be paid at the Contract LUMP SUM price, which price shall be full compensation for all labor, material, equipment and incidental costs required to complete the work. No separate payment will be made for maintenance of the existing installation, and the removal and stacking of existing traffic signal equipment, but all costs in connection therewith shall be included in the lump sum price bid for Item 816.01. No separate payment will be made for work considered incidental to the excavation, including but not limited to, mast arm foundations, dewatering, etc., but all costs in connection therewith shall be included in the lump sum price bid for Item 816.01. No separate payment will be made for adjusting or readjusting of proposed vehicle detection zones, but all costs in connection therewith shall be included in the lump sum price bid for Item 816.01.

Conduit will be paid for separately under Item 804.3, 3-Inch Electrical Conduit Type NM Plastic (UL).

Pull Boxes will be paid for separately under Item 811.31, Pull Box 12 x 12 Inch – SD2.031.

Handholes will be paid for separately under Item 811.22, Electric Handhole – SD2.022.

Luminaires will be paid for separately under Item 823.04, Highway Lighting Luminaire – LED Type B. Wiring from the luminaires routed inside mast arm shafts and connection to the signal cabinet power, bracket arm, splicing and equipment grounding, inline fuses and all other work necessary to complete the installation, shall be included in the lump sum price under Item 816.01.

ITEM 821.913 ORNAMENTAL LIGHT POLE – POST TOP (DENNIS) EACH

The work under this Item shall conform to the relevant provisions of Subsection 820 of the Standard Specifications and the following:

The work under Item 821.913 shall include the furnishing and installation of decorative light poles to match those of the existing Main Street lighting system in Dennis.

Ornamental light pole- post top shall be an equivalent manufactured by:

- Spring City
- Holophane
- Sternberg

The decorative light pole shaft shall be made of one-piece seamless, flat octagonal cast aluminum. Each pole shall be fabricated in a manner to accommodate a single post top luminaire, and 1 – 18" aluminum banner with eyebolt arm and a duplex GFCI outlet.

Pole bases shall have a handhole with a reinforced frame and cover located in the base.

A bonding means shall be provided in the base and at the handhole of each pole. Base shall set flush with top of light pole foundation. Decorative base shall conceal the anchor bolts and nuts.

Anchor bolts shall be supplied by the pole manufacturer. Anchor bolt shall be completely hot dip galvanized. Each anchor bolt shall have a hex nut, flat washers, and lock washer. The anchor base shall conform to ASTM A36. Bolt circle diameter and length shall be per pole manufacturer's requirements.

One 18" long cast aluminum banner arm shall be provided at height indicated, bolted to a welded cast aluminum mounting plate through a cast aluminum coupling with a stainless-steel latch-pin. Stainless steel eyebolt shall be located below the arm at height indicated on drawing. Banner arm shall be oriented parallel to roadway.

The pole shaft, base, banner arms, duplex outlet box and cover, decorative fittings and hardware shall be finished with a black polyester powder coat paint applied after multi-stage pre-treatment process to ensure uniformity of appearance. The complete assembly of the pole shaft, pole base and banner arm shall be rated for the design wind speed of 130 MPH per Subsection 820.41.

The 15-amp, 120-volt, ground fault circuit interrupter weatherproof duplex receptacle shall be mounted in the post at height indicated. The receptacle shall be UL Listed according to E-48380 and UL 943 class A and UL 498. The cover shall be cast aluminum, lockable, UL listed and suitable for wet locations while in use and complies with NEC Article 410-57(b). The receptacle and cover shall mount to the outlet opening in the pole with stainless screws and a gasket. Outlet shall be oriented away from roadway.

All wiring, splices, grounding, fuses, and connections installed within the light pole, base, and luminaire shall be done as shown on the plans and meet the requirements of Section 813.

The exterior of the pole components shall be free of protuberances, dents, cracks, discolorations, and other imperfections marring their appearance. All hardware shall be stainless steel.

The length of the pole shaft shall be determined by the Contractor to meet the luminaire mounting height indicated on the plans.

ITEM 821.913 (Continued)

The Contractor shall submit shop drawings and catalog data for the pole, base, banner arm, luminaire, and light pole foundation as a complete and coordinated submittal indicating all mounting provisions of the assorted Items, dimensioned.

METHOD OF MEASUREMENT

Item 821.913, Ornamental Light Pole-Post Top (Municipal Standard) will be measured for payment in place, per EACH unit tested, and accepted by the Engineer.

BASIS OF PAYMENT

Item 821.913 will be paid for at the Contract unit price per EACH pole installed, which price shall be full compensation for all labor, materials, equipment, and incidental costs required for the work.

No separate payment shall be made for all wiring, splices, fusing, grounding, and connections installed within the light pole, base, bracket arm and luminaire, but all costs in connection therewith shall be included in the Contract unit price bid.

Ornamental post-top luminaires shall be paid under Items 823.911.

ITEM 821.914 ORNAMENTAL LIGHT POLE – POST TOP (HARWICH) EACH

The work under this Item shall include the furnishing and installation of decorative light poles for the Route 28 lighting system in Harwich.

Ornamental light pole - post top shall be manufactured by:

- Spring City
- Holophane
- Sternberg

The lighting post shall be all aluminum, one-piece construction, massively tapered with an octagonal design of alternating flat and concave sides.

The base and fluted tapered cast shaft shall be heavy wall, cast aluminum produced from certified ASTM 356.1 ingot per ASTM B-179 or ASTM B26. The straight shafts shall be extruded from aluminum, ASTM 6061 alloy. The tapered shaft shall be extruded from aluminum, ASTM 6063 alloy, spun to a tapered shape. All hardware shall be tamper resistant stainless steel. Anchor bolts to be completely hot dip galvanized. Utilize a polyester powder coat paint to ensure maximum durability. Rigorous multi-stage pre-treating and painting process yields a finish that achieves a scribe creepage rating of 8 (per ASTM D1654) after over 5,000 hours exposure to salt fog chamber (operated per ASTM B117) on standard and RAL finish options. The post shall be cast in one piece. At the top of the post, an integral tenon with a transitional donut shall be provided for luminaire mounting.

The 15-amp, 120-volt, ground fault circuit interrupter weatherproof duplex receptacle shall be mounted in the post at height indicated. The receptacle shall be UL Listed according to E-48380 and UL 943 class A and UL 498. The cover shall be cast aluminum, lockable, UL listed and suitable for wet locations while in use and complies with NEC Article 410-57(b). The receptacle and cover shall mount to the outlet opening in the pole with stainless screws and a gasket. Outlet shall be oriented away from roadway.

The post shall be provided with four, hot dip galvanized L-type anchor bolts. A door shall be provided in the base for anchorage and wiring access. A grounding screw shall be provided inside the base opposite the door.

METHOD OF MEASUREMENT

Item 821.914, Ornamental Light Pole-Post Top (Harwich) will be measured in place, tested, and accepted per EACH by the Engineer.

BASIS OF PAYMENT

Item 821.914 will be paid for at the Contract unit price per EACH pole installed which price shall be full compensation for all labor, materials, equipment, and incidental costs required for the work.

No separate payment shall be made for all wiring, splices, fusing, grounding, and connections installed within the light pole, base, bracket arm and luminaire, but all costs in connection therewith shall be included in the Contract unit price bid.

Ornamental post top luminaires shall be paid under Items 823.913.

ITEM 823.04 HIGHWAY LIGHTING LUMINAIRE – LED Type B EACH

The work shall conform to the relevant portions of Subsection 820 of the Standard Specifications, the lighting plans, and the following:

The work under this Item shall consist of furnishing and installing the following luminaires:

LED Type B – Four (4), 3200 initial lumen Type III LED highway lighting luminaries mounted on the intersection signal mast arm shafts with an 8-foot bracket, American Electric MODEL ACC P152 R3 3K or approved equal by Philips or Cooper Lighting.

SUBMITTALS

Submittals for all lighting equipment shall be made in a timely fashion. All photometric data, shop drawings, and reports shall employ the terminology, classifications, and methods prescribed by the IES Lighting Handbook, as applicable, for the lighting systems specified:

Shop drawings and Manufacturer's Photometric Data shall be submitted for the following:

- Each luminaire, including fabrication and assembly drawings, bill of material. Luminaire & Driver data including all Housing, Mounting, Optic, Electric and Material Specifications outlined under this Item.
- Independent Testing Laboratory Photometric Data
- Luminaire photometric data including the following:
    - Electronic .IES file submitted to the designer via email or CD for the luminaire.
    - Horizontal ISO Footcandle Plot for the luminaire displaying, at a minimum, average maintained footcandle levels based on the required 30-foot mounting height and pole spacing as shown on the plans.
    - Average maintained footcandles shall be at a minimum 1.0 for bridge roadway, and 2.0 for approach curves and sidewalk. Uniformity ratio of average/minimum shall be 3.0 or less. The up light from the BUG rating shall be zero (0).

General

Luminaires and accessories shall be shipped securely packaged and labeled for safe handling in shipment and to avoid damage. Luminaires and accessories shall be stored in a secure area in original packaging in a manner to prevent soiling, physical damage, wetting or corrosion prior to installation. The luminaire assembly shall meet 3G vibration requirements per ANSI C136.31-2010. All luminaires to be provided on the project shall be of the same manufacturer and model.

The mounting assembly shall be of the slip fit type with a minimum of 5± degrees of adjustment for leveling and shall provide an integral die cast mounting pipe stop feature.

OPTICS

Durable, precision optical control shall be obtained with silicone materials that permit superior mold detail and denser LED population for a more visually comfortable appearance.

ITEM 823.04 (Continued)

Lighting Performance shall be comparable to 50-150W HPS roadway luminaires. Correlated color temperature 3000K, 70 CRI minimum. LED light engines provided 0% uplight and restrict backlight to within sidewalk depth, providing optimal application coverage and optimal pole spacing. Available in Type II, III, IV & V roadway distributions.

ELECTRICAL

Expected Life: LED light engines >100,000 hours at 25°C, L70. Electronic driver an expected life of 100,000 hours at a 25°C ambient. 10kV/5kA or 20kV/10kA protection.

Luminaire ships with a 0-10v dimmable driver or DALI D4i driver. Luminaire is continuous and step dimming capable via AO option or other installed controls.

MECHANICAL

Includes standard AEL lineman-friendly features such as tool-less entry, 3 station terminal block and quick disconnects. Bubble level is located inside the electrical compartment for easily leveling at installation. Pre-treatment and paint process that yields a finish that achieves a scribe creepage rating of 10 (per ASTM D1654) after 5000 hours exposure to salt fog chamber (operated per ASTM B117). Mast arm mount is adjustable for arms from 1-1/4" to 2" (1-5/8" to 2-3/8" O.D.) diameter. Provides a 3G vibration rating per ANSI C136.31

CONTROLS

ANSI 7-pin receptacle which supports traditional locking style photocontrols, robust outdoor motion detection and response at up to 40' mounting heights.

CONSTRUCTION METHODS

A luminaire of the type indicated on the Drawings shall be installed on its respective signal mast arm as shown on the plans. The luminaire shall be installed on the bracket arms with the luminaire parallel to the roadway grade unless otherwise shown on the plans. Pole and bracket cable shall be installed through the pole bracket arm and connected to the luminaire terminals. Adequate slack pole and bracket cable shall be left at the base of the pole to permit connections to the signal cabinet power.

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.

ITEM 823.04 (Continued)

METHOD OF MEASUREMENT

Item 823.04 will be measured for payment per EACH installed complete in place.

BASIS OF PAYMENT

Item 823.04 will be paid at the contract unit price for EACH luminaire installed, complete in place, which price shall constitute full compensation for all labor, tools, and equipment, materials and for all work necessary for the proper completion of the work specified herein and as shown on the Plans, complete in place.

Wiring from the luminaire routed inside mast arm shaft and connection to the signal cabinet power, bracket arm, splicing and equipment grounding, inline fuses and all other work necessary to complete the installation, shall be included in the lump sum price under Item 816.01.

ITEM 823.61 HIGHWAY LIGHTING LOAD CENTER NO. 1 LUMP SUM

The work under this Item shall conform to the relevant provisions of Subsections 815 and 820 of the Standard Specifications and the following:

The work under Item 823.61 shall include revisions to the existing Dennis highway lighting load center as required to install additional circuits to the panelboard as shown on the plans.

The Contractor shall check the Dennis load center cabinet main breaker. If the main breaker is 200 amp the Contractor shall replace with a 100 amp breaker.

BASIS OF PAYMENT

Highway Lighting Load Center No. 1 will be paid at the Contract LUMP SUM price, which price shall be considered full compensation for all labor, materials, equipment, and incidental costs required for the work.

ITEM 823.62 HIGHWAY LIGHTING LOAD CENTER NO. 2 LUMP SUM

The work under these Items shall conform to the relevant provisions of Subsection 820 of the Standard Specifications and the following:

The work to be done under this item shall consist of furnishing and installing a Highway Lighting Load Center (HLLC) for the Harwich lighting system of the type specified herein, and as detailed on the drawings including foundation, service connection and necessary conduit. HLLC shall be provided at the locations shown on the plans or as directed by the Engineer. The Contractor shall provide the HLLC enclosure, all electrical equipment, wiring, conduit and trenching, raceways, within the enclosure as specified herein and shown on the contract drawings.

SUBMITTALS

Submittals for the Highway Lighting Load Center shall be made in a timely fashion including all manufactures data sheets, and shop drawings, as applicable, and specified herein.

Manufacture's Data shall be submitted for the following:

- Highway Lighting Load Center Enclosure
- Conduit
- Wire
- Wire Trough
- Circuit Breakers
- Fuse Block
- Cabinet Luminaire
- Receptacles
- Switches
- Panel boards
- Main Fused Disconnect

Shop drawings shall be submitted for the following:

Highway Lighting Load Center to include enclosure, layout drawing showing the placement of all electrical components within the enclosure, wiring diagrams, and cabinet mounting detail. Meter box and the load center equipment layout drawing shall be to scale.

SERVICE CONNECTIONS

Service connections shown on the plans are approximate only. The Contractor shall determine exact locations from the servicing utility, arrange to complete the service connections, and be responsible for all charges incidental thereto.

MATERIALS

The Highway Lighting Load Center shall be of the dimensions specified on the contract drawings. The electrical service and system design is for 120/240 volts, single phase, three-wire. All equipment shall be accessible from the front of the enclosure.

ITEM 823.62 (Continued)

The electrical equipment to be provided in the cabinet shall be U.L. listed for its intended use. All electrical equipment shall be installed in compliance with the Massachusetts Electric Code, National Electric Code. The Contractor shall verify that all equipment can be mounted in each cabinet prior to the construction of Highway Lighting Load Center enclosure. All electrical equipment and enclosures shall be bonded in accordance with the code. All materials shall have a one-year warranty, unless specified as longer by the manufacturer.

The details of the Highway Lighting Load Center enclosure are shown on the Drawings.

The Highway Lighting Load Center shall consist of a free standing NEMA 3R, type 316 Stainless Steel cabinet, painted GLOSS BLACK. The doors shall be recessed to be flush with the front of the cabinet. The door on the enclosure shall be constructed from the same material as the enclosure. Additional hardware shall include a brass padlock, directory frame and six sets of keys.

The complete load center shall conform to and meet all the current requirements of the National Electrical Manufacturers Association (NEMA) and be tested in accordance with the provisions of the American Society for Testing and Materials (ASTM) or its successor, wherever such standards and tests may apply.

Anchor bolts shall be provided with the enclosure. The entire length of the anchors bolts shall be galvanized steel. Galvanized steel nuts, lock washers, and flat washers shall be provided with the anchors bolts.

Main Branch circuits shall be changeable without additional machining, drilling or tapping. Branch circuit connections shall provide sequence phasing, with connections permanently identified on the face of the front of the panel interior.

Mains shall be equipped with automatic circuit breakers for branch circuit protection and shall have ratings as indicated. All single pole branches shall be rated as shown on the Drawings.

Buses shall be rigid copper or copper alloy, installed to provide consecutive phasing. Solid neutral bus shall have solderless connectors, shall be insulated from the cabinet and shall have an ampacity equal to or greater than the ampacity of the phase buses. Equipment grounding bus shall be bonded to the cabinet, shall have solderless connectors and a main lug. All copper parts shall be plated to prevent corrosion.

Circuit breakers shall be of the indicating type, providing distinctive "On", "Off" and "Tripped" positions of the operating handle. All multi-pole breakers shall be so designed that an overload in any one pole automatically causes all poles to open. Multi-pole breakers shall have a single operating handle. Single pole 15 and 20 ampere branch breakers shall be UL listed for switching duty.

ITEM 823.62 (Continued)

Breakers shall be thermal magnetic type having inverse time delay thermal trip on overloads and instantaneous magnetic trip on short circuit. Circuit breakers shall be quick-break, quick-make on manual, as well as automatic operation. Each circuit breaker shall be independently removable without disturbing adjacent units or other bus connections and shall be fastened to the main bus bars with a bolt-on connection. All copper parts shall be plated to prevent corrosion.

All panel boards shall be factory assembled, UL listed, as manufactured by the approved panel board manufacturer.

All 120/240 volt panel boards shall be Square-D NF type panel boards or equivalent by Eaton or Siemens. Panel boards serving control circuits and lighting circuits shall be Square-D NQOD type panel boards or equivalent by Eaton or Siemens.

The auxiliary equipment mounted on the board, i.e.; the control circuit, GFCI receptacle, and lamp shall be protected with a circuit breaker rated at 15 amps per pole (2 required).

A duplex convenience GFCI receptacle shall be rated at 15 amperes. The receptacle shall be fused by a 15 amp circuit breaker located in the 120/240V panel board. The receptacle shall have a weatherproof cover that is normally closed.

An interior light and junction box-NEMA 4 rating with a porcelain light socket and a 20 watt EL/mdT compact fluorescent lamp shall be provided and installed, as directed on the detail sheets.

A standard single pole, single throw, maintained contact, 15 amp, 125 volt toggle switch shall be provided for the light within the enclosure. The switch shall be located with the duplex receptacle in a double gang plastic enclosure.

All cable used in the assembly of the panel board shall be of the size and type as shown on the Drawings, and shall conform to the relevant provisions of Subsection 801 of the Standard Specifications.

Photoelectric control (Photocell) shall be U.L. listed, suitable to be mounted on top of the roadway lighting luminaire, rated 120 VAC power supply, UV-resistant and weatherproof housing, operating temperature of -40 degree Celsius to +70 degree Celsius, and surge protected.

The street lighting circuits, and the control light circuit, shall be clearly identified and wired directly inside the enclosure, connecting to the appropriate lug(s) or cables. No splicing in the controller base shall be allowed.

Concrete Foundation

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

Cement and Cement Concrete Materials	M4 Metals and Related Materials M8
Gravel	M1.03.0, Type C

ITEM 823.62 (Continued)

Provide concrete foundation and steel reinforcement as indicated on the Contract Drawings.

CONSTRUCTION METHODS

All work shall be constructed as shown on the plans.

The Highway Lighting Load Center shall be installed atop the foundation as noted in this specification and as shown on Drawings. The cabinet door shall face away from the roadway, or as directed by the Owner. It shall be determined that no obstruction, including a light post, will interfere with opening, closing, or access to the HLLC.

Each location, as shown on the plans, may be diagrammatic only, and the location should be such as to not interfere with access to private property or to detract from the general appearance of the area. The location shall not also inhibit pedestrian travel of the public way.

The electrical equipment to be installed in each HLLC shall be securely fastened to the backboard in a neat and workmanlike manner. Electrical equipment shall be arranged in the HLLC and wired in accordance to the wiring diagrams on the detail sheets, or as specified herein. Each piece of electrical equipment shall be permanently labeled with and equipment tag. The equipment tag shall be engraved, black, melamine plastic laminate with engraved white lettering. The tag shall be fastened to or above each piece of equipment with stainless steel rivets.

Within the controller, the Contractor shall bind wire groups together; and all conductors shall be identified.

Concrete foundation shall be provided with the anchor bolts, reinforcing rods, concrete, and conduit sweeps as shown on the Contract Drawings and accordance with the applicable requirements of Section 901 Cement Concrete Masonry and Subsection 801.62 Foundations.

Surface Restoration

Where HLLC are installed in existing sidewalk, or paved median areas to remain, the work shall include replacement of the gravel base material and the surface pavement to match pre-construction conditions.

BASIS OF PAYMENT

Item 823.62, Highway Lighting Load Center No. 2 will be paid for at the Contract LUMP SUM price, which price shall be full compensation for all labor, material, equipment and incidental costs required to complete the work.

Work performed by the utility company shall not be included as part of this contract.

ITEM 823.72 HIGHWAY LIGHTING ARM AND LUMINAIRE REMOVED AND RESET EACH

The work under this Item shall conform to the relevant provisions of Subsections 801 and 820 of the Standard Specifications and the following:

The work under this Item shall consist of dismantling and removing the existing highway luminaires and arms from the existing utility poles and resetting them onto the relocated utility poles, as shown on the plans. The Contractor shall contact the Electric Utility Company to coordinate the disconnection and reconnection of the luminaire service wire.

The Contractor shall exercise extreme care in removing, dismantling, transporting, storing, and resetting the existing luminaires and arms. Any equipment damaged or stolen through carelessness or lack of protection by the Contractor shall be replaced at no additional cost.

Work shall be in accordance with the latest edition of the National Electrical Code, Massachusetts Electrical Code, local codes and as directed by the Engineer. All work shall be performed by an experienced electrician licensed in the Commonwealth of Massachusetts, and qualified to perform work on utility poles in the Electrical Space.

If the Engineer determines that an existing lighting arm and luminaire is not suitable to be reset, the Contractor shall notify the Town and verify if the Town would like to salvage the arm and luminaire. If the Town elects to salvage the arm and luminaire, the work shall also include dismantling, removing, and stacking of the arm and luminaire and the Contractor shall arrange a time to deliver and stack the arm and luminaire at the Town's yard. If the Town decides to abandon part or all of the arm and luminaire, said materials shall become the property of the Contractor and shall be legally disposed of.

The Town may also provide a new or refurbished arm and luminaire for resetting under this Item, for new light location or for luminaires unsuitable for resetting.

METHOD OF MEASUREMENT

Item 823.72 will be measured for payment by the EACH highway lighting arm and luminaire to be removed and reset.

BASIS OF PAYMENT

Item 823.72 will be paid for at the Contract unit price per EACH, which price shall include all labor, equipment, materials, and any related Utility charges and/or permit fees required to complete the work.

ITEM 823.911 ORNAMENTAL POST TOP LANTERN LUMINAIRE (MUNICIPAL STANDARD DENNIS TYPE A) EACH

The work under this Item shall conform to the relevant provisions of Subsection 820 of the Standard Specifications and the following:

The work under Item 823.911 shall include the furnishing and installation of luminaires to match and extend the existing Dennis lighting system on Main Street in Dennis. These luminaires shall be an equivalent manufactured by:

- Philips
- Spring City
- American Electric
- Sternberg

The decorative luminaire shall be of the Traditional Lantern type, approved by the Town, employing white 4000K CCT, long life LED type lamps and IES Type III asymmetrical light distribution with vertical control to minimize uplight. Lantern lens shall be clear.

The electrical / reflector assembly shall hinge up or down from the wiring chamber for ease in wiring and maintenance and be secured with a stainless steel latch. The one-piece electrical housing shall consist of an LED driver mounted to an aluminum plate with disconnect plugs connecting the driver to the terminal block.

The luminaire shall have an all-aluminum housing. Wire chamber terminal block shall accept a #10 AWG conductor. Quick disconnect harness shall be included to allow for mate and break under load for ease of maintenance.

The luminaire shall include a photoelectric control device as specified on plan which shall also control the pole mounted receptacle.

Type “A.” The 85 +/- watt luminaire shall provide an initial 9097 lumens (minimum) for the LED package with driver operating at a maximum of 850mA. Electronic driver efficiency shall be greater than 90%. The luminaire shall be furnished with the manufacturer’s LED/driver power package combination configured/sized to deliver the minimum initial lumens indicated.

The luminaire shall be suitable for, and UL listed for wet locations. The finish shall have a black polyester powder coat electrostatically applied and thermocured and matching pole finish. Luminaire shall have a 5-year warranty on the LEDs, 5 years on the driver. Furnish with manufacturer standard surge suppression device.

Submit IES formatted photometric files with lighting statistics electronically with shop drawing submittals for approval of fixture performance. Lighting to provide 0.9 fc for roadways, 2.0 fc for sidewalks, and 4.0 fc for crosswalks average maintained. Roadway uniformity ratios 3.0 or less.

ITEM 823.911 (Continued)

METHOD OF MEASUREMENT

Item 823.911 will be measured for payment per EACH unit installed complete in place.

BASIS OF PAYMENT

Item 823.911 will be paid for at the contract unit price per EACH, which price shall be considered full compensation for all labor, materials, equipment, and incidental costs required for the work. No separate payment shall be made for wiring, splices, fusing, photocell, grounding, and connections installed within the luminaire, but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 823.913 ORNAMENTAL POST TOP LANTERN LUMINAIRE (MUNICIPAL STANDARD HARWICH TYPE C) EACH

The work under Item 823.913 shall include the furnishing and installation of luminaires on Route 28 for a new lighting system in Harwich.

These luminaires shall be manufactured by:

- Philips
- Spring City
- American Electric
- Sternberg

Dark sky compliant fixtures are required by the Harwich lighting ordinance.

The colonial LED lantern, approved by the Town, employing white 4000K CCT, long life LED type lamps greater than 100,000 hours at 25 degrees C. and full cutoff distribution with a BUG rating of 1-0-2 or lower. Lantern lens shall be clear.

A Die-cast aluminum housing, Engineered for sturdy life-long performance with Die-cast aluminum hood features a trigger latch (TL) option and captive thumb screws for fast, easy electrical and optical chamber access.

Standard black finish is matte texture. All other finishes are smooth gloss. Housing is tenon pole-mounted and designed for use with a 3" tall by 2-3/8" to 3" diameter tenon and secured by three set screws.

Rated LED and driver life greater than 100,000 hours at 25°C. Surge protection device (standard) exceeds ANSI/IEEE C62.41-2002 Category C High (10kV/10kA) and ANSI C136.2-2015 Enhanced (10kV/5kA). 20KV Option exceeds ANSI/IEEE C62.41-2002 Category C High (10kV/10kA) and ANSI C136.2-2015 Extreme (20kV/10kA). Equipped with LED electronic 0-10V dimmable driver. Complies with ANSI: C136.2, C136.10, C136.15 CSA listed and suitable for up to 40°C ambient.

The luminaire shall include a photoelectric control device as specified on plan. Luminaire shall have a 5-year warranty on the LEDs, 5 years on the driver. Furnish with manufacturer standard surge suppression device.

Submit IES formatted photometric files with lighting statistics electronically with shop drawing submittals for approval of fixture performance. Lighting to provide 0.9 fc for roadways, 2.0 fc for sidewalks, and 4.0 fc for crosswalks, average maintained. Roadway uniformity ratios 3.0 or less.

ITEM 823.913 (Continued)

METHOD OF MEASUREMENT

Item 823.913 will be measured for payment per EACH unit installed complete in place.

BASIS OF PAYMENT

Item 823.913 will be paid for at the contract unit price per EACH, which price shall be considered full compensation for all labor, materials, equipment, and incidental costs required for the work.

No separate payment shall be made for wiring, splices, fusing, photocell, grounding, and connections installed within the luminaire, but all costs in connection therewith shall be included in the Contract unit price bid.

ITEM 826.7 ELECTRIC SERVICE RISER RELOCATION EACH

The work under this Item shall conform to the relevant provisions of Section 800 of the Standard Specifications and the following:

The work shall consist of the removal and relocation of existing underground secondary electrical services from relocated utility poles.

New utility poles will be installed by "By Others". The Contractor shall supply and install a new rigid galvanized riser pipe and sweep assembly, SCH 80 PVC conduit with sand bedding, hand-hole (polymer concrete) with 3 Z4" crushed stone (M2.01.4) bedding 6" min. below base of hand- hole, wiring and appurtenances as necessary per the latest edition of the National Electrical Code, Massachusetts Electrical Code, Utility Company Specifications and Local Codes/Guidelines to complete the service relocation.

The work shall include all excavation, sand bedding, backfill, compaction, and materials or any other requirements in accordance with the latest edition of the National Electrical Code, Massachusetts Electrical Code, Utility Company Specifications and Local Codes/Guidelines.

The work associated with disconnecting power and reconnecting power to the utilities secondary power lines should be performed at a time convenient to the property owners or tenants occupying the building. The actual time of day or evening for the disconnecting and reconnecting will be agreed upon between the Engineer, Power Company and the property owner/tenant during construction. No additional compensation shall be given for this work outside of normal work hours if required.

COMPENSATION

Payment for service connections shall be at the contract unit price per EACH. This price shall be considered full compensation for the furnishing of all labor, risers, sweeps, conduit, sand bedding, hand-holes w/ crushed stone bedding, wiring, and miscellaneous materials, tools and equipment, plus any related Utility charges and/or permit fees associated with the work complete in place.

The work associated with the relocation of the utility poles and the transfer of the Utilities overhead primary and secondary wiring shall be the responsibility of the respective utility companies and shall not be paid for under this Item.

ITEM 852.11 TEMPORARY PEDESTRIAN BARRICADE FOOT
ITEM 852.12 TEMPORARY PEDESTRIAN CURB RAMP EACH

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 eight (8) 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 48 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.

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.

ITEMS 852.11 and 852.12 (Continued)

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.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Payment for Temporary Pedestrian Barricades will be made at the contract price per 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 854.6 TEMPORARY PORTABLE RUMBLE STRIP DAY

Work under this Item consists of furnishing, deploying, maintaining in proper operating conditions, and removing temporary portable rumble strips (TPRS) for temporary lane closures of 24 hours or less.

MATERIALS

The TPRS shall be 10’ to 11’ wide, measured perpendicular to the path of travel, 12” to 16” long, measured parallel to the path of travel, and 0.5” to 0.75” tall. All edges shall be beveled. The surfaces shall be grooved to limit potential hydroplaning.

The TPRS shall lay flat on the road surface without the use of nails, anchors, or adhesives, and shall be flexible so as to conform to the surface profile.

The TPRS shall be able to withstand vehicle weights of up to 80,000 lbs. and operate in temperatures between 0° to 120° F.

The manufacturer shall certify the TPRS to be safe for use on roads with speed limits of at least 70 mph.

TPRS that appear damaged or functioning in an unsafe manner may be order removed by the Engineer and replaced at no additional cost.

CONSTRUCTION METHODS

The TPRS shall be installed per the plans or at the discretion of the Engineer.

The Contractor shall conform to the manufacturer’s specifications for installation and the following:

A. The road surface shall be cleared of all gravel, sand, and debris.

B. If RoadQuake 2™ model is used, the modular pieces shall be assembled into 11-foot strips per the manufacturer’s instructions in advance of deployment. The interconnected segments shall form a smooth and flat, continuous section.

C. A Truck-Mounted Attenuator, conforming to Section 850, shall be used as shadow vehicle protection during the deployment and removal of TPRS on any roadway with speeds of 45 mph or greater.

D. TPRS shall be deployed in conjunction with all other temporary traffic control devices. MA-W28-1 (Rumble Strips Ahead) sign(s) shall be installed per the Temporary Traffic Control Plan.

ITEM 854.6 (Continued)

E. TPRS deployment:

1. TPRS shall be placed perpendicular to the direction of travel, centered in the lane.
2. Three (3) individual strips are required for a single array.
3. Refer to the Temporary Traffic Control Plan for the location of the array respective to the lane closure.
4. The spacing of the individual strips within the array shall conform to the following table:

Speed Limit	Distance Between Rumble Strips (measured center-to-center)
>55 mph	20 feet
40 mph to 55 mph	15 feet
<40 mph	10 feet

5. The TPRS shall be placed without the use of nails, adhesives, or other methods of affixing them to the road surface.

F. All TPRS shall be maintained in proper condition, alignment, spacing, and location throughout the duration of the lane closure, at no additional cost.

G. The TPRS shall be removed prior to the removal of the traffic control devices used to close the travel lane.

H. TPRS shall not be used during snow events.

METHOD OF MEASUREMENT

An array of three (3) temporary portable rumble strips is considered one (1) unit and will be measured by the DAY. Each period of up to 24 hours during which this unit is in use will be measured as one day regardless of the number of times the array is deployed, repositioned, or removed.

BASIS OF PAYMENT

Temporary Portable Rumble Strips will be paid for at the contract unit price per DAY, which shall include full compensation for furnishing, deploying, repositioning, and removing the array of three (3) individual strips as directed by the Engineer.

ITEM 859.1 REFLECTORIZED DRUMS WITH SEQUENTIAL FLASHING WARNING LIGHTS DAY

The work under this Item shall conform the relevant provisions of Subsection 850 of the Standard Specifications and the following:

Work under this Item consists of furnishing, installing, maintaining in proper operating conditions, and removing reflectorized drums, and any necessary ballast, equipped with sequential flashing warning lights.

MATERIALS

Reflectorized drums shall be listed on the MassDOT Qualified Traffic Control Equipment List.

Reflective sheeting on drums shall meet or exceed ASTM D4956 Type VIII. All drums shall be maintained in a satisfactory manner including the removal of oils, dirt, and debris that may cause reduced retroreflectivity.

The Contractor shall use one of the following sequential flashing warning light systems unless otherwise approved by the Engineer:

1. Empco-Lite LWCSD.
2. pi-Lit® Sequential Barricade-Style Lamp; or
3. Unipart Dorman SynchroGUIDE.

Sequential flashing warning lights shall be secured to reflectorized drums per the light manufacturer's specifications.

CONSTRUCTION METHODS

The first ten (10) drums in any merging or shifting taper as designated in the Temporary Traffic Control Plan shall be equipped with sequential flashing warning lights. These lights shall be operating, at a minimum, between dusk and dawn when the taper is deployed.

The successive flashing of the sequential warning lights shall occur from the upstream end of the merging or shifting taper to the downstream end of the taper in order to identify the desired vehicle path. Each warning light in the sequence shall be flashed at a rate of not less than 55, nor more than 75 times per minute.

Warning lights shall be powered off when drums are not deployed in a taper.

ITEM 859.1 (Continued)

METHOD OF MEASUREMENT

A group of ten (10) reflectorized drums with sequential flashing warning lights is considered one (1) unit and will be measured by the DAY. Each period of up to 24 hours during which this unit is in use will be measured as one day regardless of the number of times that the drums are positioned, repositioned, removed, or returned to service.

BASIS OF PAYMENT

Reflectorized Drums with Sequential Flashing Warning Lights will be paid for at the contract unit price per DAY, which price shall be considered full compensation for furnishing, positioning, repositioning, and removing the group of ten (10) drums as directed by the Engineer.

ITEM 864.22 SYMBOLS FOR BICYCLE FACILITIES (PF) EACH
ITEM 864.23 ARROWS FOR BICYCLE FACILITIES (PF) EACH

The work under these Items shall conform to the relevant provisions of Subsection 860 of the Standard Specifications and the following.

Work under these Items consists of furnishing and installing bicycle pavement marking arrows and symbols and legends at the locations shown on the plans or as directed by the Engineer.

MATERIALS

Preformed Markings for symbols and arrows shall be composed of preformed thermoplastic with pigments, glass spheres or other reflective materials, and other additives to control color, retroreflectivity, and skid resistance.

All pavement marking colors shall be white and conform to MUTCD standards, including the Daytime Color Specification Limits for Retroreflective Pavement Marking Material found in 23 CFR 655, Subpart F.

The dimensions of all pavement marking symbols, and arrows shall conform to dimensions shown in the plans, and are generally categorized in the following table.

Item (Type)	Typical Applications
864.22 (Bicycle Symbols)	Helmeted Bicyclist used in bike lanes; Bicycle Detector symbol; and Two-Stage Turn Box at intersections
864.23 (Bicycle Arrows)	Arrow used with bike lane markings; and Two-Stage Turn Box at intersections

Post-installation, the surfaces of all preformed markings shall provide a minimum skid resistance value of 35 British Pendulum Number (BPN) when tested in accordance with ASTM E303, with exception to Preformed Markings for Bicycle Facilities, which shall provide a minimum of 55 BPN.

The leading edge(s) of all preformed markings shall be tapered to minimize risk of plow damage.

Retroreflective properties shall be verified by an independent laboratory prior to installation. The average initial retroreflectance readings shall exceed the following minimum values:

Test Method	*White Markings
ASTM E1710 (Dry)	300 mcd/lux/m^2

*Observation Angle = 1.05°, Entrance Angle = 88.8°

The Contractor shall provide a Certificate of Compliance verifying the product supplied will meet the color, friction, and retroreflectivity requirements prior to installation.

ITEMS 864.22 and 864.23 (Continued)

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 Preformed Markings for Symbols, and Arrows. Any joints or cracks in the pavement shall be pre-treated per the manufacturer's recommendation. At larger cracks or joints the material shall be laid over the gap and off-cut 1 in. on each side of the crack or joint prior to installation.

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.

All existing pavement markings that are to remain, castings, curbs, and rumble strips within the vicinity of the Preformed Markings for and Arrows shall be protected by the Contractor. Existing pavement markings damaged during the installation shall be removed and replaced by the Contractor at no additional cost.

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 Preformed Markings installation from vehicle and foot traffic throughout the minimum cure time recommended by the manufacturer.

Warranty

The Manufacturer shall warrant the preformed markings against material defects for a period of one year from the date of the acceptance letter of the project by MassDOT.

METHOD OF MEASUREMENT

Items 864.22 and 864.23 will be measured for payment per EACH pavement marking arrows and symbols and legends installed, complete in place.

BASIS OF PAYMENT

Items 864.22 and 864.23 will be paid for at their respective contract unit prices per EACH, which prices shall be full compensation for all material, labor, equipment and all incidental costs required to complete the work.

ITEM 864.41 GREEN COLORIZED PAVEMENT MARKINGS SQUARE FOOT

All work under this Item shall conform to the relevant provisions of Subsection 860 of the Standard Specifications and the following.

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.

This work shall consist of furnishing and placing green colorized pavement markings for bicycle safety as identified in the Contract Drawings.

Materials

Colorized Pavement Markings are composed of Epoxy, Methyl Methacrylate (MMA).

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

Item 864.41 will be measured and paid for at the Contract unit price per SQUARE FOOT, which price shall be full compensation for all labor, material, tools, equipment testing, and all incidental costs required to complete the work.

ITEM 874. STREET NAME SIGN EACH

The work under this Item shall conform to the relevant provisions of Subsections 828 and 840 of the Standard Specifications and the following:

The work shall consist of fabricating, furnishing and erecting street name signs on steel breakaway posts and on traffic signal mast arms as shown on the plans.

Per MassDOT standard specifications Subsection 828 and M9.30.0 reflective sheeting shall be used for all signs.

Mast Arm Sign Support Assembly

Sign brackets for mast arms shall be used in all locations where a sign is to be mounted to the mast arms. Mast arm sign 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 hardware, and all miscellaneous materials necessary to fix mount the signs to the mast arms.

Signs shall be bolted through the sign face.

Vertical support tubes shall be of sufficient length to allow mounting of the signs to within 3 inches of the top and bottom of the signs.

Any sign bracket that does not meet MassDOT approval will not be accepted. No separate payment will be made to correct the sign bracket.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 874. will be measured and paid for at the Contract unit price per EACH, which price shall be full compensation for all labor, materials, equipment and incidental costs required to complete work. Sign attachment hardware and brackets shall be incidental to this Item.

Sign supports shall be paid for under Item 847.1.

ITEM 874.2 TRAFFIC SIGN REMOVED AND RESET EACH

The work under this Item shall conform to the relevant provisions of Subsections 828 and 840 of the Standard Specifications and the following:

The Contractor shall carefully remove and reset at new locations all existing signs, attachment hardware and sign support posts not included under other sign Items as shown on the drawings and as directed by the Engineer.

Signs, attachment hardware and sign support posts shall be satisfactorily stored and protected until reset in the proposed work.

Signs, attachment hardware and sign support posts lost, damaged or otherwise made unsuitable for reuse while being removed, transported, stored or reset shall be replaced with new materials at no additional cost to the Owner. New attachment hardware shall be furnished and installed as necessary to replace any missing or unusable existing hardware.

Included under Item 874.2 are Warning-Regulatory and Route Marker signs, and miscellaneous directional signs and decorative street name signs.

METHOD OF MEASUREMENT

Item 874.2, Traffic Sign Removed and Reset will be measured for payment by the unit, EACH complete in place.

BASIS OF PAYMENT

Item 874.2, Traffic Sign Removed and Reset will be paid for at the Contract unit price per EACH, which price shall be full compensation for all labor, material, removal and disposal of the existing foundations, backfilling, area restoration, equipment and incidental costs required to complete the work.

ITEM 874.4 TRAFFIC SIGNS REMOVED AND STACKED EACH

The work under this Item shall conform to the relevant provisions of Subsection 828 of the Standard Specifications and the following:

The work shall include the careful removal, transporting and stacking of signs, attached hardware and supports from locations shown on the plans and as directed by the Engineer.

The work also includes the removal and disposal of the existing foundations, and backfilling and restoration of the area.

The Contractor shall accept and hold entirely responsibility for the removal, handling and stacking at a location convenient for removal by the owner. Any signs and posts damaged or lost either directly or indirectly as a result of the Contractor's operations shall be replaced by the Contractor at no additional cost. The Contractor shall coordinate the removal of signs and posts with MassDOT by notifying MassDOT prior to and at the completion of the above work. Existing signs shall remain in place until proposed new signs are in place.

The signs within State Highway Layout should be neatly stacked at the MassDOT District 5 Maintenance Depot.

METHOD OF MEASUREMENT

Item 874.4, Traffic Signs Removed and Stacked will be measured for payment by number of signs removed and stacked.

BASIS OF PAYMENT

Item 874.4, Traffic Sign Removed and Stacked will be paid for at the Contract unit price per EACH, which price shall be full compensation for all labor, material, removal and disposal of the existing foundations, backfilling, restoration of the area, equipment and all incidental costs required to complete the work.

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DOCUMENT A00802

DETAIL SHEETS

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ESTIMATE OF QUANTITIES-DETAIL SHEET

TOWN-CITY: Dennis / Harwich
TYPE OF PROJECT: Roadway Reclamation
ROAD: Main Street (Rt 28)
DATE: August 1, 2025

Unclassified Excavation	6,000 CY
Class "B" Trench Excavation	2,625 CY
Class "B" Rock Excavation.	50 CY
Gravel Borrow	1,370 CY
Gravel Borrow – Type C	1,150 CY
Crushed Stone	260 TONS
Crushed Stone for Backing	7,027 TONS

PROPOSED FULL DEPTH PAVEMENT (IN RECLAIM AREAS) **AREA = 12,338.3 SY**

MAIN STREET STA 10+20 TO STA 47+00
UPPER COUNTY RD STA 4+12 TO STA 5+66

SURFACE: 2" SUPERPAVE SURFACE COURSE 12.5 POLYMER (SSC-12.5-P)
2½" SUPERPAVE INTERMEDIATE COUURSE 19.0 (SIC-19.0)

BASE: 5" SUPERPAVE BASE COURSE – 37.5 (SBC-37.5)

SUBBASE: 12" RECLAIMED PAVEMENT BORROW (M1.09.0)

PROPOSED FULL DEPTH PAVEMENT (IN WIDENING AREAS) **AREA = 2,703.9 SY**

MAIN STREET STA 11+58 TO STA 12+37, STA 11+79 TO STA 12+43, STA 12+61 TO STA 20+89, STA 12+66 TO STA 18+17, STA 18+39 TO STA 25+12, STA 21+44 TO STA 25+19, STA 25+64 TO STA 26+62, STA 30+50 TO STA 41+47, STA 32+23 TO STA 40+72, STA 41+09 TO STA 44+79, STA 41+68 TO STA 45+29
UPPER COUNTY RD STA 4+11 TO STA 4+34, STA 4+36 TO STA 5+27
DEPOT ROAD WEST STA 9+28 TO STA 9+54

SURFACE: 2" SUPERPAVE SURFACE COURSE 12.5 POLYMER (SSC-12.5-P)
2½" SUPERPAVE INTERMEDIATE COUURSE 19.0 (SIC-19.0)

BASE: 5" SUPERPAVE BASE COURSE – 37.5 (SBC-37.5)

SUBBASE: 12" GRAVEL BORROW, TYPE b OR
RECLAIMED PAVEMENT BORROW (M1.09.0)

PROPOSED PAVEMENT FINE MILLING & OVERLAY **AREA = 669.5 SY**

AREAS OF MILL AND OVERLAY SHALL BE USED AS PAVEMENT TRANSITIONS FROM FULL DEPTH PAVEMENT TO EXISTING.

SURFACE: 2" SUPERPAVE SURFACE COURSE 12.5 POLYMER (SSC-12.5-P)

MILLING: 2" MAXIMUM PAVEMENT MILLING

EXISTING PAVEMENT RECLAIM **AREA = 13,884.7 SY**

MAIN STREET STA 10+20 TO STA 47+00
UPPER COUNTY RD STA 4+11 TO STA 5+65

EXISTING PAVEMENT SHALL BE RECLAIMED TO A DEPTH OF 15"

PROPOSED BRICK SIDEWALK/ISLAND **AREA = 1,538.0 SY**

SURFACE: 2¼" WIRE CUT BRICK PAVER OVER NEOPRENE-MODIFIED ASPHALT OVER BITUMINOUS SETTING BED

BASE: 4" CEMENT CONCRETE AIR ENTRAINED 4000 PSI, ¾", 610

SUBBASE: 8" GRAVEL BORROW, TYPE b OR RECLAIMED PAVEMENT BORROW (M1.09.0)

PROPOSED CEMENT CONCRETE PEDESTRIAN CURB RAMP & CEMENT CONCRETE SIDEWALK

PCR AREA= 303.7 SY, WALK AREA: 36.0 SY

SURFACE: 4" CEMENT CONCRETE AIR ENTRAINED 4000 PSI, 3/4", 610

BASE: 8" GRAVEL BORROW, TYPE b OR RECLAIMED PAVEMENT BORROW (M1.09.0)

PROPOSED CEMENT CONCRETE DRIVEWAY **AREA = 398.5 SY**

SURFACE: 6" CEMENT CONCRETE AIR ENTRAINED 4000 PSI, 3/4", 610

BASE: 8" GRAVEL BORROW, TYPE b OR RECLAIMED PAVEMENT BORROW (M1.09.0)

PROPOSED HOT MIX ASPHALT SIDEWALK **AREA = 1,408.1 SY**

SURFACE: 1¼" SUPERPAVE SURFACE COURSE – 9.5 (SSC-9.5)

INTERMEDIATE: 1¾" SUPERPAVE SURFACE COURSE – 12.5 (SSC-12.5)

BASE: 8" GRAVEL BORROW, TYPE b OR RECLAIMED PAVEMENT BORROW (M1.09.0)

PROPOSED HOT MIX ASPHALT DRIVEWAY **AREA = 2,328.7 SY**

SURFACE: 1½" SUPERPAVE SURFACE COURSE – 9.5 (SSC-9.5)

INTERMEDIATE: 2½" SUPERPAVE SURFACE COURSE – 12.5 (SSC-12.5)

BASE: 8" GRAVEL BORROW, TYPE b OR RECLAIMED PAVEMENT BORROW (M1.09.0)

NOTES:

1. ALL HOT MIX ASPHALT PAVEMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 450 QUALITY ASSURAANCE FOR HMA.

2. ASPHALT EMULSION FOR TACK COAT (ITEM 452.) SHALL BE SPRAY APPLIED FOR TRIPLE COVERAGE IN ACCORDANCE WITH SUBSECTION 450.43 (G) OF THE STANDARD SPECIFICATIONS.

3. HMA JOINT ADHESIVE (ITEM 453.) SHALL BE APPLIED IN SURFACE COURSE AT ALL VERTICAL COLD JOINTS PRIOR TO HMA PAVING.

4. ALL HOT MIX ASPHALT WALKS AND DRIVEWAYS SHALL BE ESTIMATED AND PAID FOR UNDER ITEM 702. OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.

5. SURFACE PAVING TO BE COMPLETED AT THE END OF PROJECT AND AS DIRECTED WHEN IT CAN BE PLACED IN ITS ENTIRETY.

6. ALL FRAMES AND SERVICE BOXES SHALL BE ADJUSTED TO INTERMEDIATE COURSE AND ADJUSTED LEVEL WITH THE SURFACE COURSE PRIOR TO PAVING WITH HMA JOINT SEALANT.

ITEM 101. CLEARING AND GRUBBING

MAIN STREET

STA 22+63 LT to STA 24+89 LT

ITEM 102.2 TREE TRIMMING

MAIN STREET

STA 16+19 LT to STA 16+77 LT

ITEM 102.511 TREE PROTECTION – ARMORING & PRUNING

MAIN STREET

STATION		OFFSET	QUANTITY	
10+05	RT	21.2’	1	EA
10+35	RT	21.0’	1	EA
11+33	LT	40.5’	1	EA
11+40	LT	39.7’	1	EA
17+04	RT	29.8’	1	EA
18+38	LT	27.7’	1	EA
19+45	RT	29.0’	1	EA
20+20	RT	26.4’	1	EA
20+52	RT	25.3’	1	EA
20+89	RT	25.4’	1	EA
21+04	RT	24.7’	1	EA
21+53	RT	29.1’	1	EA
22+14	RT	26.7’	1	EA
22+35	RT	25.9’	1	EA
24+89	LT	25.1’	1	EA
25+07	LT	24.2’	1	EA
25+82	LT	35.1’	1	EA
26+22	LT	32.1’	1	EA
26+53	RT	31.1’	1	EA
31+82	RT	44.6’	1	EA
32+59	LT	43.0’	1	EA
36+44	RT	33.2’	1	EA
36+63	RT	24.2’	1	EA
37+91	LT	26.8’	1	EA
38+16	LT	27.3’	1	EA
38+43	LT	28.9’	1	EA
38+54	RT	26.9’	1	EA
40+46	RT	26.8’	1	EA
41+36	RT	28.3’	1	EA
42+78	LT	27.8’	1	EA
44+39	RT	25.1’	1	EA

ITEM 102.521 TREE AND PLANT PROTECTION FENCE

MAIN STREET

STA 33+84 RT to STA 34+59 RT

ITEM 102.55 ARBORIST

Assume 16 hours for construction oversight and monitoring

ITEM 103. TREE REMOVED – DIAMETER UNDER 24 INCHES

UPPER COUNTY RD

STATION		OFFSET	QUANTITY	
4+48	RT	24.7’	1	EA
4+81	RT	23.0’	1	EA
5+10	RT	22.0’	1	EA

MAIN STREET

10+34	RT	21.4’	1	EA
11+75	LT	31.7’	1	EA
12+01	LT	28.1’	1	EA
13+84	RT	27.0’	1	EA
16+48	RT	16.8’	6	EA
23+41	RT	22.4’	1	EA
35+64	LT	19.9’	1	EA
35+87	LT	17.8’	1	EA

ITEM 104. TREE REMOVED – DIAMETER 24 INCHES AND OVER

MAIN STREET

STATION		OFFSET	QUANTITY	
23+90	RT	24.1’	1	EA

ITEM 146. DRAINAGE STRUCTURE REMOVED

UPPER COUNTY RD

STATION		OFFSET	TYPE
4+26	RT	27.8’	DMH
4+28	RT	35.0’	DMH
4+29	RT	37.0’	CBCI
4+30	RT	28.5’	DMH
5+48	RT	15.0’	CB
5+52	RT	6.7’	DMH
5+60	LT	7.0’	DMH
5+68	LT	13.3’	CB

MAIN STREET

11+11	RT	12.5’	DMH
11+17	RT	19.2’	CBCI
14+28	LT	9.6’	CBCI
14+35	LT	12.5’	DMH
14+47	LT	12.1’	CB
14+47	RT	14.5’	CB
14+59	RT	15.0’	CB
18+50	LT	12.9’	CB
25+36	LT	25.2’	CB
27+60	RT	23.8’	CBCI
27+66	RT	21.6’	DMH
27+66	LT	21.7’	CB
29+45	RT	23.7’	CB
30+46	RT	15.7’	CB
32+21	LT	22.3’	CB
32+81	RT	25.3’	CB
33+36	RT	21.2’	CB
33+42	LT	25.1’	CB
34+35	RT	18.9’	CB
34+36	LT	22.1’	CB
37+09	RT	12.2’	CB
37+16	RT	8.0’	DMH
37+23	LT	15.7’	CB
38+10	RT	10.8’	CB
38+19	RT	7.6’	DMH
38+68	RT	9.8’	CB
38+97	RT	13.5’	CB
38+98	RT	8.0’	DMH
38+98	LT	14.8’	CB
39+92	LT	11.1’	CB
40+39	RT	12.6’	CB
41+39	RT	20.9’	CBCI
41+40	RT	16.9’	DMH
41+53	LT	15.3’	CB
41+58	RT	7.2’	DMH
41+72	RT	23.9’	CBCI
44+37	LT	15.0’	CB
44+57	RT	4.8’	DMH
44+86	LT	15.9’	CB

ITEM 151. GRAVEL BORROW

For use as a sub-base material where reclaimed pavement is not available and as required by the Engineer.

ITEM 151.01 GRAVEL BORROW - TYPE C

This Item is used to provide bedding and/or backfill material for reinforced concrete pipe and ductile iron pipe to a point two feet above the top of the pipe, at locations where the Engineer determines, in accordance with Subsection 150.64C of the Standard Specifications, that the insitu material is not sufficient for use as backfill.

ITEM 156. CRUSHED STONE

For use as a bedding material for drainage pipes and structures where saturated soils are unstable and as required by the Engineer.

ITEM 184.1 DISPOSAL OF TREATED WOOD PRODUCTS

For removal of wooden guardrail posts where existing guardrail is to be removed and discarded, and as required by the Engineer.

ITEM 192.6 MONITORING WELL ADJUSTED

UPPER COUNTY RD

STATION		OFFSET	QUANTITY	
4+34	LT	12.8’	1	EA
4+39	RT	15.1’	1	EA
4+61	LT	12.0’	1	EA
4+62	LT	12.1’	1	EA
4+69	RT	1.3’	1	EA
4+72	RT	7.8’	1	EA
4+88	LT	19.1’	1	EA
4+92	LT	19.4’	1	EA
4+93	LT	2.4’	1	EA
5+04	RT	0.9’	1	EA
5+14	LT	15.4’	1	EA
5+24	LT	12.4’	1	EA
5+30	RT	5.2’	1	EA
5+47	LT	2.3’	1	EA
5+80	RT	4.8’	1	EA

DIVISION ST NORTH

5+69	LT	8.6’	1	EA

MAIN STREET

18+17	RT	28.6’	1	EA

ITEM 201. CATCH BASIN

UPPER COUNTY ROAD

Station		Structure No.
5+14	LT	1
5+14	RT	2
5+33	RT	4
5+34	LT	5
5+68	LT	7

MAIN STREET

10+82	RT	8
11+01	RT	10
11+26	LT	12
14+43	RT	18
14+43	LT	19
14+63	RT	21
14+63	LT	22
17+50	RT	24
17+50	LT	25
22+65	RT	26
22+73	LT	27
25+16	LT	29
24+95	RT	30
27+54	RT	33
27+54	LT	34
27+74	RT	36
27+74	LT	37
30+96	RT	40
30+96	LT	41
33+54	LT	44
33+54	RT	45
33+75	RT	47
33+75	LT	48
35+66	LT	50
35+68	RT	51
39+75	LT	55
39+75	RT	56
39+94	LT	58
39+94	RT	59
41+90	LT	61
41+44	RT	63
41+74	RT	64
44+15	LT	66
44+17	RT	67
44+41	LT	69
44+42	RT	70
11+10	LT	74
12+94	RT	75
47+07	LT	77
47+09	RT	78

ITEM 202. MANHOLE

MAIN STREET

Station		Structure No.
5+11	RT	3
5+32	RT	6
10+89	RT	9
11+09	RT	11
12+65	LT	15
12+88	RT	16
14+39	RT	17
14+57	RT	20
17+38	RT	23
22+75	RT	28
25+03	RT	31
26+47	RT	32
27+58	RT	35
27+78	RT	38
29+45	RT	39
32+00	RT	43
33+58	RT	46
33+79	RT	49
47+01	RT	76
11+06	LT	79
5+33	LT	80

ITEM 202.2 MANHOLE (9 TO 14 FOOT DEPTH)

MAIN STREET

Station		Structure No.
38+98	RT	54
41+75	RT	65

ITEM 202.5 MANHOLE – 5 FOOT DIAMETER

MAIN STREET

31+00	RT	42
35+74	RT	52

ITEM 202.6 MANHOLE – 6 FOOT DIAMETER

MAIN STREET

11+27	RT	13

ITEM 202.52 MANHOLE – 5 FOOT DIAMETER (9 TO 14 FOOT DEPTH)

MAIN STREET

Station	Structure No.	
37+00	RT	53
39+83	RT	57
39+96	RT	60
41+36	RT	62
44+26	RT	68
44+57	RT	71

ITEM 220. DRAINAGE STRUCTURE ADJUSTED

All Proposed Structures and:

MAIN STREET

Station	Offset		Type
11+80	9.0’	LT	DMH
12+51	8.1’	LT	DMH
15+48	31.5’	RT	CB
26+64	29.6’	RT	CB
26+76	24.2’	LT	CB
46+19	2.4’	RT	DMH

BELMONT ROAD

10+64	11.7’	RT	CB
10+65	11.7’	LT	CB

DEPOT ROAD WEST

9+54	3.9’	RT	DMH
9+66	3.9’	RT	DMH

ITEM 220.5 DRAINAGE STRUCTURE REMODELED

All Proposed Structures and:

MAIN STREET

Station	Offset	
12+72	21.7’	LT

DEPOT ROAD WEST

9+52	12.8’	LT
9+53	11.2’	RT

ITEM 221. FRAME AND COVER

This Item is to be used to provide frame and cover castings for all proposed manholes and for an assumed 50% of all existing adjusted manholes.

ITEM 222.1 FRAME AND GRATE (OR COVER) – MASSDOT CASCADE TYPE

This Item is to be used to provide frame and grate castings for all proposed catch basins, for 50% of existing adjusted catch basins, and all existing remodeled structures, as assumed.

ITEM 223.2 FRAME AND GRATE (OR COVER) REMOVED AND DISCARDED

Assume all frames and grates (or covers) of existing drainage structures that will be removed or CIT are to be removed and discarded.

ITEM 227.3 REMOVAL OF DRAINAGE STRUCTURE SEDIMENT

For removal and disposal of sediments in existing drainage structures being removed, adjusted, rebuilt, tied into, and as directed by the Engineer.

ITEM 227.31 REMOVAL OF DRAINAGE PIPE SEDIMENT

For removal and disposal of sediments for existing drainage pipes being removed, replaced, or are directly connected to new structures or change in types.

ITEM 227.4 MASONRY PLUG

To be used where proposed utilities cross existing drainage pipes. Plugs to be used for pipe ends in abandoned and removed structures are considered incidental to the respective work.

ITEM 238.10 10 INCH DUCTILE IRON PIPE

To be used between the following drainage structures and as required by the Engineer.

Structure No.		Structure No.
4	to	6
2	to	3

ITEM 238.12 12 INCH DUCTILE IRON PIPE

To be used between the following drainage structures and as required by the Engineer.

Structure No.		Structure No.
18	to	27
26	to	28
27	to	28

ITEM 241.12 12 INCH REINFORCED CONCRETE PIPE CLASS III

To be used between the following drainage structures and as required by the Engineer.

Structure No.		Structure No.
7	to	80
5	to	80
80	to	6
1	to	3
16	to	15
75	to	16
17	to	16
20	to	17
23	to	20
25	to	23
28	to	31
30	to	31
29	to	31
37	to	38
36	to	38
41	to	42
40	to	42
50	to	52
51	to	52
63	to	62
64	to	65
61	to	65
76	to	EX-3
77	to	76
78	to	76

ITEM 241.15 15 INCH REINFORCED CONCRETE PIPE CLASS III

To be used between the following drainage structures and as required by the Engineer.

Structure No.		Structure No.
EX-5	to	6
6	to	3
3	to	79
35	to	38
38	to	39

ITEM 241.18 18 INCH REINFORCED CONCRETE PIPE CLASS III

To be used between the following drainage structures and as required by the Engineer.

Structure No.		Structure No.
EX-1	to	9
9	to	11
11	to	13
39	to	42
46	to	49

ITEM 241.24 24 INCH REINFORCED CONCRETE PIPE CLASS III

To be used between the following drainage structures and as required by the Engineer.

Structure No.		Structure No.
79	to	13
15	to	EX-2
49	to	52
52	to	53
53	to	54
54	to	57
57	to	60
60	to	62
62	to	65
65	to	68
68	to	71
71	to	EX-3

ITEM 243.12 12 INCH REINFORCED CONCRETE PIPE CLASS IV

To be used between the following drainage structures and as required by the Engineer.

Structure No.		Structure No.
4	to	6
2	to	3
8	to	9
10	to	11
19	to	17
21	to	20
44	to	46
45	to	46
47	to	49
48	to	49
56	to	57
55	to	57
59	to	60
58	to	60
66	to	68
67	to	68
69	to	71
70	to	71

ITEM 243.18 18 INCH REINFORCED CONCRETE PIPE CLASS IV

To be used between the following drainage structures and as required by the Engineer.

Structure No.		Structure No.
42	to	43
43	to	46

ITEM 244.12 12 INCH REINFORCED CONCRETE PIPE CLASS V

To be used between the following drainage structures and as required by the Engineer.

Structure No.		Structure No.
74	to	79
12	to	13
22	to	20
24	to	23
31	to	32
32	to	35
33	to	35
34	to	35
74	to	79

ITEM 303.06 6 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT)

These Items are to be used to relocate hydrants, for the water main replacement. and as required by the Engineer.

Starting Structure	Ending Structure
11+94 Exist Hyd.	11+94 Prop Hyd.
4+96 Insertion Valve	5+46 Insertion Valve

ITEM 358. GATE BOX ADJUSTED

To be used as required by the Engineer.

MAIN STREET

STATION		OFFSET	QUANTITY	
10+61	RT	31’	1	EA
11+14	LT	18’	1	EA
11+94	LT	17’	1	EA
12+24	LT	14’	1	EA

UPPER COUNTY ROAD

5+79	LT	9’	1	EA

ITEM 372.02 2 INCH TAPPING ASSEMBLY TO BLIND FLANGE

STATION	OFFSET		QUANTITY	
12+54	80’	LT	1	EA
12+61	63’	RT	1	EA

ITEM 375.06 6 INCH INSERTION VALVE AND BOX

STATION	OFFSET		QUANTITY	
4+99	12’	LT	1	EA
5+46	11’	LT	1	EA

ITEM 375.08 8 INCH INSERTION VALVE AND BOX

STATION	OFFSET		QUANTITY	
44+87	19’	RT	1	EA

ITEM 376.2 HYDRANT - REMOVED AND RESET

STATION		QUANTITY	
11+94	LT	1	EA

ITEM 390. REMOVE AND RESET IRRIGATION

To be used where private irrigation systems are disturbed.

ITEM 403.2 FULL DEPTH RECLAMATION WITH EMULSIFIED ASPHALT STABILIZATION

To be used for the reclamation of existing pavement.

ITEM 470.2 HOT MIX ASPHALT BERM, TYPE A

MAIN STREET

Station		Station
10+70	TO	10+71 RT
13+44	TO	13+48 RT
13+67	TO	13+70 RT
15+24	TO	15+33 RT
15+57	TO	15+67 RT
16+85	TO	16+86 LT
17+08	TO	17+10 LT
34+87	TO	34+90 RT
35+13	TO	35+14

DEPOT ROAD WEST

9+35	TO	9+66 LT
9+48	TO	9+88 RT

ITEM 472. TEMPORARY ASPHALT PATCHING

To be used for temporary access and traffic maintenance as directed by the Engineer.

ITEM 504.2 GRANITE CURB TYPE VA4 - SPLAYED END

DEPOT ROAD WEST

QUANTITY: 2 EA

ITEM 506. GRANITE CURB TYPE VB – STRAIGHT

UPPER COUNTY ROAD

Station		Station	
4+17	TO	4+29	RT
4+31	TO	4+34	RT
4+34	TO	4+68	RT
4+56	TO	5+73	RT
4+68	TO	5+27	RT
4+15	TO	4+22	ISLAND
4+24	TO	4+26	ISLAND

DIVISION STREET

6+37	TO	6+51	LT
6+40	TO	6+62	RT
5+58	TO	5+78	LT
5+44	TO	5+44	RT
5+58	TO	5+64	LT

DEPOT ROAD WEST

9+28	TO	9+32	LT
9+42	TO	9+48	RT

MANSION STREET

11+41	TO	11+53	LT

RIVERSIDE DRIVE

13+42	TO	13+42	LT
13+43	TO	13+76	RT
13+77	TO	13+79	RT

MAIN STREET

9+32	TO	10+26	LT
9+32	TO	9+60	LT
9+82	TO	10+01	LT
10+17	TO	10+26	RT
10+25	TO	10+25	RT
10+31	TO	10+31	RT
10+31	TO	10+43	RT
10+31	TO	10+53	LT
10+48	TO	10+48	RT
10+79	TO	12+12	RT
10+91	TO	11+10	LT
11+45	TO	12+06	LT
11+73	TO	11+73	LT
11+78	TO	12+20	LT

ITEM 506. (Continued)

12+89	TO	13+32 RT
12+92	TO	12+95 LT
13+20	TO	13+42 LT
13+79	TO	14+63 LT
13+82	TO	15+09 RT
14+93	TO	16+76 LT
15+82	TO	15+94 RT
16+19	TO	17+97 RT
17+19	TO	17+83 LT
18+31	TO	18+42 LT
18+40	TO	18+41 RT
18+56	TO	18+62 RT
18+66	TO	19+13 LT
18+90	TO	20+30 RT
19+27	TO	19+50 LT
19+61	TO	20+34 LT
20+50	TO	21+34 RT
20+52	TO	20+81 LT
21+18	TO	21+29 LT
21+46	TO	22+01 LT
21+50	TO	22+76 RT
22+30	TO	25+19 LT
23+01	TO	24+27 RT
24+59	TO	24+99 RT
25+68	TO	26+62 RT
25+86	TO	26+53 LT
26+81	TO	27+18 LT
26+82	TO	27+18 RT
27+23	TO	28+18 RT
27+23	TO	28+08 LT
28+46	TO	29+23 LT
28+76	TO	29+85 RT
29+45	TO	29+75 LT
29+93	TO	30+94 LT
30+02	TO	30+24 RT
30+41	TO	31+84 RT
31+20	TO	31+42 LT
32+14	TO	32+95 RT
32+20	TO	32+84 LT
33+21	TO	34+76 RT
33+38	TO	34+53 LT
34+75	TO	34+95 LT
35+15	TO	37+00 LT
35+21	TO	35+84 RT
36+04	TO	37+24 RT
37+20	TO	37+37 LT
37+44	TO	38+72 RT

ITEM 506. (Continued)

37+72	TO	37+89	LT
38+25	TO	40+38	LT
38+92	TO	41+21	RT
41+14	TO	41+30	LT
41+85	TO	41+94	LT
41+99	TO	43+07	RT
42+20	TO	43+93	LT
43+42	TO	44+02	RT
44+22	TO	47+27	RT
44+79	TO	47+17	LT

ITEM 506.1 GRANITE CURB TYPE VB – CURVED

UPPER COUNTY ROAD

Station		Station	
4+12	TO	4+19	LT
4+11	TO	4+15	ISLAND
4+13	TO	4+15	ISLAND
4+15	TO	4+18	ISLAND
4+22	TO	4+37	LT
4+23	TO	4+25	ISLAND
4+25	TO	4+26	ISLAND
4+38	TO	4+55	LT

MANSION STREET

11+53	TO	11+73	LT

RIVERSIDE DRIVE

13+40	TO	13+42	LT
13+76	TO	13+77	RT

MAIN STREET

9+60	TO	9+65	LT
9+65	TO	9+77	LT
9+77	TO	9+82	LT
10+43	TO	10+48	RT
10+69	TO	10+79	RT
12+06	TO	12+13	LT
12+17	TO	12+29	LT
12+32	TO	12+35	LT
12+17	TO	12+29	LT
12+32	TO	12+35	LT

ITEM 506.1 (Continued)

12+17	TO	12+39 RT
12+41	TO	12+42 RT
12+63	TO	12+69 LT
12+63	TO	12+80 LT
12+67	TO	12+68 RT
12+69	TO	12+92 LT
12+69	TO	12+81 RT
12+85	TO	12+92 LT
12+86	TO	12+89 RT
13+33	TO	13+38 RT
13+76	TO	13+82 RT
15+08	TO	15+15 RT
15+75	TO	15+82 RT
16+76	TO	16+80 LT
17+14	TO	17+19 LT
17+83	TO	17+88 LT
17+96	TO	18+03 RT
18+10	TO	18+17 RT
18+41	TO	18+44 RT
18+50	TO	18+56 RT
18+62	TO	18+65 RT
18+85	TO	18+89 RT
20+81	TO	20+86 LT
21+13	TO	21+18 LT
24+27	TO	24+31 RT
24+56	TO	24+59 RT
24+99	TO	25+05 RT
25+11	TO	25+13 RT
25+19	TO	25+25 LT
25+33	TO	25+38 LT
25+39	TO	25+50 RT
25+60	TO	25+68 RT
25+67	TO	25+72 LT
25+80	TO	25+86 LT
31+41	TO	31+48 LT
31+56	TO	31+64 LT
31+93	TO	32+03 LT
32+13	TO	32+20 LT
32+84	TO	32+89 LT
33+32	TO	33+38 LT
34+76	TO	34+81 RT
35+18	TO	35+23 RT
37+37	TO	37+41 LT
37+67	TO	37+72 LT
37+89	TO	37+94 LT
38+19	TO	38+25 LT
40+38	TO	40+46 LT

ITEM 506.1 (Continued)

40+56	TO	40+70 LT
40+94	TO	41+00 LT
41+07	TO	41+14 LT
41+21	TO	41+28 RT
41+29	TO	41+35 LT
41+37	TO	41+46 RT
41+69	TO	41+82 RT
41+80	TO	41+84 LT
41+91	TO	41+99 RT
43+93	TO	43+99 LT
44+73	TO	44+79 LT

ITEM 509. GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS – STRAIGHT

This shall include transition cubs for pedestrian curb ramp transitions, driveway transitions and driveway transitions at the back of walk and transitions between propose granite curb and edge of pavement.

ITEM 509.1 GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS – CURVED

This shall include curved transition cubs for pedestrian curb ramp transitions, driveway transitions and driveway transitions at the back of walk and curved transitions between propose granite curb and edge of pavement.

ITEM 514. GRANITE CURB INLET - STRAIGHT

UPPER COUNTY ROAD

STATION	
5+14	LT
5+14	RT
5+34	LT

MAIN STREET

10+82	RT
11+01	RT
11+26	LT
14+43	RT
14+43	LT
14+63	RT
17+50	RT
17+50	LT
22+65	RT
22+73	LT
25+16	LT
24+95	RT
27+54	RT
27+54	LT
27+74	RT
27+74	LT
30+96	RT
33+54	LT
33+54	RT
33+75	RT
33+75	LT
35+66	LT
35+68	RT
39+75	LT
39+75	RT
39+94	LT
39+94	RT
41+90	LT
44+15	LT
44+42	RT
47+07	LT
47+09	RT

ITEM 515. GRANITE CURB INLET - CURVED

MAIN STREET

STATION		OFFSET
41+44	RT	29’
41+74	RT	28’

ITEM 580. CURB REMOVED AND RESET

Assume 20% of existing granite curb will be removed and reset

ITEM 581. CURB INLET REMOVED AND RESET

Assume 50% of existing drainage structures to be removed have curb inlets than can be reset.

ITEM 590. CURB REMOVED AND STACKED

Assume 20% of existing granite curb will be stacked

ITEM 594. CURB REMOVED AND DISCARDED

Assume 60% of existing granite curb will be discarded.

ITEM 595. CURB INLET REMOVED AND DISCARDED

Assume 50% of existing drainage structures to be removed have curb inlets that are not suitable to be reset and will be discarded.

ITEM 620.12 GUARDRAIL, TL-2 (SINGLE FACED)

MAIN STREET

STATION		STATION
44+88	TO	46+56 LT
45+12	TO	46+68 RT

ITEM 627.1 TRAILING ANCHORAGE

MAIN STREET

STATION
44+76 LT

ITEM 627.82 GUARDRAIL, TANGENT END TREATMENT, TL-2

MAIN STREET

44+74	TO	45+12 RT

ITEM 628.21 TRANSITION TO NCHRP 350 GUARDRAIL

MAIN STREET
46+75 RT & 46+75 LT

ITEM 628.304 TEMPORARY IMPACT ATTENUATOR, NON-REDIRECTIVE (TL-2)

Temp impact attenuator needed to shield blunt ends of barrier for guardrail work on both sides of Route 28 at Herring River Bridge.

ITEM 628.4 TEMPORARY IMPACT ATTENUATOR REMOVED AND RESET

From Item 628.304, remove and reset attenuator for south side guardrail work.

ITEM 630.2 HIGHWAY GUARD REMOVED AND DISCARDED

MAIN STREET

STATION		STATION
44+67	TO	46+90 LT
44+71	TO	46+42 RT
46+51	TO	47+02 RT

ITEM 669. FENCE REMOVED AND STACKED

MAIN STREET

STATION		STATION
18+72	TO	19+05 LT
18+94	TO	19+45 RT
20+64	TO	21+31 RT
22+57	TO	22+75 RT
22+92	TO	23+84 RT
37+43	TO	38+54 RT
41+77	TO	43+00 RT
42+25	TO	43+06 LT
43+13	TO	43+30 LT
43+37	TO	43+74 LT

ITEM 697.1 SILT SACK

To be used at all drainage inlets to be removed, all proposed catch basins, and all adjusted catch basins.

ITEM 706.5 FIELD STONE WALK REMOVED AND RESET

MAIN STREET

STATION		STATION
43+08	TO	43+11 LT
43+31	TO	43+35 LT

ITEM 707.1 PARK BENCH

MAIN STREET

STATION		OFFSET
27+00	LT	27.0’
27+40	LT	27.0’

ITEM 710.4 BOUND – PLAIN GRANITE

UPPER COUNTY ROAD

STATION		OFFSET
4+21	LT	26.2’
4+50	LT	21.4’
5+03	RT	21.0’
5+04	RT	26.0’
5+73	LT	19.5’
5+73	LT	20.5’

DIVISION STREET NORTH

5+58	LT	22.38’
5+58	LT	26.0’

MAIN STREET

9+38	LT	16.4’
9+38	LT	17.5’
9+60	LT	18.0’
9+60	LT	19.3’
9+82	LT	18.0’
9+82	LT	19.3’
10+30	LT	17.5’
10+30	LT	21.0’
10+55	LT	17.5’
10+55	LT	16.1’
11+94	LT	32.9’
12+89	RT	21.5’
12+92	LT	22.5’
13+41	LT	21.5’
13+41	LT	22.5’
18+54	LT	21.5’
18+54	RT	21.5’
19+24	RT	21.5’
20+45	LT	21.5’
21+66	LT	21.5’
36+27	RT	21.5’
38+77	RT	21.5’
43+58	RT	21.5’

ITEM 711. BOUND REMOVED AND RESET

MAIN STREET

STATION		OFFSET
12+77	LT	24.1’
12+79	RT	25.9’
23+91	RT	21.7’

ITEM 712.2 BOUND REMOVED

MAIN STREET

STATION		OFFSET
11+21	RT	22.0’
11+21	RT	25.9’
11+68	LT	29.8’
12+26	LT	51.4’
14+18	RT	20.5’
15+49	LT	19.9’
36+89	RT	20.9’
41+15	RT	17.3’
42+01	RT	17.3’

ITEM 715. RURAL MAILBOX REMOVED AND RESET

MAIN STREET

STATION		QUANTITY	
15+86	RT	1	EA
17+20	RT	1	EA
18+95	RT	2	EA
20+27	RT	1	EA
23+05	RT	1	EA
30+61	RT	2	EA
32+23	RT	2	EA
33+21	RT	1	EA
35+63	RT	3	EA
36+16	RT	3	EA
37+18	RT	2	EA
39+16	RT	1	EA

ITEM 767.121 SEDIMENT CONTROL BARRIER

To be used at locations shown on the plans, around catch basins in grasses areas and as directed by the Engineer.

ITEM 772.336 CEDAR – RED 5-6' HT.

MAIN STREET

STATION		OFFSET
45+47	LT	79'

ITEM 777.328 OAK – WHITE 2-2.5 INCH CALIPER

MAIN STREET

STATION		OFFSET
46+47	RT	79'

ITEM 778.501 JUNIPER – LOW #3

MAIN STREET

STATION		OFFSET
45+47	LT	79'

ITEM 788.301 BEARBERRY #1

MAIN STREET

STATION		OFFSET
45+47	LT	79'

ITEM 789.433 BEACH PLUMB #3

MAIN STREET

STATION		STATION
44+50	TO	47+50 LT

ITEM 794.345 SUMAC – FRAGRANT 'GRO LOW' 18-24 INCH

MAIN STREET

STATION		STATION
44+50	TO	47+00 LT

ITEM 796.762 DAYLILY – 'ROSY RETURNS' 1 GAL

MAIN STREET

STATION		STATION
26+80	TO	28+34 RT & LT

ITEM 802.408 4 INCH TELEPHONE CONDUIT – TYPE NM (8 BANK)

Main Street

STA		STA
14+10 LT	to	14+10 LT
14+10 LT	to	23+40 RT
23+40 RT	to	23+40 LT
32+60 LT	to	40+50 RT
40+50 RT	to	40+50 LT

ITEM 804.3 3 INCH ELECTRICAL CONDUIT – TYPE NM – PLASTIC (UL)

To be used for street lighting and traffic signals.

Main Street at Upper County Road

STA		STA
10+26 RT	to	10+40 RT
10+33 LT	to	10+40 LT
10+41 LT	to	10+40 RT
10+40 RT	to	10+43 RT
10+41 RT	to	10+76 RT
10+77 RT	to	10+77 RT
10+77 RT	to	10+90 RT
10+41 LT	to	10+55 LT
10+55 LT	to	10+50 LT
10+56 LT	to	10+62 LT
10+57 LT	to	11+01 LT
11+01 LT	to	10+94 LT
11+01 LT	to	10+94 LT
11+02 LT	to	11+27 LT
11+12 LT	to	11+26 LT
10+81 LT	to	11+26 LT

Main Street between Upper County Road & Division Street

11+27 LT	to	11+41 LT
11+43 LT	to	11+46 LT
11+51 LT	to	11+54 LT
11+54 LT	to	12+05 LT
11+51 LT	to	11+81 LT

Main Street at Division Street

12+02 RT	to	12+05 LT
12+02 RT	to	12+17 RT
12+02 RT	to	12+27 RT
12+05 LT	to	12+09 LT
12+06 LT	to	12+19 LT
12+18 LT	to	12+18 LT
12+19 LT	to	12+28 LT
12+19 LT	to	12+74 LT

ITEM 804.3 (Continued)

12+66	LT	to	12+68	LT
12+68	LT	to	12+73	LT
12+68	LT	to	12+74	LT
12+75	LT	to	12+87	LT
12+28	RT	to	12+27	RT
12+28	RT	to	12+35	RT
12+28	RT	to	12+72	RT
12+72	RT	to	12+73	RT
12+74	RT	to	12+77	RT
12+74	RT	to	12+82	RT

Lighting Conduit

EX TR HH	10+15	RT	D25	10+33	RT
EX TR HH	09+60	LT	D24	10+40	LT
D26	11+18	LT	D28	12+01	LT
D25	10+81	RT	D27	12+10	RT
H1	12+88	RT	H3	14+06	RT
H2	12+87	LT	H4	13+95	LT
H4	13+95	LT	H6	15+40	LT
H3	14+06	RT	H5	14+96	RT
H5	14+96	RT	H7	15+78	RT
H6	15+40	LT	H8	16+30	LT
H7	15+78	RT	H9	16+68	RT
H8	16+30	LT	H10	17+20	LT
H9	16+68	RT	H11	17+59	RT
H10	17+20	LT	H12	17+88	LT
H12	17+88	LT	H14	18+78	LT
H13	18+50	RT	H15	19+57	RT
H14	18+78	LT	H16	19+71	LT
H15	19+57	RT	H17	20+31	RT
H16	19+71	LT	H18	20+63	LT
H17	20+31	RT	H19	21+22	RT
H18	20+63	LT	H20	21+53	LT
H19	21+22	RT	H21	22+12	RT
H20	21+53	LT	H22	22+43	LT
H21	22+15	RT	H23	23+03	RT
H22	22+43	LT	H24	23+43	LT
H23	23+03	RT	H25	23+84	RT
H24	23+43	LT	H26	24+31	LT
H25	23+84	RT	H27	24+75	RT
H26	24+31	LT	H28	25+22	LT
H29	25+66	RT	H31	26+58	RT
H30	26+10	LT	H32	27+13	LT
H31	26+58	RT	H33	27+12	RT
H32	27+13	LT	H34	27+74	LT
H33	27+12	RT	24" HH	28+07	RT
H34	27+74	LT	24" HH	27+97	LT

ITEM 804.3 (Continued)

LC	28+08	RT	H35	28+23	RT
LC	28+08	RT	H36	28+62	LT
H35	28+23	RT	H37	29+16	RT
H36	28+62	LT	H38	29+48	LT
H37	29+16	RT	H39	31+02	RT
H38	29+48	LT	H40	31+39	LT
H39	31+02	RT	H41	32+73	RT
H41	32+73	RT	H43	34+55	RT
H42	33+29	LT	H44	34+78	LT
H43	34+55	RT	H45	36+21	RT
H44	34+78	LT	H46	36+69	LT
H45	36+21	RT	H47	38+00	RT
H46	36+69	LT	H48	38+61	LT
H47	38+00	RT	H49	39+89	RT
H48	38+61	LT	H50	40+40	LT
H51	41+90	RT	H53	43+58	RT
H52	41+96	LT	H54	43+80	LT

ITEM 804.333 3 INCH ELECTRICAL CONDUIT TYPE NM PLASTIC (UL) IN ROADWAY

STA			STA	
10+54	LT	to	11+18	LT
17+59	RT	to	18+54	RT
24+75	RT	to	25+67	RT
25+20	LT	to	26+10	LT
27+97	LT	to	28+05	RT
31+39	LT	to	33+28	LT
39+89	RT	to	41+87	RT
40+36	LT	to	41+94	LT

ITEM 811.121 TELEPHONE MANHOLE

Main Street

STA	OFFSET	
14+10	5.0'	LT
23+40	20.0'	RT
40+50	20.0'	RT

ITEM 811.22 ELECTRIC HANDHOLE – SD2.022

To be used for street lighting and traffic signals.

Main Street

11+42 36.1' LT
11+53 33.2' LT

For Lighting

HH1 10+54 LT
HH2 10+81 LT
HH3 11+18 RT
HH4 12+02 LT
HH5 12+09 RT
HH6 12+85 LT
HH7 12+91 LT
HH8 13+95 LT
HH9 14+06 LT
HH10 14+96 LT
HH11 15+40 RT
HH12 15+72 RT
HH13 16+30 LT
HH14 16+68 RT
HH15 17+24 LT
HH16 17+59 RT
HH17 17+82 LT
HH18 18+55 RT
HH19 18+77 LT
HH20 19+57 RT
HH21 19+70 LT
HH22 20+26 RT
HH23 20+63 LT
HH24 21+22 RT
HH25 21+53 LT
HH26 22+12 RT
HH27 22+43 LT
HH28 23+06 RT
HH29 23+43 LT
HH30 23+81 RT
HH31 24+31 LT
HH32 24+75 RT
HH33 25+19 LT
HH34 25+68 RT
HH35 26+10 LT
HH36 26+55 RT
HH37 27+10 LT
HH38 27+13 RT

ITEM 811.22 (Continued)

HH39 27+74 RT
HH40 28+15 LT
HH41 28+61 RT
HH42 29+15 LT
HH43 29+48 RT
HH44 31+02 LT
HH45 31+39 RT
HH46 32+73 LT
HH47 33+28 RT
HH48 34+55 LT
HH49 34+78 RT
HH50 36+19 LT
HH51 36+69 RT
HH52 38+00 LT
HH53 38+61 RT
HH54 39+89 LT
HH55 40+37 RT
HH56 41+94 LT
HH57 41+99 RT
HH58 43+59 LT
HH59 43+76 RT

ITEM 811.28 ELECTRIC HANDHOLE – 24”x24”

HH91 27+97 LT
HH90 28+07 RT

ITEM 811.31 PULL BOX 12 X 12 INCHES – SD2.031

Main Street

10+41 15.2' LT
10+40 25.1' RT
10+56 13.9' LT
10+77 20.0' RT
11+01 15.1' LT
11+27 40.5' LT
12+05 27.4' LT

Division Street North

05+39 30.2' LT
05+37 18.7' RT
05+23 24.7' RT

Division Street South

06+16 52.8' RT
06+21 27.5' RT
06+25 17.6' LT

ITEM 812.09 LIGHT STANDARD FOUNDATION PRECAST

D24	10+56 LT
D25	10+81 RT
D26	11+15 LT
D27	12+11 RT
D28	12+04 LT
H1	12+88 LT
H2	12+91 RT
H3	14+06 LT
H4	13+95 RT
H5	14+96 RT
H6	15+40 LT
H7	15+78 RT
H8	16+30 LT
H9	16+68 RT
H10	17+20 LT
H11	17+59 RT
H12	17+88 LT
H13	18+50 RT
H14	18+78 LT
H15	19+57 RT
H16	19+71 LT
H17	20+31 RT
H18	20+63 LT
H19	21+22 RT
H20	21+53 LT
H21	22+12 RT
H22	22+43 LT
H23	23+03 RT
H24	23+43 LT
H25	23+84 RT
H26	24+31 LT
H27	24+75 RT
H28	25+22 LT
H29	25+66 RT
H30	26+10 LT
H31	26+58 RT
H33	27+12 RT
H32	27+13 LT
H34	27+74 LT
H35	28+23 RT
H36	28+62 LT
H37	29+16 RT
H38	29+48 LT
H39	31+02 RT
H40	31+39 LT
H41	32+24 RT
H42	33+29 LT

ITEM 812.09 (Continued)

H43	34+55 RT
H44	34+78 LT
H45	36+21 RT
H46	36+69 LT
H47	38+00 RT
H48	38+61 LT
H49	39+89 RT
H50	40+40 LT
H51	41+90 RT
H52	41+96 LT
H53	43+58 RT
H54	43+80 LT

ITEM 813.42 WIRE TYPE 8 NO. 6 DIRECT BURIAL

LP #		LP #
EX TR HH	to	D24
D24	to	D26
D26	to	D28
EX TR HH	to	D25
D25	to	D27

ITEM 813.43 WIRE TYPE 8 NO. 4 DIRECT BURIAL

LP #		LP #
H1	to	H3
H3	to	H5
H5	to	H7
H7	to	H9
H9	to	H11
H11	to	H13
H13	to	H15
H15	to	H17
H17	to	H19
H19	to	H21
H21	to	H23
H23	to	H25
H25	to	H27
H27	to	H29
H29	to	H31
H31	to	H33
H33	to	HH61
HH61	to	LC
H2	to	H4
H4	to	H6

ITEM 813.43 (Continued)

H6	to	H8
H8	to	H10
H10	to	H12
H12	to	H14
H14	to	H16
H16	to	H18
H18	to	H20
H20	to	H22
H22	to	H24
H24	to	H26
H26	to	H28
H28	to	H30
H30	to	H32
H32	to	H34
H34	to	HH60
HH60	to	LC
LC	to	HH61
HH61	to	H35
H35	to	H37
H37	to	H39
H39	to	H41
H41	to	H43
H43	to	H45
H45	to	H47
H47	to	H49
H49	to	H51
H51	to	H53
HH60	to	H36
H36	to	H38
H38	to	H40
H40	to	H42
H42	to	H44
H44	to	H46
H46	to	H48
H48	to	H50
H50	to	H52
H52	to	H54

ITEM 813.526 WIRE TYPE 10 NO. 6 GROUNDING

LP #		LP #
H42	to	H44
H44	to	H46
H46	to	H48
H48	to	H50
H50	to	H52
H52	to	H54

ITEM 821.913 ORNAMENTAL LIGHT POLE-POST TOP (DENNIS)

Main Street

Station	Offset	LP #
10+56	LT	D24
10+81	RT	D25
11+15	LT	D26
12+11	RT	D27
12+02	LT	D28

ITEM 821.914 ORNAMENTAL LIGHT POLE-POST TOP (HARWICH)

Main Street

Station	Offset	LP #
12+88	RT	H1
12+91	LT	H2
14+06	RT	H3
13+95	LT	H4
14+96	RT	H5
15+40	LT	H6
15+78	RT	H7
16+30	LT	H8
16+68	RT	H9
17+20	LT	H10
17+59	RT	H11
17+88	LT	H12
18+50	RT	H13
18+78	LT	H14
19+57	RT	H15
19+71	LT	H16
20+31	RT	H17
20+63	LT	H18
21+22	RT	H19
21+53	LT	H20
22+12	RT	H21
22+43	LT	H22
23+03	RT	H23
23+43	LT	H24

ITEM 821.914 (Continued)

23+84	RT	H25
24+31	LT	H26
24+75	RT	H27
25+22	LT	H28
25+66	RT	H29
26+10	LT	H30
26+58	RT	H31
27+12	RT	H33
27+13	LT	H32
27+74	LT	H34
28+23	RT	H35
28+62	LT	H36
29+16	RT	H37
29+48	LT	H38
31+02	RT	H39
31+39	LT	H40
32+24	RT	H41
33+29	LT	H42
34+55	RT	H43
34+78	LT	H44
36+21	RT	H45
36+69	LT	H46
38+00	RT	H47
38+61	LT	H48
39+89	RT	H49
40+40	LT	H50
41+90	RT	H51
41+96	LT	H52
43+58	RT	H53
43+80	LT	H54

ITEM 823.04 HIGHWAY LIGHTING LUMINAIRE – LED TYPE B

Required for 4 mast arms at Main Street/Division Street intersection.

ITEM 823.61 HIGHWAY LIGHTING LOAD CENTER NO. 1 (DENNIS)

To be used for upgrades to existing Dennis Load Center.

ITEM 823.62 HIGHWAY LIGHTING LOAD CENTER NO. 2 (HARWICH)

To be used for new Harwich Load Center at Main St STA 28+05 RT.

ITEM 823.72 HIGHWAY LIGHTING ARM AND LUMINAIRE REMOVED AND RESET

Main Street

	Station	Offset	UP #
	10+43	LT	37/403
Upper County	4+53	RT	42/1

ITEM 823.911 ORNAMENTAL POST TOP LANTERN LUMINAIRE MUNICIPAL STANDARD (DENNIS TYPE A)

Main Street

Station	Offset	LP #
10+56	LT	D24
10+81	RT	D25
11+15	LT	D26
12+11	RT	D27
12+02	LT	D28

ITEM 823.913 ORNAMENTAL POST TOP LANTERN LUMINAIRE MUNICIPAL STANDARD (HARWICH TYPE C)

Main Street

Station	Offset	LP #
13+95	LT	H2
12+88	RT	H1
12+91	LT	H2
14+06	RT	H3
13+95	LT	H4
14+96	RT	H5
15+40	LT	H6
15+78	RT	H7
16+30	LT	H8
16+68	RT	H9
17+20	LT	H10
17+59	RT	H11
17+88	LT	H12
18+50	RT	H13
18+78	LT	H14
19+57	RT	H15
19+71	LT	H16
20+31	RT	H17
20+63	LT	H18
21+22	RT	H19
21+53	LT	H20
22+12	RT	H21
22+43	LT	H22
23+03	RT	H23

ITEM 823.913 (Continued)

23+43	LT	H24
23+84	RT	H25
24+31	LT	H26
24+75	RT	H27
25+22	LT	H28
25+66	RT	H29
26+10	LT	H30
26+58	RT	H31
27+12	RT	H33
27+13	LT	H32
27+74	LT	H34
28+23	RT	H35
28+62	LT	H36
29+16	RT	H37
29+48	LT	H38
31+02	RT	H39
31+39	LT	H40
32+24	RT	H41
33+29	LT	H42
34+55	RT	H43
34+78	LT	H44
36+21	RT	H45
36+69	LT	H46
38+00	RT	H47
38+61	LT	H48
39+89	RT	H49
40+40	LT	H50
41+90	RT	H51
41+96	LT	H52
43+58	RT	H53
43+80	LT	H54

ITEM 826.7 ELECTRIC SERVICE RISER RELOCATION

Main Street

STA	OFFSET
12+75	56.5' RT
13+40	25.0' LT
14+95	28.0' RT
15+45	21.0' LT
18+60	25.0' RT
22+55	22.0' LT
22+60	27.0' RT
27+40	30.0' LT
33+75	36.0' LT
33+80	31.0' RT
34+80	29.0' LT
38+70	27.5' RT
43+90	29.3' RT

ITEM 854.016 TEMPORARY PAVING MARKINGS - 6 INCH (PAINTED)

To be used during staging on milled roadway prior to overlay.

ITEM 854.036 TEMPORARY PAVING MARKINGS - 6 INCH (TAPE)

To be used during staging on final surface course prior to final striping.

ITEM 864.41 GREEN COLORIZED PAVEMENT MARKINGS

Main Street

STA		STA
12+22	to	12+74 LT
12+28	to	12+76 RT
18+02	to	18+52 RT
20+85	to	21+15 LT
25+04	to	25+62 RT
25+24	to	25+81 LT
31+46	to	32+15 LT
34+81	to	35+19 RT
40+45	to	41+07 LT
41+27	to	41+93 RT

ITEM 874.2 TRAFFIC SIGN REMOVED AND RESET

	Station	Offset	
Main Street			
	10+19	20.1'	RT
	12+04	27.9'	LT
	12+85	23.1'	RT
	13+81	25.4'	RT
	14+20	16.0'	RT
	14+20	16.0'	RT
	14+59	17.8'	LT
	14+59	17.8'	LT
	15+56	12.5'	LT
	19+57	15.8'	RT
	22+95	22.2'	RT
	39+11	25.0'	RT
	41+85	28.3'	LT
	43+70	29.6'	LT
Upper County Road			
	4+27	17.8'	LT
	4+31	9.6'	RT
	4+31	9.6'	RT
	4+31	9.6'	RT
Division Street			
	6+38	14.4'	LT
Belmont Road			
	10+37	17.1'	RT

ITEM 903. 3000 PSI, 1.5 INCH, 470 CEMENT CONCRETE

To be used at each hydrant to be reset requiring a thrust block.

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DOCUMENT A00804

GEOTECHNICAL REPORT

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March 12, 2020

Ms. Patricia Domigan
Vanasse Hangen Brustlin, Inc.
101 Walnut Street
P.O. Box 9151
Watertown, MA 02471-9151
Phone: (617) 924-1770
Fax: (617) 924-2286
e-mail: PDomigan@VHB.com

Re: **Geotechnical Letter Report**
Proposed Route 28 Improvements
Harwich, Massachusetts
LGCI Project No. 1828

Dear Ms. Domigan:

Lahlaf Geotechnical Consulting, Inc. (LGCI) has completed a geotechnical study for the proposed roadway improvements in Harwich, Massachusetts. This letter report presents the results of our study.

1. PROJECT INFORMATION

1.1 Project Authorization

We performed services in general accordance with our proposal No. 16129-Rev. 1 dated January 3, 2017 and revised on March 21, 2018, and in general accordance with the terms and conditions of the Subconsultant Authorization from Vanasse Hangen Brustlin, Inc. (VHB) dated April 12, 2018 and signed by Mr. March Shamon of VHB on April 13, 2018

1.2 Purpose and Scope of Services

The purpose of this study was to obtain subsurface information, to perform an existing pavement evaluation, and to perform a pavement design. LGCI performed the following services:

- Prepared an exploration plan including pavement core and boring locations for VHB's review.
- Marked the exploration locations at the site.
- Provided a geotechnical engineer to observe the existing pavement and make an evaluation of the pavement condition.

- Engaged a drilling subcontractor to perform nine (9) pavement cores on May 16, 2019 for the existing pavement evaluation and the proposed pavement design. We also engaged a drilling subcontractor to advance three (3) borings on January 20, 2020 for the proposed mast arms. Our drilling subcontractor notified Dig Safe Systems Inc. (Dig Safe) and the Town of Harwich for utility clearance. Our drilling subcontractor also applied for and obtain MassDOT permits for the pavement cores and for the mast arm borings.

- Provided a field engineer at the site to coordinate and observe the pavement cores and borings, collect soil samples and pavement core samples and prepare field logs.

- Submitted eight (8) soil samples, four (4) each from the subbase and subgrade for grain-size analyses, and submitted two (2) soil samples from the subgrade for laboratory compaction tests and California Bearing Ratio (CBR) tests.

- Performed a pavement design in accordance with AASHTO Interim Guide as revised in 1981 as required by MassDOT.

- Prepared this geotechnical letter report containing the results of our subsurface explorations and our recommendations for pavement design and construction.

LGCI did not perform environmental services for this project. LGCI's scope of services did not include an environmental assessment for the presence or absence of wetlands or analytical testing for hazardous or toxic materials in the soil, surface water, groundwater, or air, on or below or around this site, or mold in the soil or in any structure at the site. Any statements regarding odors, colors, or unusual or suspicious items or conditions are for information only and to support our geotechnical services.

Our scope did not include attending meetings, preparing specifications, performing contract document review, or providing construction services. LGCI would be pleased to perform these services when needed under a separate agreement. Recommendations for stormwater management, erosion control, slope stability analyses, and detailed cost or quantity estimates are not included in our scope of work.

1.3 Site Description

LGCI's understanding of the site is based on our observations at the site, and on the following drawings:

- Drawing titled: "Barnstable Route 28 Sheet 1 of 8 Coring Plans," prepared by Vanasse Hangen Brustlin, Inc. on November 2, 2018 and provided to us via e-mail on December 3, 2018.

- Drawing titled: "Dennis/Harwich Main Street (Route 28), Traffic Signs and Pavement Markings," prepared by Vanasse Hangen Brustlin, Inc. on October 14, 2019 and provided to LGCI via e-mail on November 12, 2019.

The site is the stretch of roadway along Route 28 (Main Street) between the intersections with Upper County Road and Herring River just east of Riverside Drive in Harwich, Massachusetts, as shown in Figure 1. The alignment of the proposed project will extend about 3,600 feet.

1.4 Project Description

We understand that the Town of Harwich plans improvements along Route 28. We understand that the improvements will include the installation of three (3) mast arms for traffic signals at the intersections of Upper County Road and Division Street with Main Street. The improvements will also include possible roadway reconstruction of a section Route 28 between Upper County Road and Herring River extending about 3600 feet.

1.5 Existing Pavement Evaluation

LGCI performed an existing pavement evaluation in accordance with the Table IIIa of the Pavement Design Checklist included in the "Massachusetts Highway Department Project Development and Design Guide," Massachusetts Highway Department, 2006 (MassDOT 2006).

Various types of pavement cracking were observed in the roadway, including alligator cracking, block cracking, longitudinal cracking, and transverse cracking. The severity of the cracking ranged mostly between low and medium but was in a few locations marked as high. Potholes and patched areas were also observed along the roadway. Cracking, potholes, and patches were mostly in the southbound lane as the asphalt in the northbound lane appears to have been replaced at several locations. Ruts of up to about 1.5 inches extending along several stretches of the southbound lane were observed.

The pavement evaluation with the associated photos of the existing pavement are included in Attachments A and B.

2. SITE AND SUBSURFACE CONDITIONS

2.1 Surficial Geology

LGCI reviewed a Surficial Geological Map titled: "Surficial Geologic Map of the Taunton Quadrangle, Massachusetts," prepared by Stone, J.R. and DiGiacomo-Cohen, M.L. for U.S. Geological Survey, 2018, Scientific Investigation Map 3402, Quadrangle 184-Harwich, MA.

The Surficial Geological Map indicates that the natural soils in the general vicinity of the site consist of coarse deposits, including gravel deposits, sand and gravel deposits, and sand deposits. The gravel deposits are composed mainly of gravel, cobbles, and boulders. The sand and gravel

layers generally range from 25 to 50 percent gravel particles and from 50 to 75 percent sand particles. The sand deposits are composed mainly of very coarse to fine sand. Coarser layers may contain up to 25 percent gravel, and finer layers may contain fine sand, silt, and clay.

The surficial geological map of the site is shown in Figure 2.

2.2 LGCI's Pavement Cores and Borings

2.2.1 General

LGCI coordinated our exploration locations with VHB and marked the exploration locations in the field by taping distances from the existing landmarks. LGCI engaged a drilling subcontractor to notify Dig Safe and the Town of Harwich for utility clearance prior to starting our explorations at the site.

Unless notified otherwise, we will dispose of the soil samples and pavement cores after three months.

2.2.2 LGCI's Explorations

2.2.2.1 Pavement Cores

LGCI engaged Northern Drilling Service, Inc. (NDS) of Northborough, Massachusetts to perform and obtain nine (9) pavement cores (PC-1 to PC-8 and PC-4A) at the site on May 16, 2019. After the pavement cores were removed, our field engineer dug a hole at each pavement core to sample the subbase and the subgrade. The pavement core holes extended to depths ranging between 3.8 and 4.3 feet beneath the existing ground surface.

An LGCI engineer observed the pavement cores in the field and collected pavement core samples, as well as soil samples from the subbase and subgrade for laboratory testing. Upon completion, the pavement core holes were backfilled with the excavated material and the ground surface was restored using cold patch asphalt.

2.2.2.2 Soil Borings

LGCI engaged (NDS) of Northborough, Massachusetts to advance three (3) borings (B-1 to B-3) on January 20, 2020. The borings were advanced with a track-mounted Diedrich D-25 ATV drill rig using drive and wash technique with a 3-inch casing. The borings extended to a depth of 20 feet beneath the ground surface. Upon completion, the boreholes were backfilled with the soil cuttings.

NDS performed Standard Penetration Tests (SPT) during drilling and obtained split spoon samples in the borings with an automatic hammer at typical depth intervals of 2 feet or 5 feet as noted on the boring logs in general accordance with ASTM D-1586. An LGCI engineer observed and logged the borings in the field.

2.2.3 Pavement Cores and Boring Logs and Locations

The pavement core locations are shown in Figures 3A-3G and the boring locations are shown in Figure 4. Attachments C and D contain LGCI's pavement photos and boring logs. Tables 1 and 2 include summaries of LGCI's pavement cores and borings, respectively.

2.3 Subsurface Conditions

2.3.1 General

The subsurface description in this report is based on a limited number of pavement cores and borings and is intended to highlight the major soil strata encountered during our pavement cores and borings. The subsurface conditions are known only at the actual pavement core and boring locations. Variations may occur and should be expected between pavement core and boring locations. The boring logs represent conditions that we observed at the time of our borings and were edited, as appropriate, based on the results of the laboratory test data and inspection of the soil samples in the laboratory. The strata boundaries shown in our boring logs are based on our interpretations and the actual transitions may be gradual. Graphic soil symbols are for illustration only.

The soil strata encountered in the pavement cores and borings were as follows, starting at the ground surface, we as described below.

2.3.2 Pavement Cores

Asphalt – Asphalt was encountered at the ground surface in all pavement cores. The thickness of the asphalt ranged between 8.5 and 13.5 inches.

Subbase – A layer of subbase material was encountered beneath the asphalt in all pavement cores except PC-7 & PC-8. The thickness of the subbase was estimated, based on the volume of subbase recovered on the day of coring, to be between 12 and 15 inches. Based on the results of the grain-size analyses, the subbase generally consisted mostly of well graded sand less than 10 percent fines and up to 46.6 percent fine to coarse gravel. One (1) sample of subbase consisted of poorly graded gravel with 33.7 percent sand.

Subgrade – Based on the results of the grain-size analyses, the subgrade (soil encountered beneath the subbase layer) generally consisted of poorly graded sand with up to about 10.6 fines and up to 7.4 percent fine gravel

2.3.3 Mast Arm Borings

Topsoil – A layer of surficial organic topsoil was encountered at the ground surface in all borings. This layer extended to depths ranging between 0.5 and 2 feet beneath the ground surface.

Fill – A layer of fill was encountered beneath the surficial organic topsoil in all borings. The fill extended to a depth of 6 feet beneath the ground surface. The fill was described as poorly graded sand and poorly graded sand with silt. The fines content in the fill ranged up to 10 percent. The gravel content in the fill ranged up to 5 percent. The fill contained traces of organic soil.
The SPT N-values in this layer ranged between 5 and 12 bpf, indicating loose to medium dense sand.

Sand – A layer of sand was encountered beneath the fill in all borings and extended to the boring termination depths of 20 feet beneath the ground surface. The samples in this layer were described as poorly graded sand. The fines content in the sand ranged up to 5 percent. The gravel content in the sand ranged up to approximately 5 percent.

The SPT N-values in this layer ranged between 4 and 17 bpf with most values between 4 and 13 bpf, indicating mostly loose to medium dense.

2.4 Groundwater

Groundwater was encountered in all borings at depths ranging between 6.5 feet and 7 feet beneath the ground surface as shown in Table 2 and in the boring logs. Groundwater levels were not measured in the pavement cores.

The groundwater information reported herein is based on observations made during or shortly after the completion of drilling and excavation, and may not represent the actual groundwater conditions, as additional time may be required for the groundwater levels to stabilize.

The groundwater information presented in this report only represents the conditions encountered at the time and location of the explorations. Seasonal fluctuation should be anticipated.

2.5 Laboratory Test Data

LGCI submitted eight (8) soil samples collected from the pavement cores for grain-size analysis. The results of the grain-size analysis are provided in the test data sheets included in Attachment E and are summarized in the table below.

Core No.	Soil Stratum	Percent Gravel	Percent Sand	Percent Fines
PC-3	Subgrade	1.8	97.7	0.5
PC-4	Subbase	46.6	53.1	0.3
PC-5	Subbase	66.2	33.7	0.1
PC-8	Subgrade	10.6	88.9	0.5
PC - (3,5,6,7)	Subbase	36.1	58.4	5.5
PC - (3,5,6,7)	Subgrade	7.2	86.8	6.0
PC - (1,2,4, 4A,8)	Subbase	44.9	49.4	5.7
PC - (1,2,4, 4A,8)	Subgrade	7.4	80.6	12.0

3. EVALUATION AND RECOMMENDATIONS

3.1 Pavement Design Recommendations

Using traffic data provided by VHB, LGCI performed pavement designs for three conditions:

- New Pavement;
- Reconstructed Pavement; and
- Pavement Resurfacing Overlay. The Pavement Resurfacing Overlay design was performed for two cases: with and without 3 inches of Macadam.

The results of our pavement design and our calculations are included in Attachment F.

3.2 Mast Arm Foundation Recommendations

Based on the results of the borings, the subsurface conditions at the site are suitable to support the proposed mast arms foundations. The mast arms should be supported on a cored pier (drilled shaft) designed in accordance with the standard drawings: "Overhead Signal Structure & Foundation, Sheets 1 through 7," by the MassDOT, Highway Division and dated December 2015 (Standard Drawing).

Using the average SPT N-value (with hammer energy correction), we assessed the soil designation in accordance with the Standard Drawing.

The mast arm at borings B-1 to B-3 should be designed using the designation "Wet Loose Sand" as the average SPT N-Value is less than 20 bpf and the soil within the anticipated drilled shaft length is wet.

4. CONSTRUCTION CONSIDERATIONS

4.1 Site Preparation and Earthwork

4.1.1 General

Loose, soft, or organic materials as well as abandoned structures, if any, and utilities and deleterious matter encountered during initial stripping operations should be removed within the proposed foundation area. Material placed around the mast arms near the surface should be compacted.

4.1.2 Pavement Subgrade

- Before placing the subbase layer, the exposed subgrade in the existing fill should be compacted to a firm and unyielding condition using at least six (6) overlapping passes of a vibratory roller compactor imparting a minimum dynamic effort of 40 kips.

- Where soft zones are observed during compaction of the subgrade, the soft material should be removed and replaced with Ordinary Borrow conforming to Massachusetts Highway Standard Specification M1.01.0 and having less than 20 percent fines content.

4.1.3 Drilled Shafts

- During construction of the cored pier foundation (drilled shaft), a temporary casing that will be removed when concrete is placed, will be required to reduce the potential for collapse of the fill and sand.

- We did not encounter boulders in our borings. However, the fill could contain cobbles and boulders. The contractor should be prepared to remove such boulders, if encountered, during the installation of the drilled shafts.

- When the drilling operations are complete, concrete should be placed inside the casing as soon as possible.

- The concrete should be placed using a tremie pipe. We recommend pouring the pier foundation concrete on the same day that the pier is drilled.

- A representative of LGCI should assess that the pier foundation is founded on competent bearing materials and that the pier foundation installation procedures comply with our recommendations.

5. REPORT LIMITATIONS

Our analysis and recommendations are based on project information provided to us at the time of this report. If changes to the type, size, and location of the proposed structures or to the site grading are made, the recommendations contained in this report shall not be considered valid unless the changes are reviewed, and the conclusions and recommendations modified in writing by LGCI. LGCI cannot accept responsibility for designs based on our recommendations unless we are engaged to review the final plans and specifications to determine whether any changes in the project affect the validity of our recommendations and whether our recommendations have been properly implemented in the design.

It is not part of our scope to perform a more detailed site history; therefore, we have not explored for or researched the locations of buried utilities or other structures in the area of the proposed construction. Our scope did not include environmental services or services related to moisture, mold, or other biological contaminants in or around the site.

We cannot accept responsibility for designs based on recommendations in this report unless we are engaged to 1) make site visits during construction to check that the subsurface conditions

exposed during construction are in general conformance with our design assumptions and 2) ascertain that, in general, the work is being performed in compliance with the contract documents.

Our report has been prepared in accordance with generally accepted engineering practices and in accordance with the terms and conditions set forth in our agreement. No other warranty, expressed or implied, is made. This report has been prepared for the exclusive use of Vanasse Hangen Brustlin, Inc. for the specific application to the proposed roadway improvements in Harwich, Massachusetts as conceived at this time.

Very truly yours,

Lahlaf Geotechnical Consulting, Inc.

Abdelmadjid M. Lahlaf, Ph.D., P.E.
Geotechnical Engineer

Attachments: Table 1 – Summary of LGCI's Pavement Cores
Table 2 – Summary of LGCI's Borings

Figure 1 – Site Location Map
Figure 2 – Surficial Geological Map
Figure A to 3G – Core Location Plan
Figure 4 – Boring Location Plan

Attachment A – Roadway Pavement Photos
Attachment B – Pavement Evaluation Table
Attachment C – Pavement Core Photos
Attachment D – Boring Logs
Attachment E – Laboratory Results
Attachment F – Pavement Design Calculation Package

Table 2- Summary of LGCI's Borings
Proposed Route 28 Improvements
Harwich, MA
LGCI Project No. 1828

Boring No.	Groundwater Depth (ft.)[1]	Bottom of Topsoil (ft.)	Bottom of Fill Depth (ft.)	Bottom of Boring Depth (ft.)
B-1	6.5	2.0	6.0	20.0
B-2	6.5	2.0	6.0	20.0
B-3	7.0	0.5	6.0	20.0

1. The groundwater level was measured at the end of drilling, as indicated in the logs.

Table 1 - Summary of LGCI's Pavement Cores
Proposed Route 28 Improvements
Harwich, Massachusetts
LGCI Project No. 1828

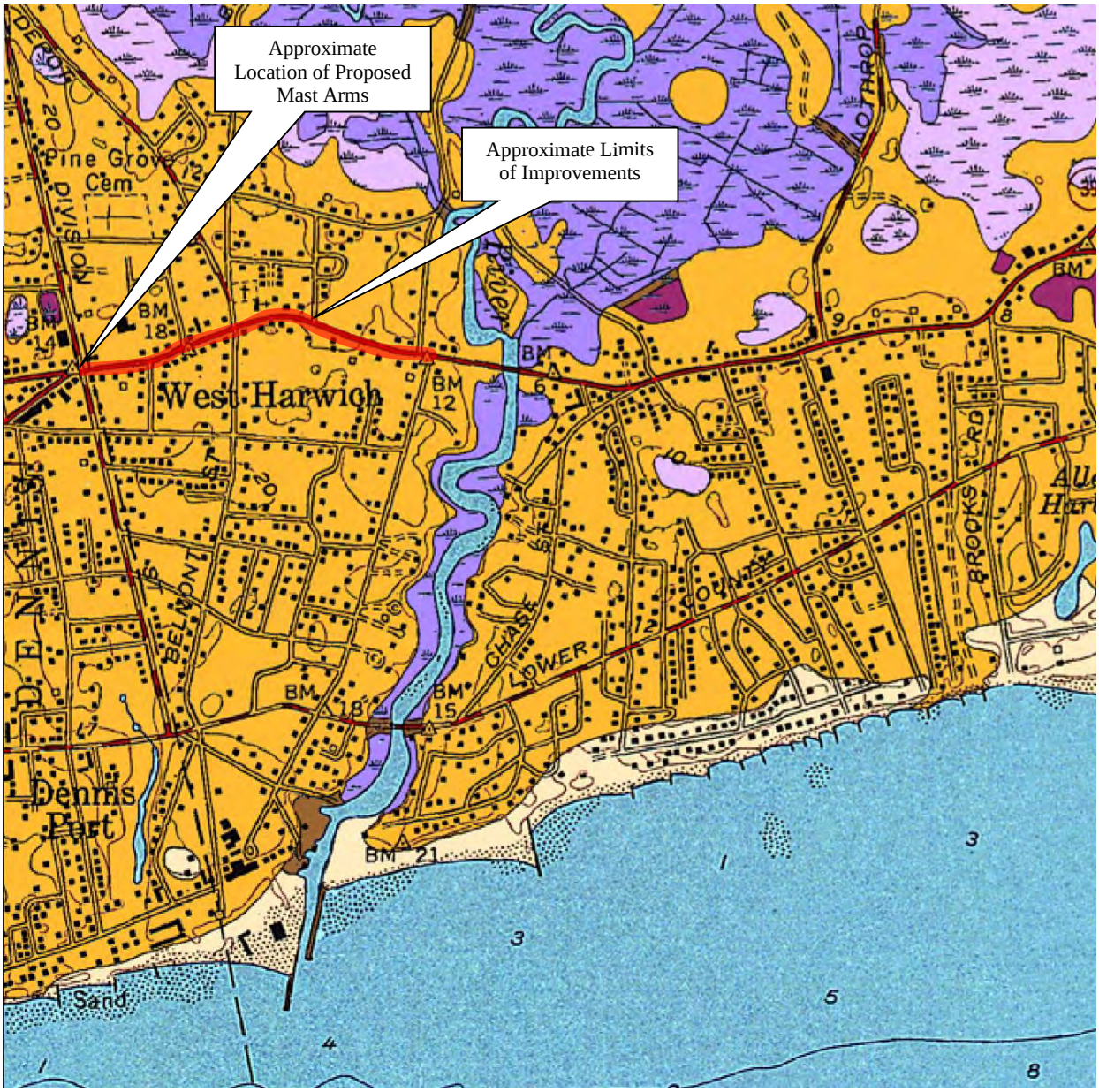
Pavement Core / Boring No.	Thickness[2] of Recovered Asphalt (in.)	Thickness of Subbase (in.)	Total Depth of Core Hole (ft.)
PC-1	9.0	[3]	4.30
PC-2	12.0	[3]	3.80
PC-3	8.5	[3]	3.80
PC-4	13.5	[3]	3.80
PC-4A	12.6	[3]	3.80
PC-5	9.6	[3]	3.80
PC-6	9.0	[3]	3.80
PC-7[3]	10.8	[3]	3.80
PC-8[3]	9.0	[3]	3.80

1. Three measurements were taken around the circumference of the recovered pavement core and the reported recovered thickness shown in the table is the average of the three measurements.
2. The thicknesses of asphalt at PC-7 and PC-8 include 3 and 4.8 inches of Mcadam, respectively.
3. The thickness of the subbase is based on the volume of subbase recoverd on the day of coring and was estimated to be between 12 and 15 inches, except at PC-7 and PC-8 where there was no subbase.

Contour Intervals: 10 feet

Note: Figure based on USGS topographic map of Harwich, MA obtained from www.mytopo.com/maps

Client:	Project:		
Vanasse Hangen Brustlin, Inc.	Proposed Route 28 Road Improvements	Figure 1 – Site Location Map	
LGCI Lahlaf Geotechnical Consulting, Inc.	Project Location: Harwich, MA	LGCI Project No.: 1828	Date: March 2020

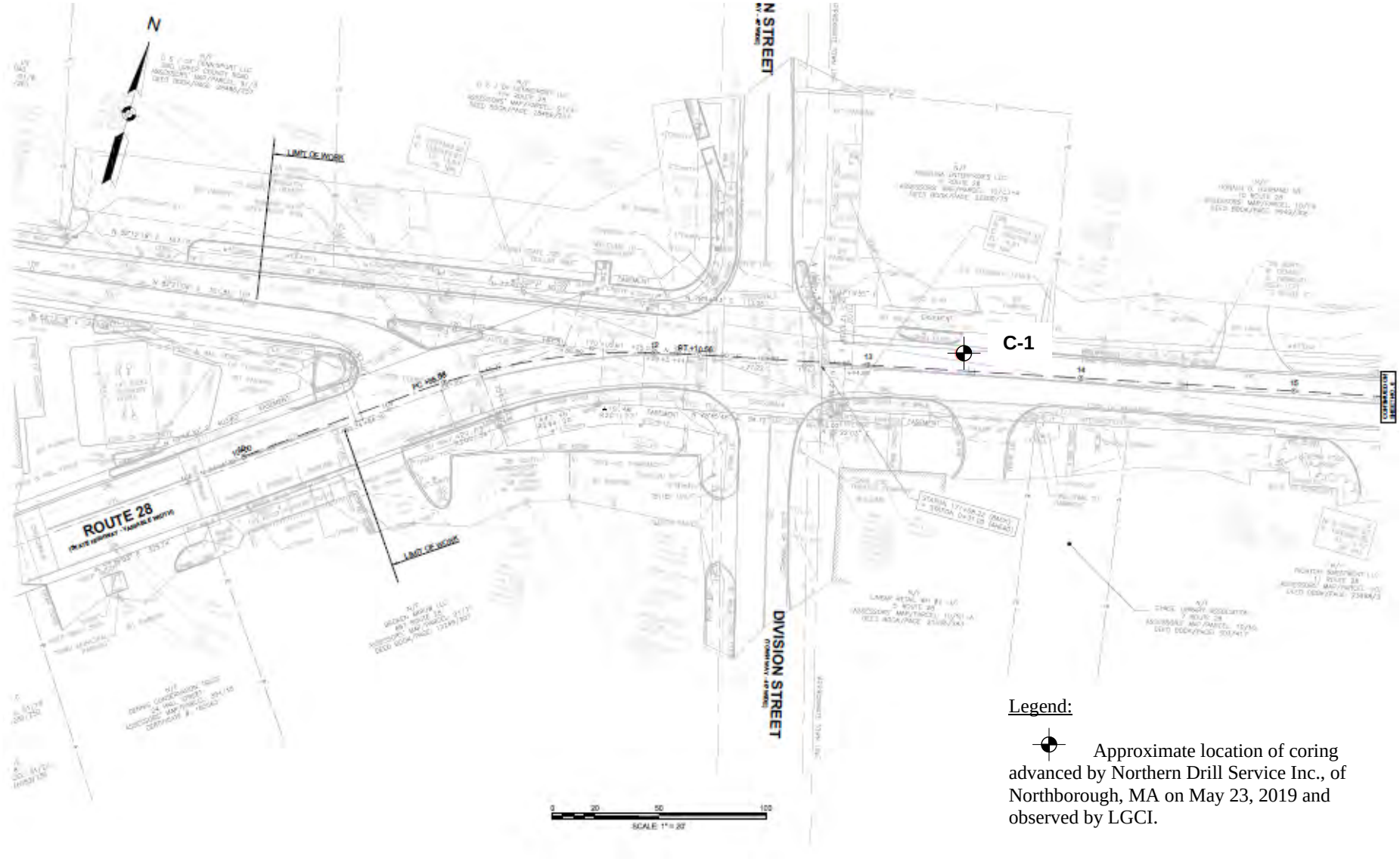


Coarse deposits consist of *gravel deposits*, *sand and gravel deposits*, and *sand deposits*, not differentiated in this report. *Gravel deposits* are composed of at least 50 percent gravel-size clasts; cobbles and boulders predominate; minor amounts of sand occur within gravel beds, and sand comprises a few separate layers. Gravel layers generally are poorly sorted, and bedding commonly is distorted and faulted due to postdepositional collapse related to melting of ice. *Sand and gravel deposits* occur as mixtures of gravel and sand within individual layers and as layers of sand alternating with layers of gravel. Sand and gravel layers generally range between 25 and 50 percent gravel particles and between 50 and 75 percent sand particles. Layers are well sorted to poorly sorted; bedding may be distorted and faulted due to postdepositional collapse. *Sand deposits* are composed mainly of very coarse to fine sand, commonly in well-sorted layers. Coarser layers may contain up to 25 percent gravel particles, generally granules and pebbles; finer layers may contain some very fine sand, silt, and clay

Figure based on map titled: "Surficial Geologic Map of the Taunton Quadrangle, Massachusetts," prepared by Stone, J.R. and DiGiacomo-Cohen, M.L. for U.S. Geological Survey, 2018, Scientific Investigation Map 3402, Quadrangle 184-Harwich, MA.

Client:	Project:	
Vanasse Hangen Brustlin, Inc.	Proposed Route 28 Road Improvements	Figure 2 – Surficial Geologic Map

LGCI Lahlaf Geotechnical Consulting, Inc.	Project Location: Harwich, MA	LGCI Project No.: 1828	Date: March 2020

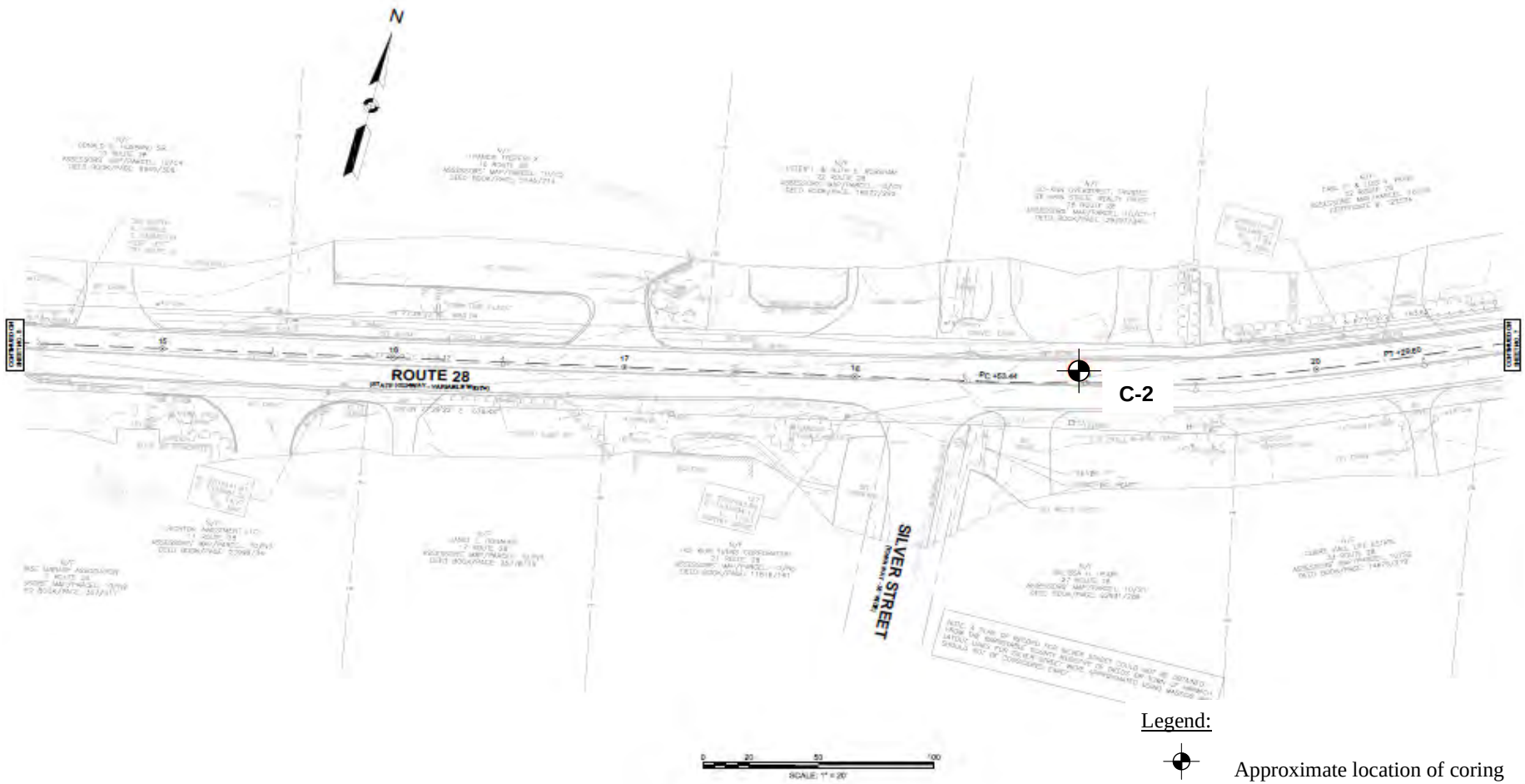


Legend:

Approximate location of coring advanced by Northern Drill Service Inc., of Northborough, MA on May 23, 2019 and observed by LGCI.

Note:
Figure based on drawing titled: "Barnstable Route 28 Sheet 1 of 8 Coring Plans," prepared by Vanasse Hangen Brustlin, Inc. on November 2, 2018 and provided to us via e-mail on December 3, 2018.

Client:	Project:	Figure 3A – Coring Location Plan	
Vanasse Hangen Brustlin, Inc.	Proposed Route 28 Road Improvements		
LGCI Lahlaf Geotechnical Consulting, Inc.	Project Location: Harwich, MA	LGCI Project No.: 1828	Date: March 2020

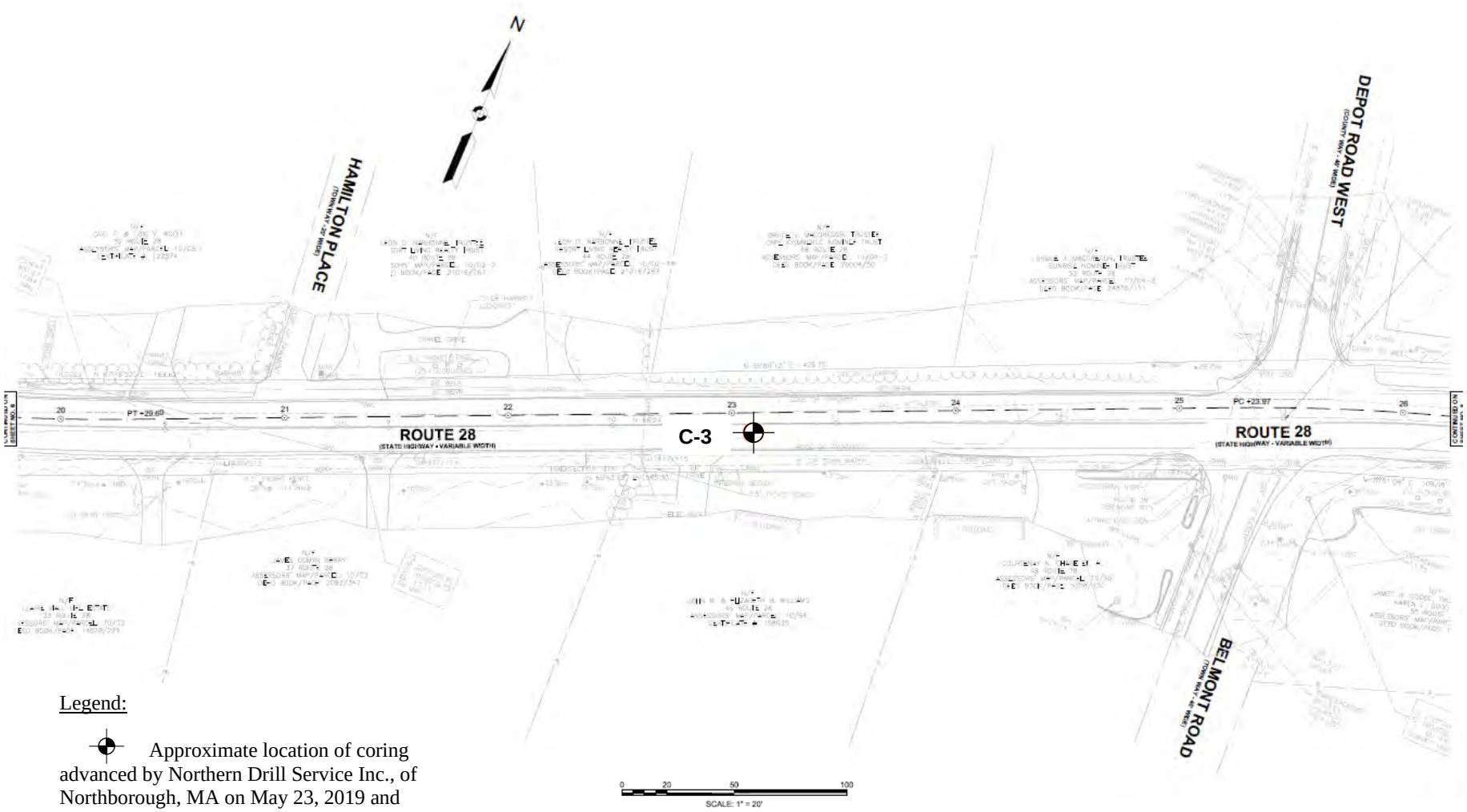


Legend:

Approximate location of coring advanced by Northern Drill Service Inc., of Northborough, MA on May 23, 2019 and observed by LGCI.

Note:
Figure based on drawing titled: "Barnstable Route 28 Sheet 2 of 8 Coring Plans," prepared by Vanasse Hangen Brustlin, Inc. on November 2, 2018 and provided to us via e-mail on December 3, 2018.

Client:	Project:	Figure 3B – Coring Location Plan	
Vanasse Hangen Brustlin, Inc.	Proposed Route 28 Road Improvements		
LGCI Lahlaf Geotechnical Consulting, Inc.	Project Location: Harwich, MA	LGCI Project No.: 1828	Date: March 2020

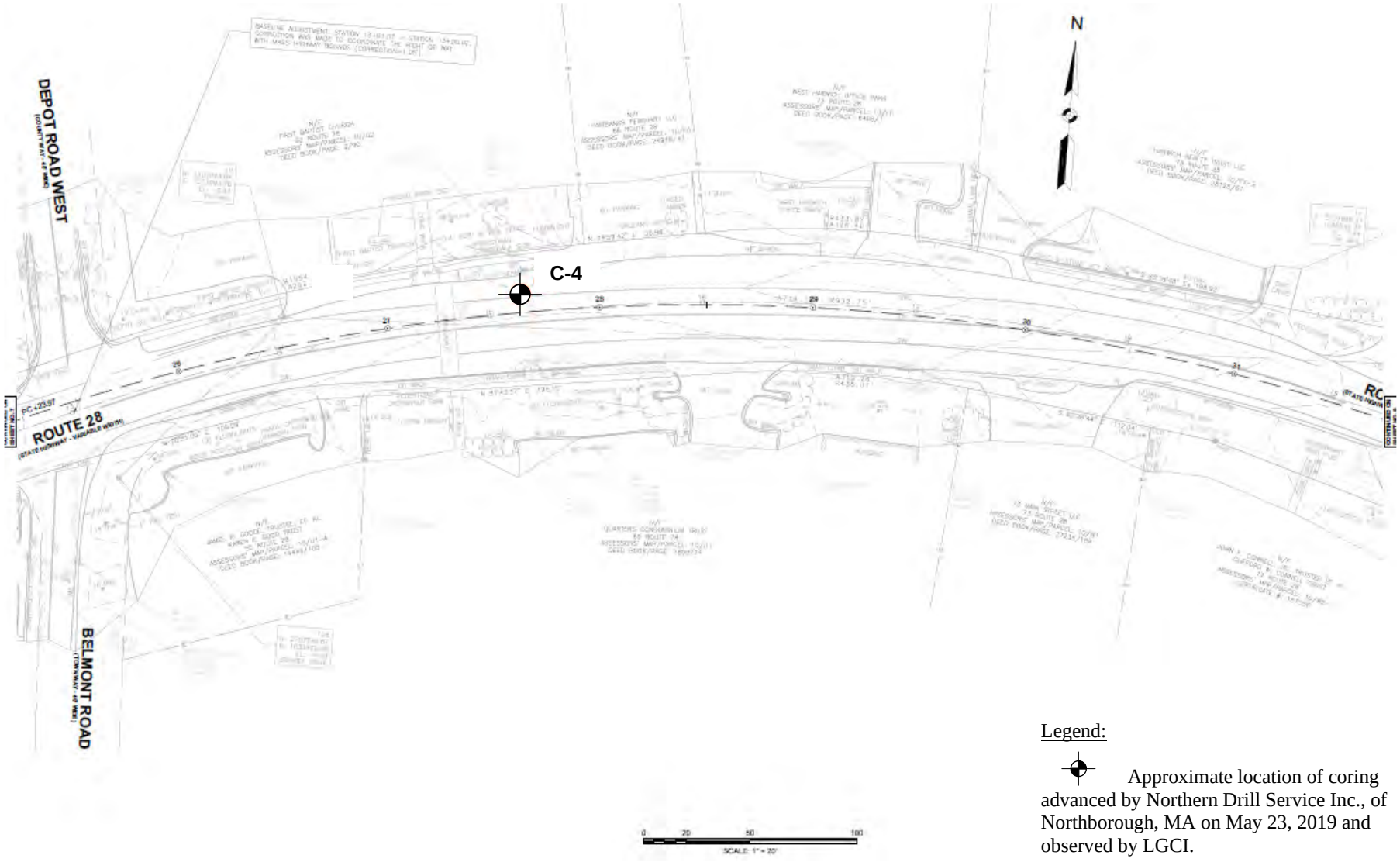


Legend:

⌖ Approximate location of coring advanced by Northern Drill Service Inc., of Northborough, MA on May 23, 2019 and observed by LGCI.

Note:
Figure based on drawing titled: "Barnstable Route 28 Sheet 3 of 8 Coring Plans," prepared by Vanasse Hangen Brustlin, Inc. on November 2, 2018 and provided to us via e-mail on December 3, 2018.

Client:	Project:	Figure 3C – Coring Location Plan	
Vanasse Hangen Brustlin, Inc.	Proposed Route 28 Road Improvements		
LGCI Lahlaf Geotechnical Consulting, Inc.	Project Location: Harwich, MA	LGCI Project No.: 1828	Date: March 2020

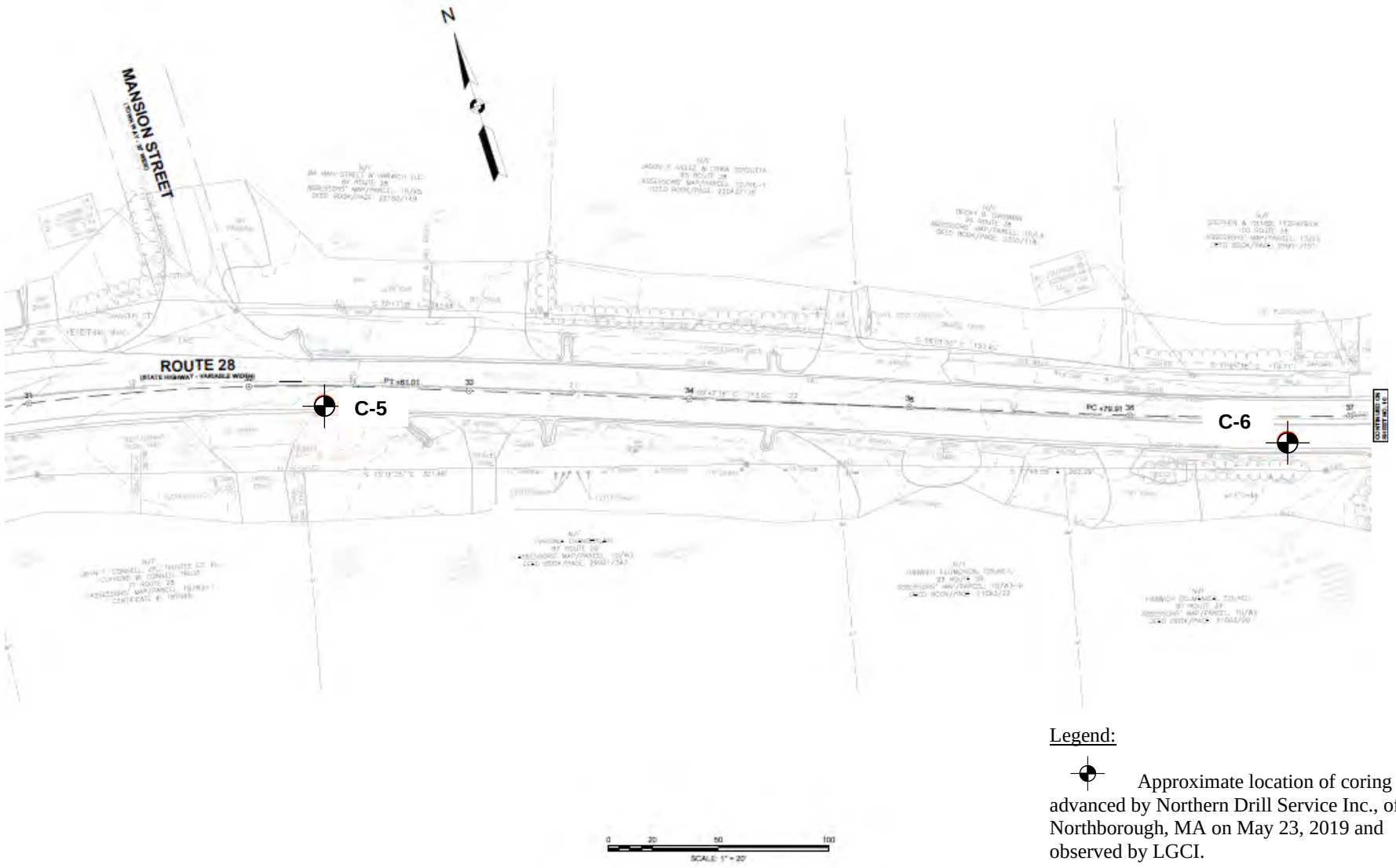


Legend:

Approximate location of coring advanced by Northern Drill Service Inc., of Northborough, MA on May 23, 2019 and observed by LGCI.

Note:
Figure based on drawing titled: "Barnstable Route 28 Sheet 4 of 8 Coring Plans," prepared by Vanasse Hangen Brustlin, Inc. on November 2, 2018 and provided to us via e-mail on December 3, 2018.

Client:	Project:	Figure 3D – Coring Location Plan	
Vanasse Hangen Brustlin, Inc.	Proposed Route 28 Road Improvements		
LGCI Lahlaf Geotechnical Consulting, Inc.	Project Location: Harwich, MA	LGCI Project No.: 1828	Date: March 2020

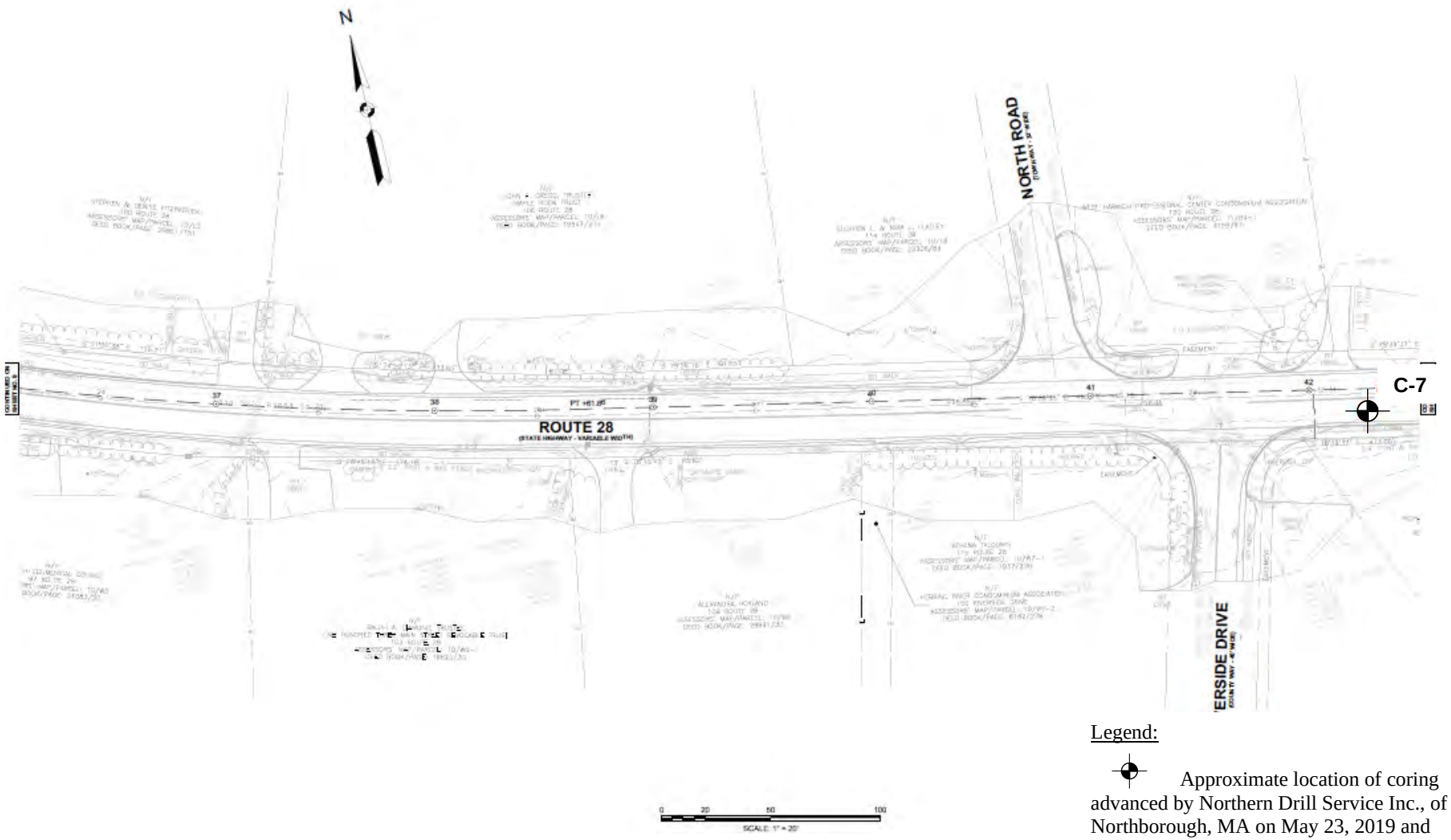


Legend:

Approximate location of coring advanced by Northern Drill Service Inc., of Northborough, MA on May 23, 2019 and observed by LGCI.

Note:
Figure based on drawing titled: "Barnstable Route 28 Sheet 5 of 8 Coring Plans," prepared by Vanasse Hangen Brustlin, Inc. on November 2, 2018 and provided to us via e-mail on December 3, 2018.

Client:	Project:	Figure 3E – Coring Location Plan	
Vanasse Hangen Brustlin, Inc.	Proposed Route 28 Road Improvements		
LGCI Lahlaf Geotechnical Consulting, Inc.	Project Location: Harwich, MA	LGCI Project No.: 1828	Date: March 2020

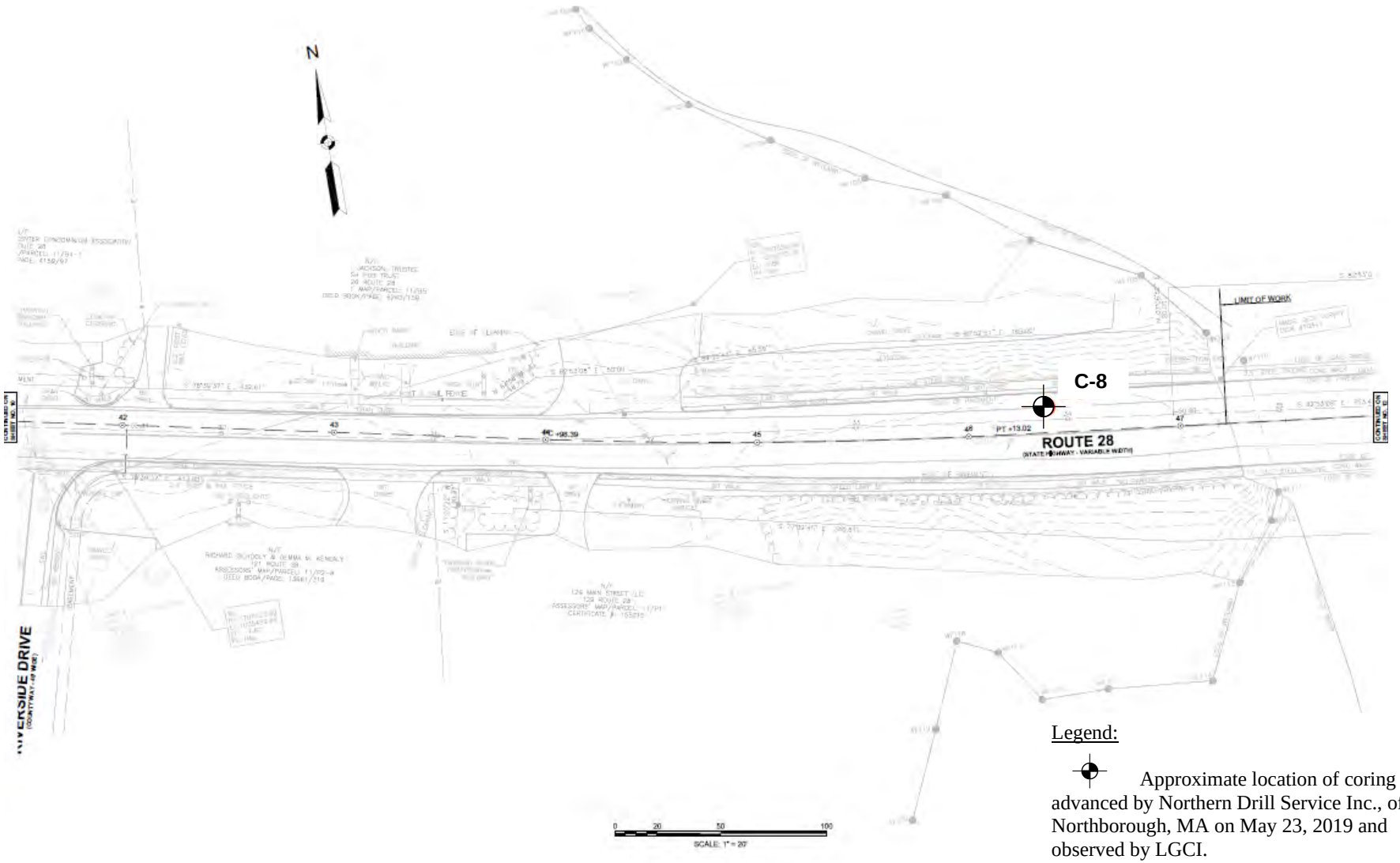


Legend:

Approximate location of coring advanced by Northern Drill Service Inc., of Northborough, MA on May 23, 2019 and observed by LGCI.

Note:
Figure based on drawing titled: "Barnstable Route 28 Sheet 6 of 8 Coring Plans," prepared by Vanasse Hangen Brustlin, Inc. on November 2, 2018 and provided to us via e-mail on December 3, 2018.

Client:	Project:	Figure 3F – Coring Location Plan	
Vanasse Hangen Brustlin, Inc.	Proposed Route 28 Road Improvements		
LGCI Lahlaf Geotechnical Consulting, Inc.	Project Location: Harwich, MA	LGCI Project No.: 1828	Date: March 2020

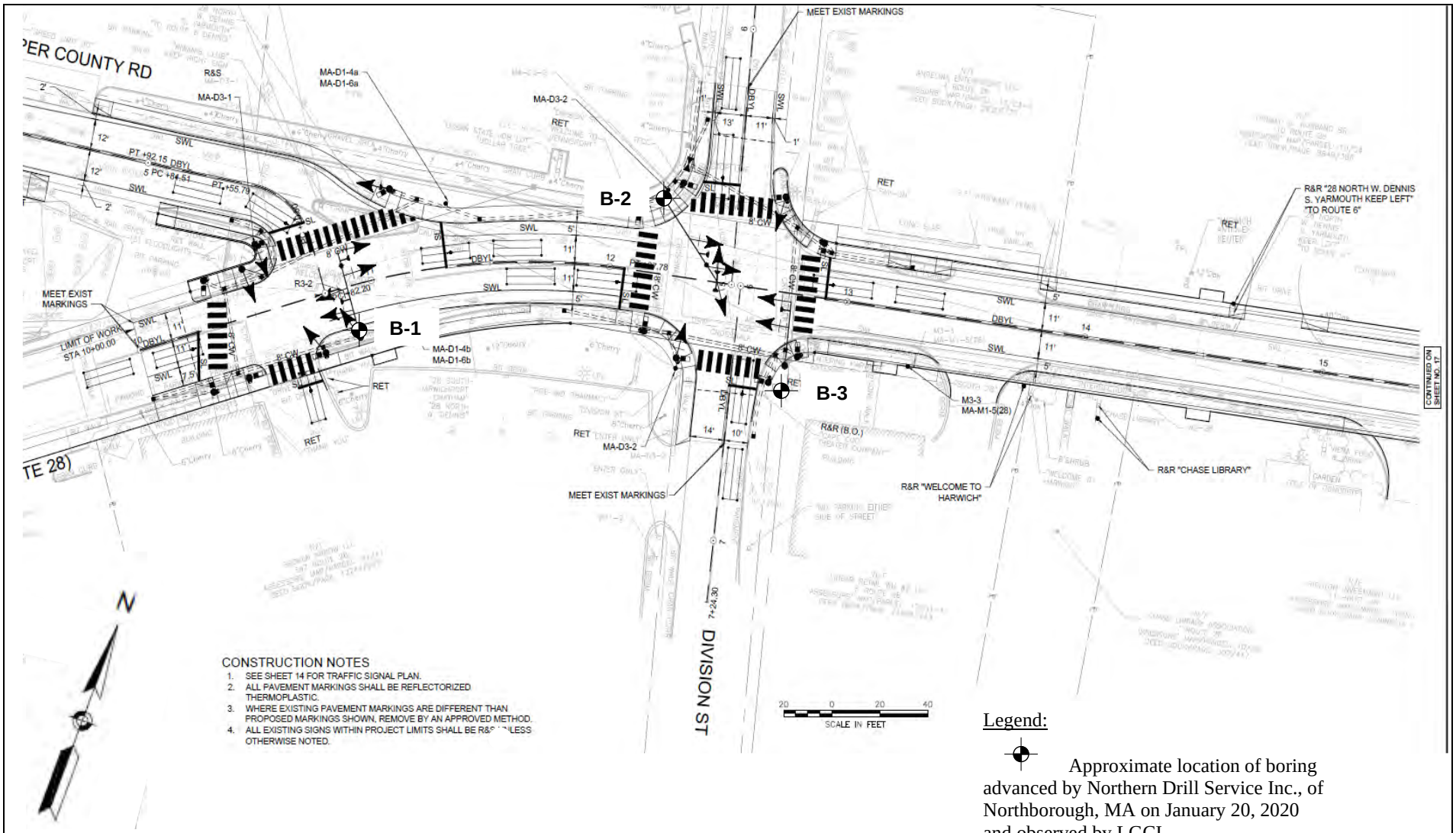


Legend:

Approximate location of coring advanced by Northern Drill Service Inc., of Northborough, MA on May 23, 2019 and observed by LGCI.

Note:
Figure based on drawing titled: "Barnstable Route 28 Sheet 7 of 8 Coring Plans," prepared by Vanasse Hangen Brustlin, Inc. on November 2, 2018 and provided to us via e-mail on December 3, 2018.

Client:	Project:	Figure 3G – Coring Location Plan	
Vanasse Hangen Brustlin, Inc.	Proposed Route 28 Road Improvements		
LGCI Lahlaf Geotechnical Consulting, Inc.	Project Location: Harwich, MA	LGCI Project No.: 1828	Date: March 2020



CONSTRUCTION NOTES

1. SEE SHEET 14 FOR TRAFFIC SIGNAL PLAN.
2. ALL PAVEMENT MARKINGS SHALL BE REFLECTORIZED THERMOPLASTIC.
3. WHERE EXISTING PAVEMENT MARKINGS ARE DIFFERENT THAN PROPOSED MARKINGS SHOWN, REMOVE BY AN APPROVED METHOD.
4. ALL EXISTING SIGNS WITHIN PROJECT LIMITS SHALL BE R&S UNLESS OTHERWISE NOTED.

Legend:

Approximate location of boring advanced by Northern Drill Service Inc., of Northborough, MA on January 20, 2020 and observed by LGCI.

Note:
Figure based on drawing titled: "Dennis/Harwich Main Street (Route 28), Traffic Signs and Pavement Markings," prepared by Vanasse Hangen Brustlin, Inc. on October 14, 2019 and provided to LGCI via e-mail on November 12, 2019.

Client: Vanasse Hangen Brustlin, Inc.	Project: Proposed Route 28 Road Improvements	Figure 4 – Boring Location Plan	
LGCI Lahlaf Geotechnical Consulting, Inc.	Project Location: Harwich, MA	LGCI Project No.: 1828	Date: March 2020

Attachment A – Roadway Pavement Photos

Existing Pavement Evaluation Photos
Route 28 Improvements, Harwich and Dennis, MA
LGCI Project No: 1828

Photo No. 1: Typical rut observed along travel lane (southbound direction)

Photo No.2: Depression in roadway (note depressed patch around drain)

Photo No.3: Typical block cracking observed in far lane (southbound)

Photo No.4: Typcal Blcok Cracking

Photo No. 5: Typical transverse cracking along southbound lane

Photo No.6: Typical transverse cracking (about 1/2 wide)

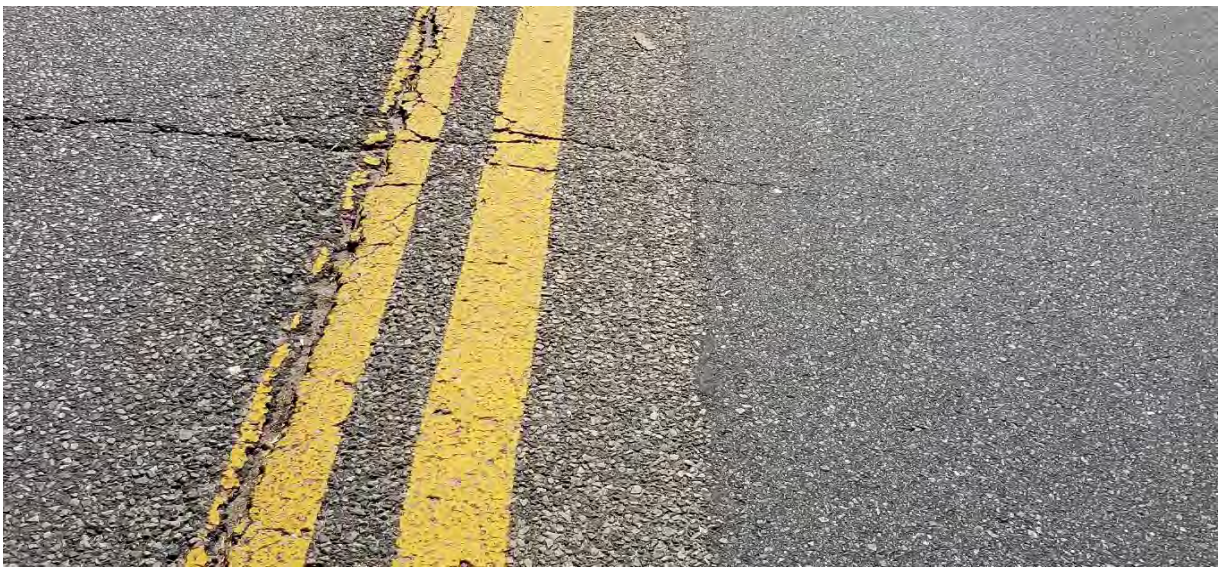


Photo No. 7: Typical Longitudinal cracking along centerline (about 1" wide and up to 4" deep)

Photo No. 8: Typical Longitudinal cracking along southbound lane

Photo No. 9: Typical alligator cracking

Photo No.10: Typical pothole on southbound lane

Photo No. 11: Typical patch

Photo No. 12: Typical patch

Attachment B – Pavement Evaluation Table

Pavement Design Checklist

I. Project Identification

City/Town Harwich, MA
Project Number 1828
Street/Rte. No. _____
Functional Class _____
From Station _____
To Station _____
From (Landmark) _____
To (Landmark) _____
Date _____
Design Engineer _____

II. Traffic Data

Current ADT (year) See pavement calcs
Future ADT (Year)* _____
T (ADT) _____
T (PEAK HR.) _____
No. of Lanes _____
Divided/Undivided _____

III. Existing Pavement Information

Year Initially Constructed _____
Overlaid _____
Source Information _____

Existing Pavement Structure:

Layer	Depth	Type
Surface Course:	See pavement core results	
Intermediate Course:		
Base Course:		
Sub-base:		
Sub-grade:		

III a. Document Existing Pavement Conditions and Distress

Type	Extent (percentages)	Severity			Depth Inches
	—	High	Medium	Low	
[ ] Alligator Cracking	10-20%		✓	✓	1"-3"
[ ] Block Cracking	transverse Longitudinal } 100%	✓	✓		1"-4"
[ ] Other Cracking (tranverse, longitudinal, reflective)					
[ ] Lane/Shoulder Dropoff					
[ ] Potholes	10-20%			✓	2"-3"
[ ] Rutting (wheelpaths)	100%			✓	1/2"
[ ] Alligator Cracking	0-5%		✓	✓	
[ ] Other Patches	~5%			✓	
[ ] Other raveling	0-5%			✓	~1/2"

Notes: 1. If existing pavement is PCC, provide a separate description of pavement
2. Provide photographs as needed to demonstrate pavement distress

* Minimum 20 yr. protection

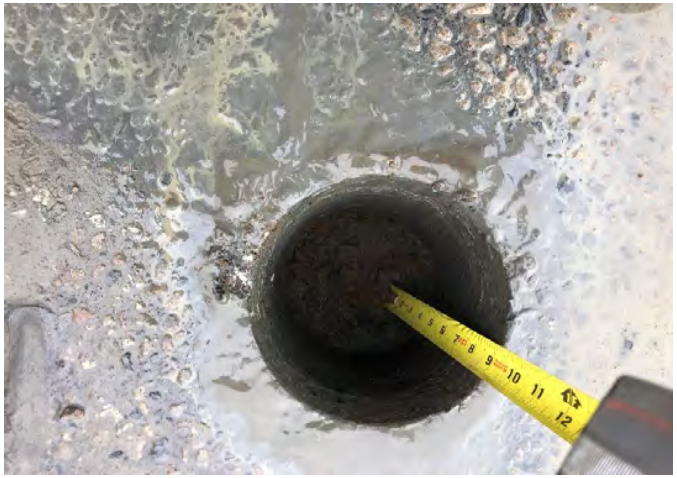
Attachment C – Pavement Core Photos

Project: **1828** **Date:** **5/23/2019** **Page:** **1 of** **9**

C-1-1 Overview of coring Location

Average thickness = (9.00"+8.75"+9.125")/3 ≃ 9.0"

C-1-2 Recovered asphalt core



C-1-3 Core hole post drilling

C-1-4 Thickness of asphalt in core hole

Project: 1828 **Date:** 5/23/2019 **Page:** 2 of 9

C-2-1 Overview of coring Location

Average thickness = (12.00"+12.125"+11.875")/3 = 12.0"

C-2-2 Recovered asphalt core

C-2-3 Core hole post drilling

C-2-4 Overview of core post hand probe

Project: 1828 **Date:** 5/23/2019 **Page:** 3 of 9

C-3-1 Overview of coring Location

Average thickness = (8.25"+8.5"+8.75")/3 = 8.5"

C-3-2 Recovered asphalt core

C-3-3 Core hole post drilling

C-3-4 Overview of core post hand probe

Project: 1828 **Date:** 5/23/2019 **Page:** 4 of 9

C-4-1 Overview of coring Location

Average thickness = (13.5"+13.375"+13.5")/3 ≃ 13.5"

C-4-2 Recovered asphalt core

C-4-3 Core hole post drilling

C-4-4 Core hole post drilling

Project: 1828 **Date:** 5/23/2019 **Page:** 5 of 9

C-4A-1 Overview of coring Location

Average thickness = (12.75"+12.5"+12.5")/3 ≃ 12.6"

C-4A-2 Recovered asphalt core

C-4A-3 Core hole post drilling

C-4A-4 Overview of core post hand probe

Project: 1828 **Date:** 5/23/2019 **Page:** 6 of 9

C-5-1 Overview of coring Location

Average thickness = (9.625"+9.5"+9.5")/3 ≃ 9.5"

C-5-2 Recovered asphalt core

C-5-3 Core hole post drilling

C-5-4 Overview of core post hand probe

Project: 1828 **Date:** 5/23/2019 **Page:** 7 of 9

C-6-1 Overview of coring Location

Average thickness = (8.875"+9.0"+9.0625")/3 ≃ 9.0"

C-6-2 Recovered asphalt core

C-6-3 Core hole post drilling

C-6-4 Overview of core post hand probe

Project: 1828 **Date:** 5/23/2019 **Page:** 8 of 9

C-7-1 Overview of coring Location

Average thickness = (10.875"+10.75"+10.875")/3 ≃ 10.8"

C-7-2 Recovered asphalt core

C-7-3 Core hole post drilling

C-7-4 Overview of core post hand probe

Project: 1828 **Date:** 5/23/2019 **Page:** 9 of 9

C-8-1 Overview of coring Location

Average thickness = (8.0"+7.625"+7.25")/3 ≃ 9.0"

C-8-2 Recovered asphalt core (Not including broken Macadam)

C-8-3 Core hole post drilling

C-8-4 Overview of core post hand probe

Attachment D – Boring Logs

LGCI Lahlaf Geotechnical Consulting, Inc.
100 Chelmsford Rd Suite 2
Billerica, MA 01862
Telephone: 9783305912
Fax: 9783305056

BORING LOG

B-1
PAGE 1 OF 1

CLIENT: Vanasse Hangen Brustlin, Inc
PROJECT NAME: Prop. Route 28 Improvements, Harwich and Dennis, MA
LGCI PROJECT NUMBER: 1828
PROJECT LOCATION: Harwich and Dennis, MA

DATE STARTED: 1/20/20 **DATE COMPLETED:** 1/20/20
BORING LOCATION: Southern side of Rte 28 near Rite Aid
COORDINATES: NA
SURFACE El.: (see note 1) **TOTAL DEPTH:** 20 ft.
WEATHER: Partially Cloudy, low 30s
GROUNDWATER LEVELS:
DURING DRILLING: -
AT END OF DRILLING: 6.5 ft.
OTHER: -

DRILLING SUBCONTRACTOR: Northern Drill Service, Inc.
DRILLING FOREMAN: Justin Stevens
DRILLING METHOD: Drive and wash with 3-inch casing
DRILL RIG TYPE/MODEL: Diedrich B-25 ATV
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb. **HAMMER DROP:** 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: AR **CHECKED BY:** AML

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
		0	S1	3-3-3-2 (6)	24/7		Topsoil	2.0	S1 - Silty SAND (SM), fine to medium, trace coarse, 15-20% fines, 0-5% coarse gravel, trace roots, organic soil, brown, moist (topsoil)
		2	S2	2-2-3-3 (5)	24/14		Fill		S2 - Poorly Graded SAND with Silt (SP-SM), fine, trace medium, 5-10% fines, 0-5% coarse gravel, trace organic soil, light brown, moist
		4	S3	2-4-4-2 (8)	24/6			6.0	S3 - Poorly Graded SAND (SP), medium, trace fine, 0-5% fines, brown, wet (possible fill)
5		6	S4	4-3-5-5 (8)	24/4		Sand		S4 - Poorly Graded SAND (SP), fine,trace medium, trace coarse, 0-5% fines, brown, wet
		8	S5	4-3-4-5 (7)	24/5				S5 - Similar to S4, orange brown
10		10	S6	4-5-6-6 (11)	24/14				S6 - Similar to S4, 0-5% coarse subangular gravel
		12							
		14	S7	4-4-6-10 (10)	24/0				S7 - No recovery.
15		16							
		18	S8	5-7-10-11 (17)	24/8				S8 - Poorly Graded SAND (SP), fine, trace medium, 0-5% fines, 0-5% coarse subangular gravel, light brown, wet
20		20						20.0	
									Bottom of borehole at 20.0 feet. Backfilled borehole with drill cuttings.
25									

GENERAL NOTES:
1. Ground surface elevation not available.

LGCI Lahlaf Geotechnical Consulting, Inc.
100 Chelmsford Rd Suite 2
Billerica, MA 01862
Telephone: 9783305912
Fax: 9783305056

BORING LOG

B-2
PAGE 1 OF 1

CLIENT: Vanasse Hangen Brustlin, Inc
PROJECT NAME: Prop. Route 28 Improvements, Harwich and Dennis, MA
LGCI PROJECT NUMBER: 1828
PROJECT LOCATION: Harwich and Dennis, MA

DATE STARTED: 1/20/20 **DATE COMPLETED:** 1/20/20
BORING LOCATION: SE corner of Rte28/Division St. intersection
COORDINATES: NA
SURFACE El.: (see note 1) **TOTAL DEPTH:** 20 ft.
WEATHER: Partially Cloudy, low 30s
GROUNDWATER LEVELS:
DURING DRILLING: -
AT END OF DRILLING: 6.5 ft.
OTHER: -

DRILLING SUBCONTRACTOR: Northern Drill Service, Inc.
DRILLING FOREMAN: Justin Stevens
DRILLING METHOD: Drive and wash with 3-inch casing
DRILL RIG TYPE/MODEL: Diedrich B-25 ATV
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb. **HAMMER DROP:** 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: AR **CHECKED BY:** AML

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
		0	S1	2-1-2-1 (3)	24/2		Topsoil	2.0	S1 - Silty SAND (SM), fine to medium, trace coarse, ~ 15 fines, 0-5% fine subrounded gravel, trace organic soil, brown, moist (topsoil)
		2	S2	3-4-5-5 (9)	24/12		Fill		S2 - Poorly Graded SAND (SP), fine to medium, trace coarse, ~5% fines, orange brown, moist
5		4	S3	4-5-7-7 (12)	24/8			6.0	S3 - Poorly Graded SAND (SP), fine, trace medium, 0-5% fines, 0-5% fine subrounded to subangular gravel, light brown, wet (possible fill)
		6	S4	5-6-7-7 (13)	24/12		Sand		S4 - Poorly Graded SAND (SP), fine, trace medium, trace coarse, 0-5% fines, light brown, wet
		8	S5	3-3-4-3 (7)	24/1				S5 - Similar to S4
10		10	S6	3-3-3-2 (6)	24/4				S6 - Similar to S4
		12							
		14	S7	3-3-5-7 (8)	24/2				S7 - Poorly graded SAND (SP), fine, 0-5% fines, light brown, wet
15		16							
		18	S8	3-5-6-8 (11)	24/6				S8 - Similar to S7, trace medium to coarse
20		20						20.0	
									Bottom of borehole at 20.0 feet. Backfilled borehole with drill cuttings.
25									

GENERAL NOTES:
1. Ground surface elevation not available.

LGCI Lahlaf Geotechnical Consulting, Inc.
100 Chelmsford Rd Suite 2
Billerica, MA 01862
Telephone: 9783305912
Fax: 9783305056

BORING LOG

B-3
PAGE 1 OF 1

CLIENT: Vanasse Hangen Brustlin, Inc
PROJECT NAME: Prop. Route 28 Improvements, Harwich and Dennis, MA
LGCI PROJECT NUMBER: 1828
PROJECT LOCATION: Harwich and Dennis, MA

DATE STARTED: 1/20/20 **DATE COMPLETED:** 1/20/20
BORING LOCATION: NW corner of Rte28/Division St. intersection
COORDINATES: NA
SURFACE El.: (see note 1) **TOTAL DEPTH:** 20 ft.
WEATHER: Partially Cloudy, low 30s
GROUNDWATER LEVELS:
DURING DRILLING: -
AT END OF DRILLING: 7.0 ft.
OTHER: -

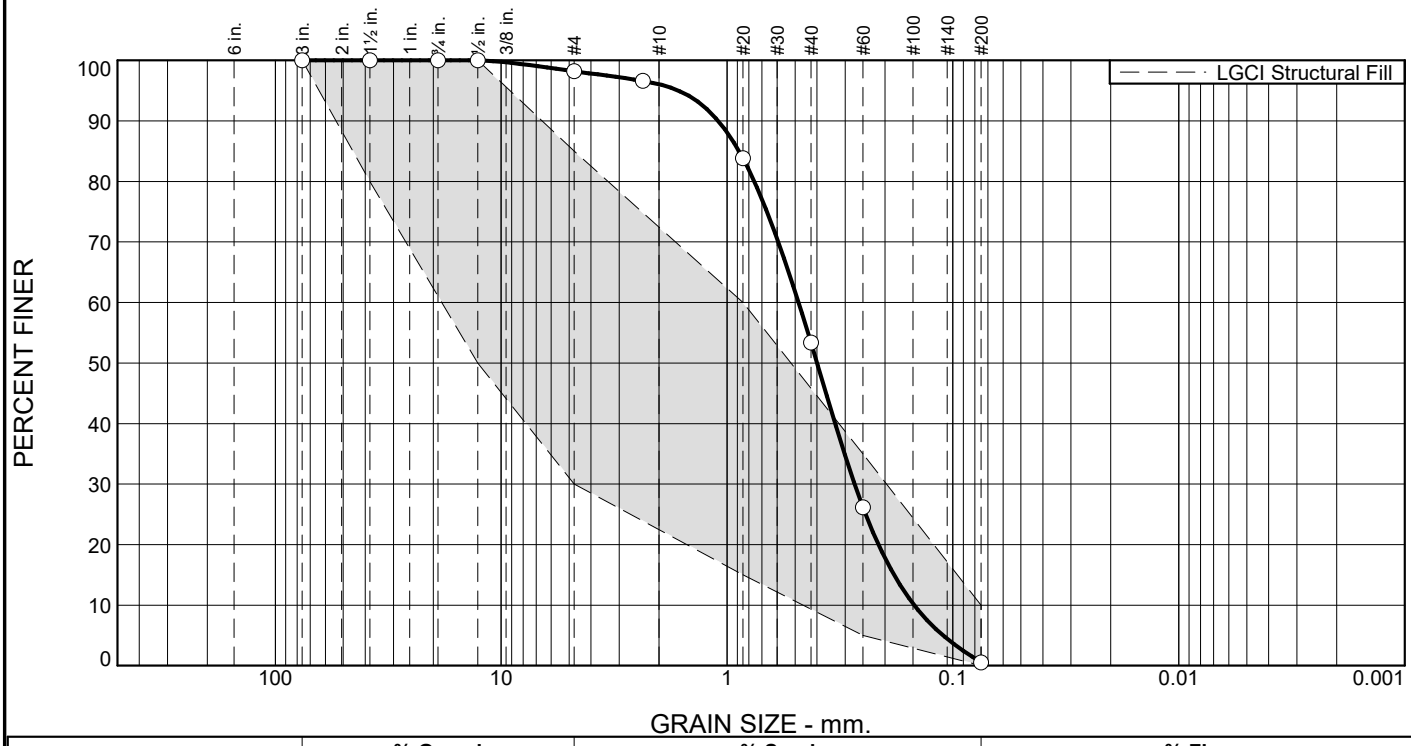
DRILLING SUBCONTRACTOR: Northern Drill Service, Inc.
DRILLING FOREMAN: Justin Stevens
DRILLING METHOD: Drive and wash with 3-inch casing
DRILL RIG TYPE/MODEL: Diedrich B-25 ATV
HAMMER TYPE: Automatic
HAMMER WEIGHT: 140 lb. **HAMMER DROP:** 30 in.
SPLIT SPOON DIA.: 1.375 in. I.D., 2 in. O.D.
CORE BARREL SIZE: NA
LOGGED BY: AR **CHECKED BY:** AML

Depth (ft.)	El. (ft.)	Sample Interval (ft.)	Sample Number	Blow Counts (N Value)	Pen./Rec. (in.)	Remark	Strata	Depth El.(ft.)	Material Description
		0	S1	3-3-7-7 (10)	24/16		Topsoil	0.5	S1 - Top. 6": Topsoil
		2	S2	5-4-4-3 (8)	24/12		Fill		Bot. 10": Poorly Graded SAND with Silt (SP-SM), fine to medium, trace coarse, 5-10% fines, trace organic soil, orange, moist S2 - Similar to bottom 10" of S1
5		4	S3	3-5-6-6 (11)	24/6			6.0	S3 - Similar to bottom 10" of S1, 0-5% fine to coarse subrounded to subangular gravel, orange to light brown, wet (possible fill)
		6	S4	5-6-7-6 (13)	24/6		Sand		S4 - Poorly graded SAND (SP), fine, trace medium, 0-5% fines, light brown, wet
		8	S5	3-2-2-2 (4)	24/1				S5 - Similar to S4
10		10	S6	3-3-3-3 (6)	24/10				S6 - Similar to S4, 0-5% coarse subangular gravel
		12							
		14	S7	2-2-3-4 (5)	24/0				S7 - No recovery
15		16							
		18	S8	4-5-7-7 (12)	24/2				S8 - Similar to S4
20		20						20.0	
									Bottom of borehole at 20.0 feet. Backfilled borehole with drill cuttings.
25									

GENERAL NOTES:
1. Ground surface elevation not available.

Attachment E – Laboratory Results

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.8	2.1	42.7	52.9	0.5	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0	100.0	
1.5"	100.0	80.0 - 100.0	
.75"	100.0		
.5"	100.0	50.0 - 100.0	
#4	98.2	30.0 - 85.0	X
#8	96.6		
#20	83.8	15.0 - 60.0	X
#40	53.4		
#60	26.2	5.0 - 35.0	
#200	0.5	0.0 - 10.0	

* LGCI Structural Fill

Material Description

Poorly Graded SAND (SP), fine to medium, 0-5% fines, 0-5% fine gravel

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= SP AASHTO (M 145)=

Coefficients

D_{90}= 1.0936 D_{85}= 0.8843 D_{60}= 0.4825
D_{50}= 0.3992 D_{30}= 0.2721 D_{15}= 0.1820
D_{10}= 0.1481 C_u= 3.26 C_c= 1.04

Remarks

Subgrade sample.

Date Received: 5/23/2019 **Date Tested:** 6/3/2019

Tested By: BM

Checked By: HA

Location: Pavement Core PC-3
Sample Number: Subgrade

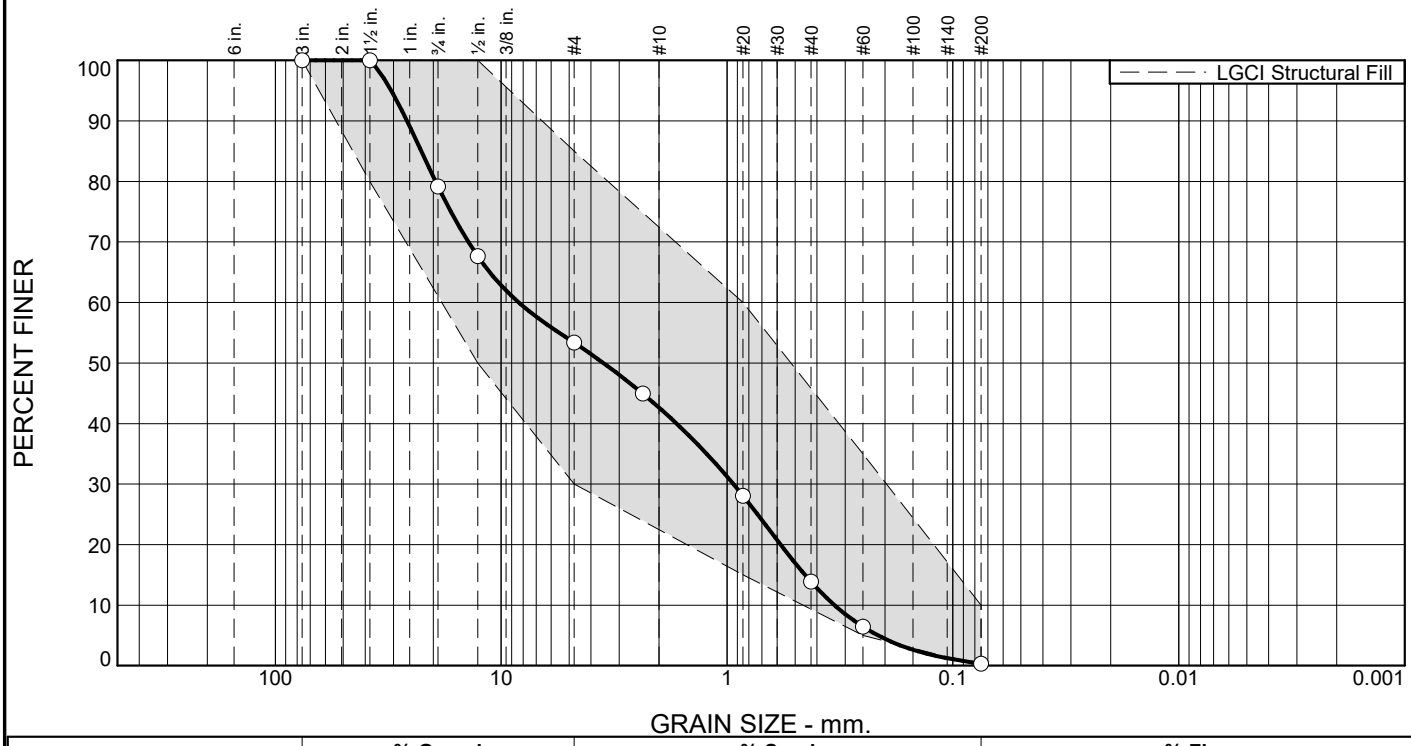
Date Sampled: 5/23/2019

LGCI
Lahlaf Geotechnical Consulting, Inc.

Client: VHB
Project: Proposed Route 28 Road Imporvements, Harwich and Dennis, MA

Project No: 1828 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	20.8	25.8	10.8	28.7	13.6	0.3	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0	100.0	
1.5"	100.0	80.0 - 100.0	
.75"	79.2		
.5"	67.7	50.0 - 100.0	
#4	53.4	30.0 - 85.0	
#8	44.9		
#20	28.1	15.0 - 60.0	
#40	13.9		
#60	6.4	5.0 - 35.0	
#200	0.3	0.0 - 10.0	

* LGCI Structural Fill

Material Description

Well Graded SAND with Gravel (SW), fine to coarse, 0-5% fines, 45-50% fine to coarse gravel

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= SP **AASHTO (M 145)=**

Coefficients

D_{90}= 26.0992 D_{85}= 22.5707 D_{60}= 8.3527
D_{50}= 3.5263 D_{30}= 0.9365 D_{15}= 0.4519
D_{10}= 0.3341 C_u= 25.00 C_c= 0.31

Remarks

Subbase sample.

Date Received: 5/23/2019 **Date Tested:** 6/3/2019

Tested By: BM

Checked By: HA

Location: Pavement Core PC-4
Sample Number: Subbase

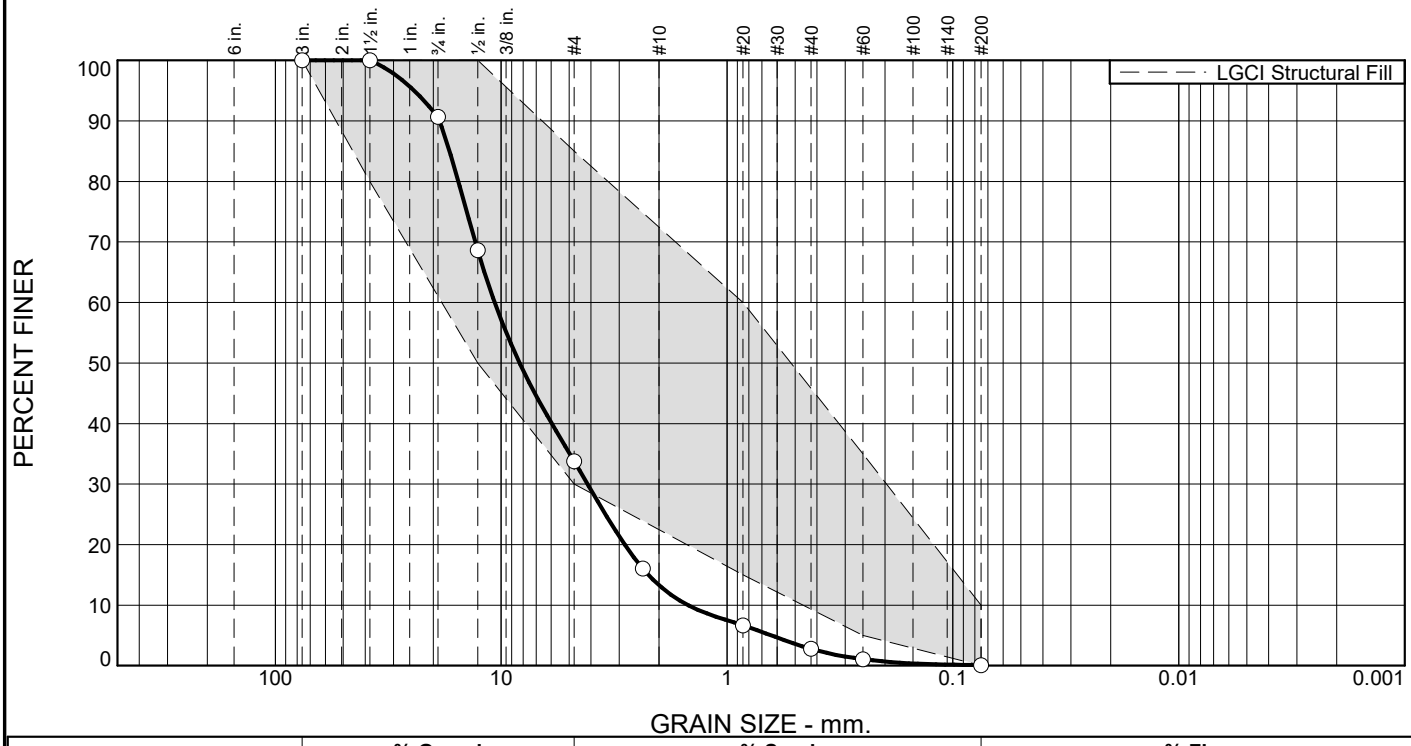
Date Sampled: 5/23/2019

LGCI
Lahlaf Geotechnical Consulting, Inc.

Client: VHB
Project: Proposed Route 28 Road Imporvements, Harwich and Dennis, MA

Project No: 1828 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	9.3	56.9	20.5	10.5	2.7	0.1	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0	100.0	
1.5"	100.0	80.0 - 100.0	
.75"	90.7		
.5"	68.6	50.0 - 100.0	
#4	33.8	30.0 - 85.0	
#8	16.0		
#20	6.7	15.0 - 60.0	X
#40	2.8		
#60	1.1	5.0 - 35.0	X
#200	0.1	0.0 - 10.0	

* LGCI Structural Fill

Material Description

Poorly Graded GRAVEL with Sand (GP), fine, 0-5% fines, 30-35% fine to coarse sand

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= GW **AASHTO (M 145)=**

Coefficients

D_{90}= 18.7577 D_{85}= 16.9323 D_{60}= 10.6704
D_{50}= 8.2739 D_{30}= 4.1457 D_{15}= 2.2288
D_{10}= 1.4864 C_u= 7.18 C_c= 1.08

Remarks

Subbase sample.

Date Received: 5/23/2019 **Date Tested:** 6/3/2019

Tested By: BM

Checked By: HA

Location: Pavement Core PC-5
Sample Number: Subbase

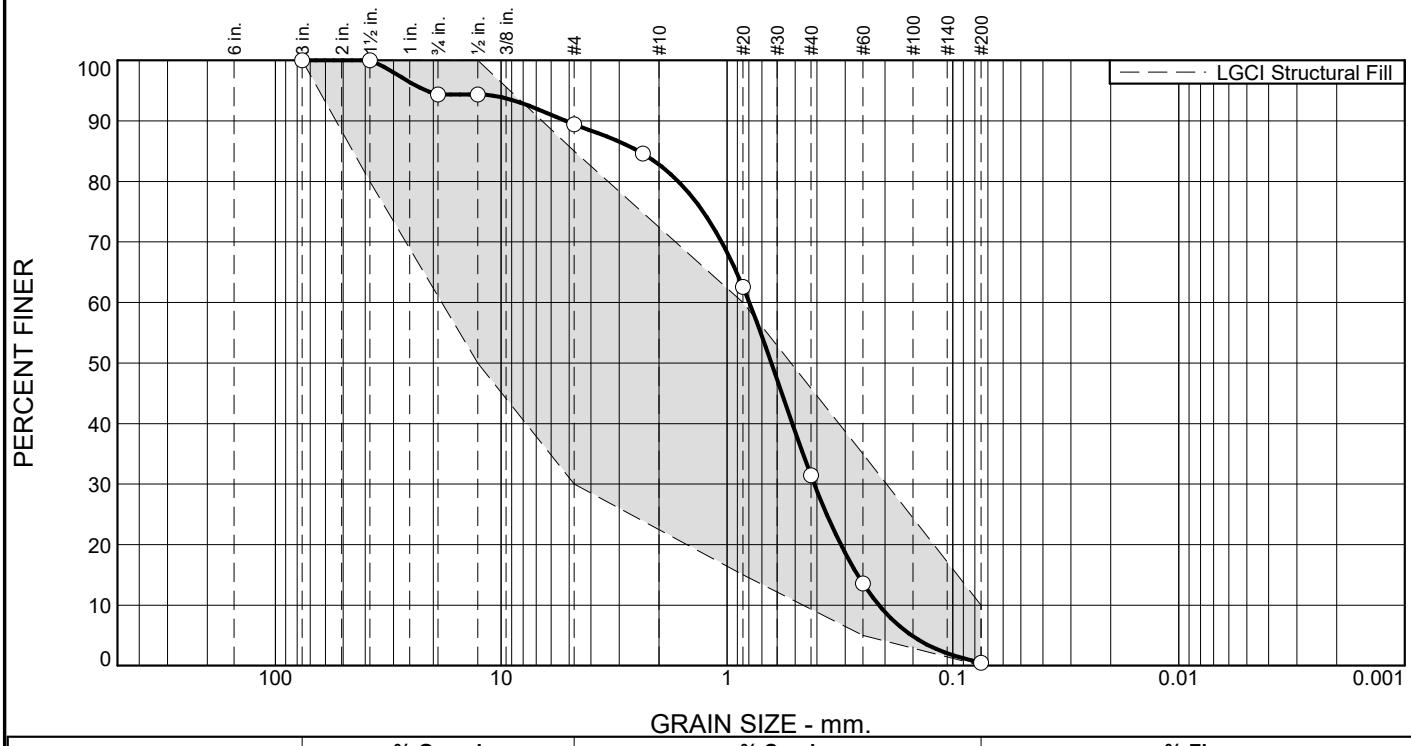
Date Sampled: 5/23/2019

LGCI
Lahlaf Geotechnical Consulting, Inc.

Client: VHB
Project: Proposed Route 28 Road Imporvements, Harwich and Dennis, MA

Project No: 1828 **Figure**

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	5.6	5.0	6.6	51.4	30.9	0.5	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3"	100.0	100.0	
1.5"	100.0	80.0 - 100.0	
.75"	94.4		
.5"	94.4	50.0 - 100.0	
#4	89.4	30.0 - 85.0	X
#8	84.6		
#20	62.6	15.0 - 60.0	X
#40	31.4		
#60	13.6	5.0 - 35.0	
#200	0.5	0.0 - 10.0	

* LGCI Structural Fill

Material Description

Poorly Graded SAND (SP), fine to medium, 0-5% fines, 10-15% fine to coarse gravel

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= SP **AASHTO (M 145)=**

Coefficients

D_{90}= 5.1665 D_{85}= 2.4637 D_{60}= 0.7969
D_{50}= 0.6362 D_{30}= 0.4107 D_{15}= 0.2641
D_{10}= 0.2123 C_u= 3.75 C_c= 1.00

Remarks

Subgrade sample.

Date Received: 5/23/2019 **Date Tested:** 6/3/2019

Tested By: BM

Checked By: HA

Location: Pavement Core PC-8
Sample Number: Subgrade

Date Sampled: 5/23/2019

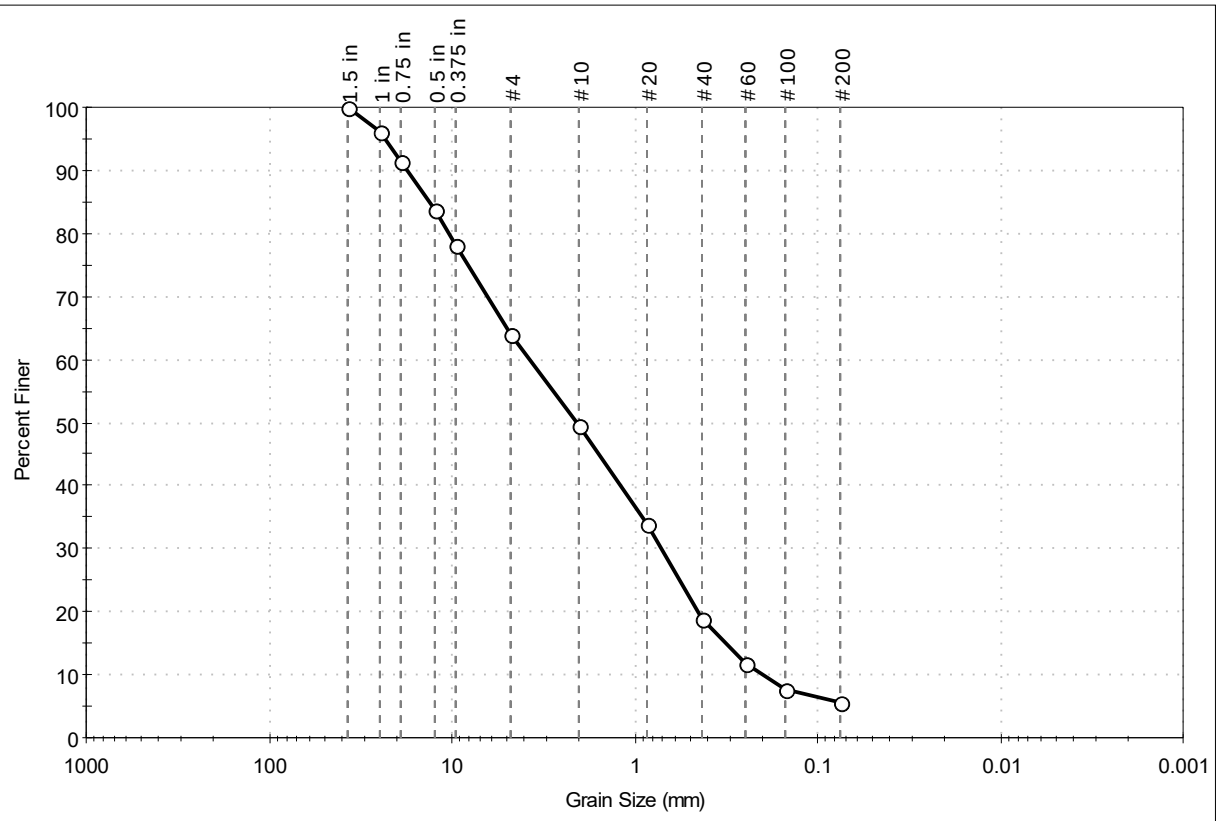
LGCI
Lahlaf Geotechnical Consulting, Inc.

Client: VHB
Project: Proposed Route 28 Road Imporvements, Harwich and Dennis, MA

Project No: 1828 **Figure**

Client:	Lahlaf Geotechnical Consulting				
Project:	Route 28 Improvements				
Location:	Harwich, MA			Project No:	GTX-310073
Boring ID:	C3,C5,C6,C7	Sample Type:	bucket	Tested By:	ckg
Sample ID:	Subbase	Test Date:	06/05/19	Checked By:	bfs
Depth :	---	Test Id:	506422		
Test Comment:	---				
Visual Description:	Moist, dark brown sand with silt and gravel				
Sample Comment:	Sample contains asphalt				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	36.1	58.4	5.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	96		
0.75 in	19.00	91		
0.5 in	12.50	84		
0.375 in	9.50	78		
#4	4.75	64		
#10	2.00	50		
#20	0.85	34		
#40	0.42	19		
#60	0.25	12		
#100	0.15	8		
#200	0.075	5.5		

Coefficients

D_{85} = 13.4313 mm	D_{30} = 0.7119 mm
D_{60} = 3.7557 mm	D_{15} = 0.3197 mm
D_{50} = 2.0517 mm	D_{10} = 0.2009 mm
C_u = 18.694	C_c = 0.672

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-a (1))

Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

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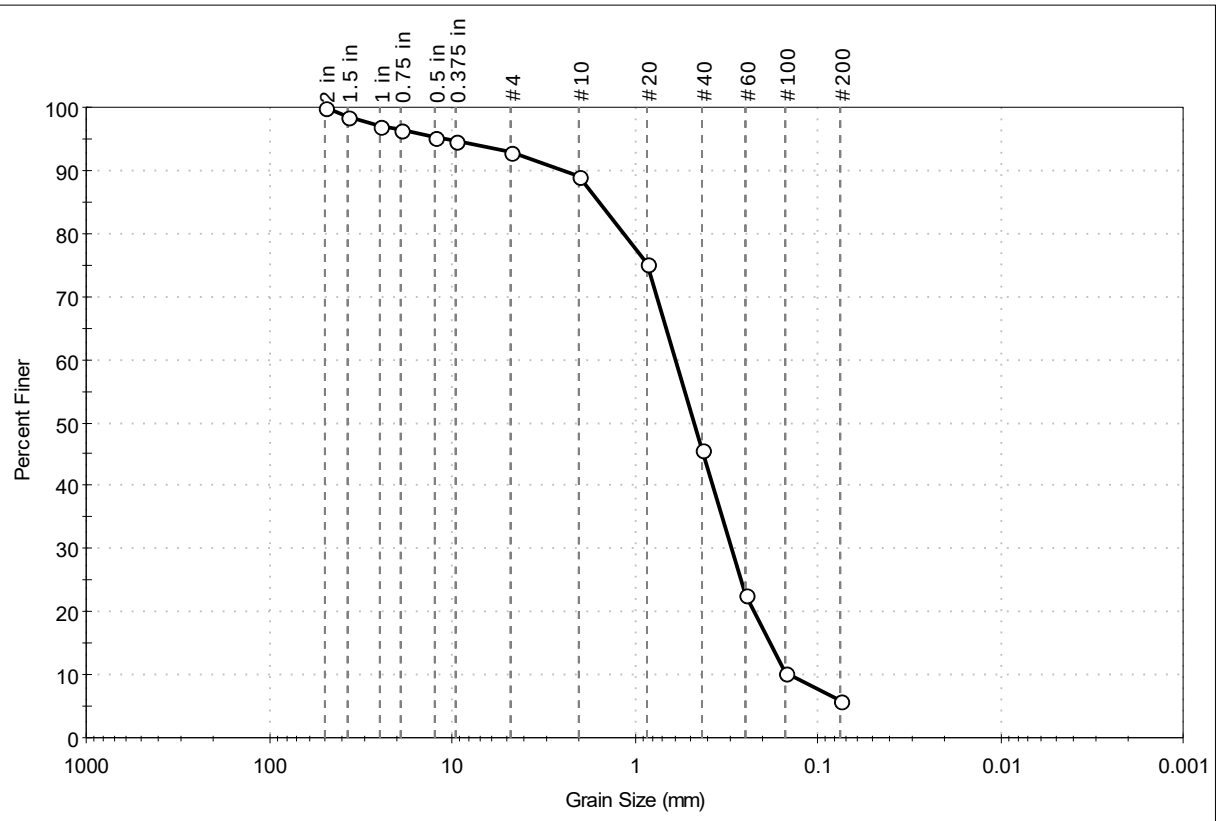
Client:	Lahlaf Geotechnical Consulting				
Project:	Route 28 Improvements				
Location:	Harwich, MA			Project No:	GTX-310073
Boring ID:	C3,C5,C6,C7	Sample Type:	bucket	Tested By:	ckg
Sample ID:	Subgrade	Test Date:	06/11/19	Checked By:	bfs
Depth :	---	Test Id:	506421		
Test Comment:	---				
Visual Description:	Moist, yellowish brown sand with silt				
Sample Comment:	Sample contains asphalt				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	7.2	86.8	6.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
2 in	50.00	100		
1.5 in	37.50	99		
1 in	25.00	97		
0.75 in	19.00	96		
0.5 in	12.50	95		
0.375 in	9.50	95		
#4	4.75	93		
#10	2.00	89		
#20	0.85	75		
#40	0.42	46		
#60	0.25	23		
#100	0.15	10		
#200	0.075	6.0		

Coefficients

D_{85} = 1.5600 mm
D_{30} = 0.2953 mm
D_{60} = 0.5934 mm
D_{15} = 0.1812 mm
D_{50} = 0.4695 mm
D_{10} = 0.1404 mm
C_u = 4.226
C_c = 1.047

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (1))

Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

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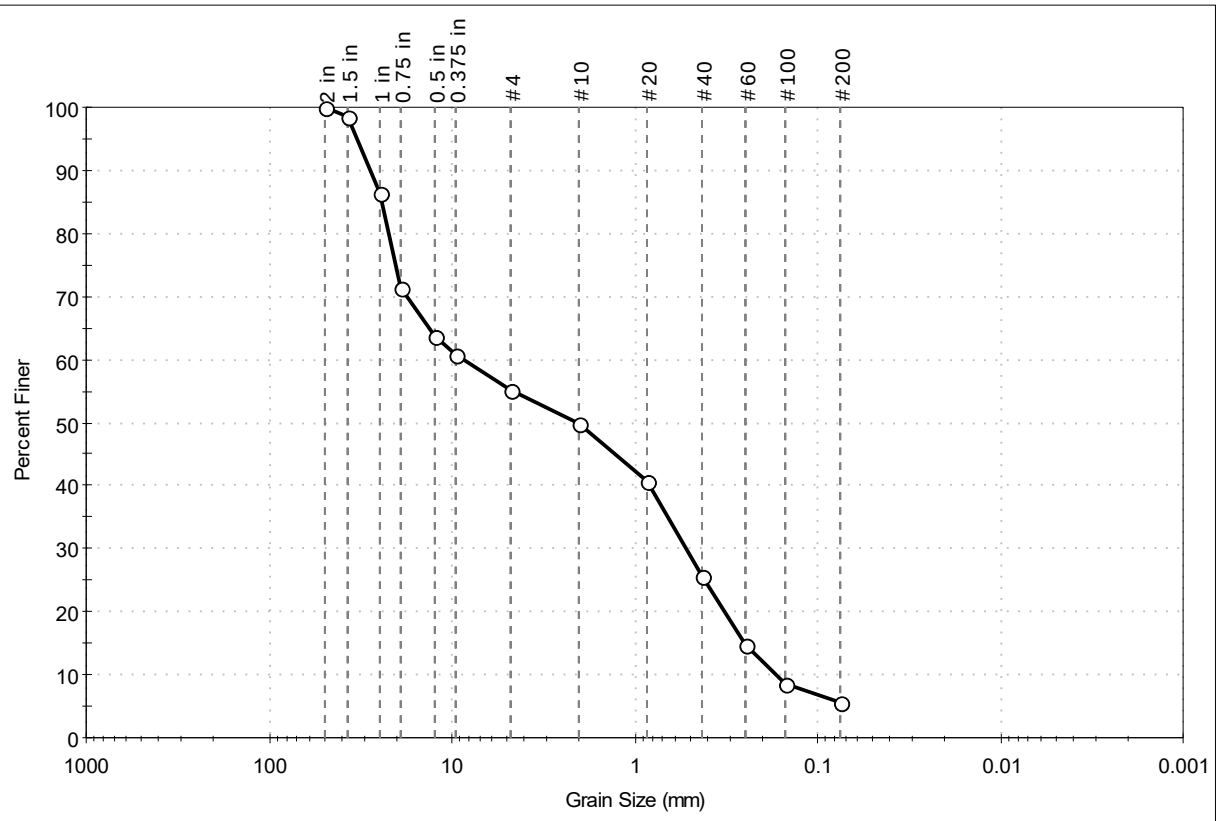
Client:	Lahlaf Geotechnical Consulting				
Project:	Route 28 Improvements				
Location:	Harwich, MA			Project No:	GTX-310073
Boring ID:	C8,C4,C4A,C2,C1	Sample Type:	bucket	Tested By:	ckg
Sample ID:	Subbase	Test Date:	06/05/19	Checked By:	bfs
Depth :	---	Test Id:	506424		
Test Comment:	---				
Visual Description:	Moist, dark brown sand with silt and gravel				
Sample Comment:	Sample contains asphalt				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	44.9	49.4	5.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
2 in	50.00	100		
1.5 in	37.50	98		
1 in	25.00	86		
0.75 in	19.00	71		
0.5 in	12.50	64		
0.375 in	9.50	61		
#4	4.75	55		
#10	2.00	50		
#20	0.85	41		
#40	0.42	26		
#60	0.25	15		
#100	0.15	9		
#200	0.075	5.7		

Coefficients

D_{85} = 24.3886 mm
D_{30} = 0.5189 mm
D_{60} = 8.5289 mm
D_{15} = 0.2525 mm
D_{50} = 2.0608 mm
D_{10} = 0.1685 mm
C_u = 50.617
C_c = 0.187

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-a (1))

Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

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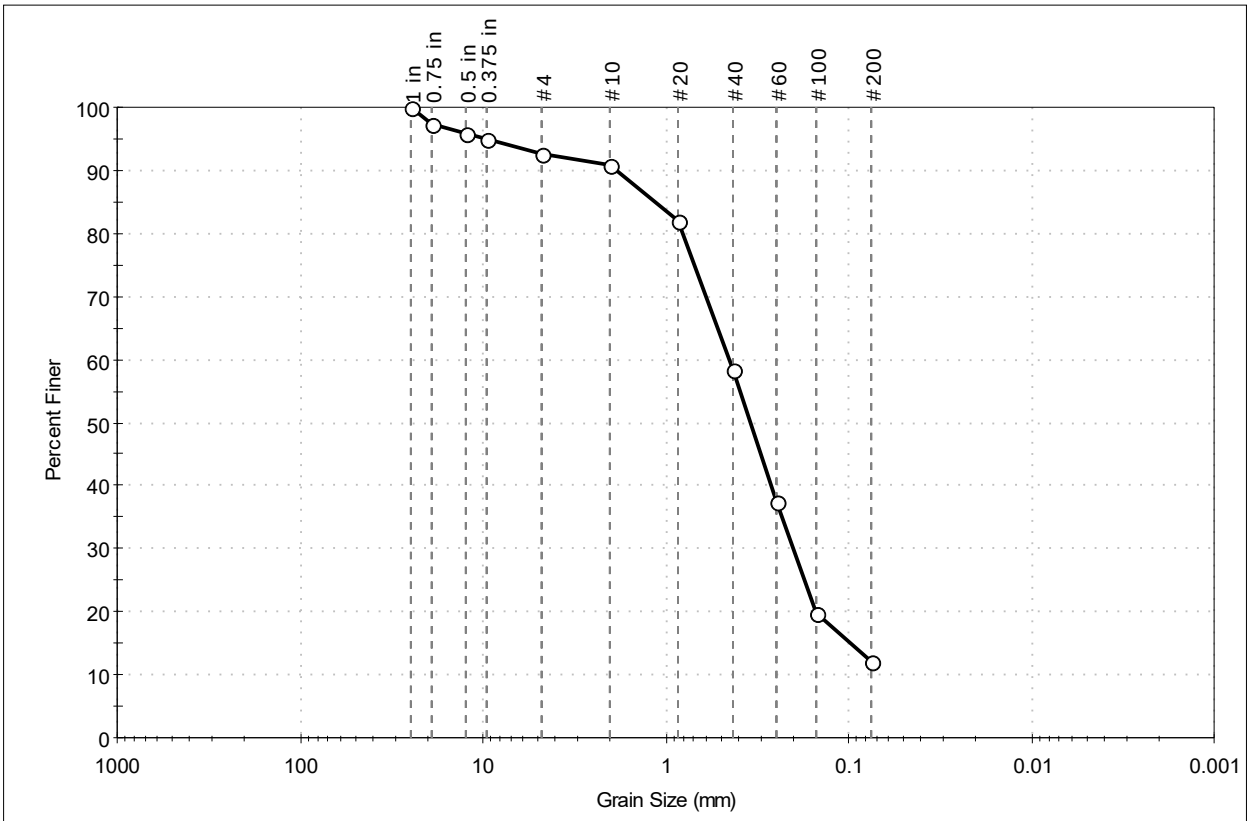
Client:	Lahlaf Geotechnical Consulting				
Project:	Route 28 Improvements				
Location:	Harwich, MA			Project No:	GTX-310073
Boring ID:	C8,C4A,C2,C1	Sample Type:	bucket	Tested By:	ckg
Sample ID:	Subgrade	Test Date:	06/11/19	Checked By:	bfs
Depth :	---	Test Id:	506423		
Test Comment:	---				
Visual Description:	Moist, brown silty sand				
Sample Comment:	Sample contains asphalt				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	7.4	80.6	12.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	97		
0.5 in	12.50	96		
0.375 in	9.50	95		
#4	4.75	93		
#10	2.00	91		
#20	0.85	82		
#40	0.42	58		
#60	0.25	37		
#100	0.15	20		
#200	0.075	12		

Coefficients

D_{85} = 1.1427 mm D_{30} = 0.2019 mm
D_{60} = 0.4465 mm D_{15} = 0.0983 mm
D_{50} = 0.3442 mm D_{10} = N/A
C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

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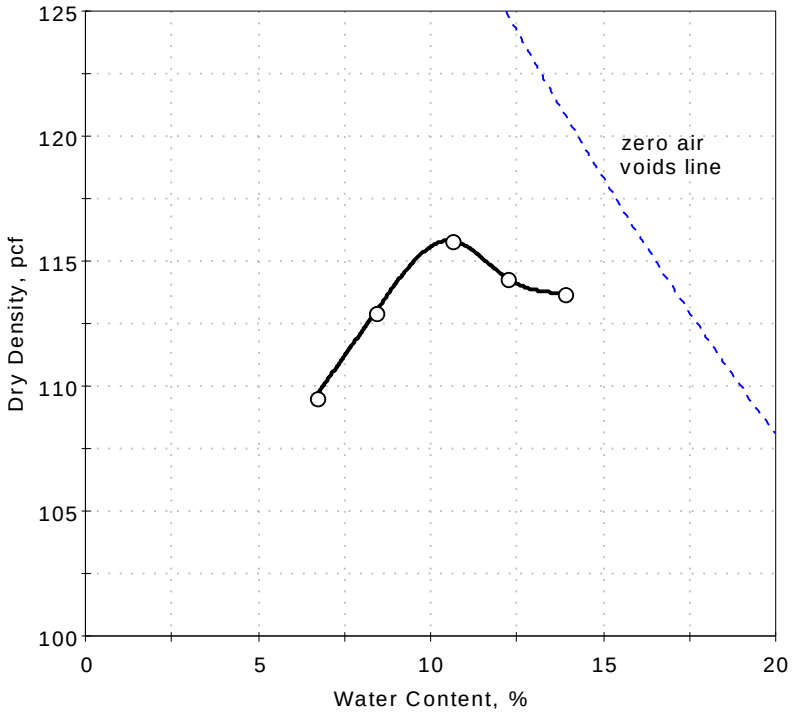
Client:	Lahlaf Geotechnical Consulting				
Project:	Route 28 Improvements				
Location:	Harwich, MA			Project No:	GTX-310073
Boring ID:	C3,C5,C6,C7	Sample Type:	bucket	Tested By:	cwd
Sample ID:	Subgrade	Test Date:	06/11/19	Checked By:	bfs
Depth :	---	Test Id:	506425		
Test Comment:	---				
Visual Description:	Moist, yellowish brown sand with silt				
Sample Comment:	Sample contains asphalt				

Compaction Report - ASTM D1557



Data Points	Point 1	Point 2	Point 3	Point 4	Point 5
Dry density, pcf	109.6	113.0	115.8	114.3	113.7
Moisture Content, %	6.7	8.4	10.6	12.2	13.9

Method : C

Preparation : WET

As received Moisture :5 %

Rammer : Mechanical

Zero voids line based on assumed specific gravity of 2.65

Maximum Dry Density= 115.8 pcf

Optimum Moisture= 10.5 %

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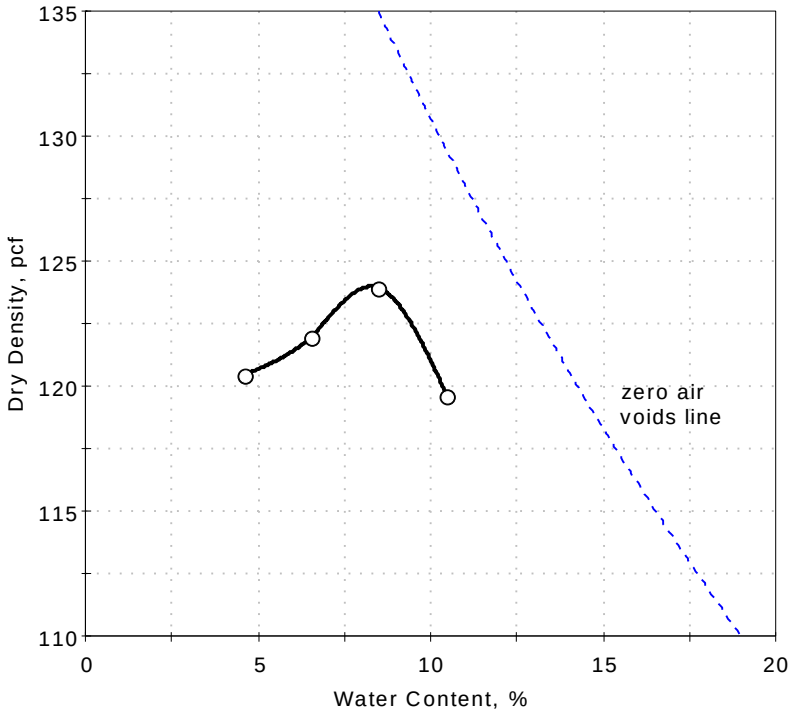
Client:	Lahlaf Geotechnical Consulting				
Project:	Route 28 Improvements				
Location:	Harwich, MA			Project No:	GTX-310073
Boring ID:	C8,C4A,C2,C1	Sample Type:	bucket	Tested By:	cwd
Sample ID:	Subgrade	Test Date:	06/07/19	Checked By:	bfs
Depth :	---	Test Id:	506426		
Test Comment:	---				
Visual Description:	Moist, brown silty sand				
Sample Comment:	Sample contains asphalt				

Compaction Report - ASTM D1557



Data Points	Point 1	Point 2	Point 3	Point 4
Dry density, pcf	120.4	121.9	123.9	119.6
Moisture Content, %	4.6	6.5	8.4	10.5

Method : B

Preparation : DRY

As received Moisture :8 %

Rammer : Mechanical

Zero voids line based on assumed specific gravity of 2.65

Maximum Dry Density= 124.0 pcf

Optimum Moisture= 8.3 %

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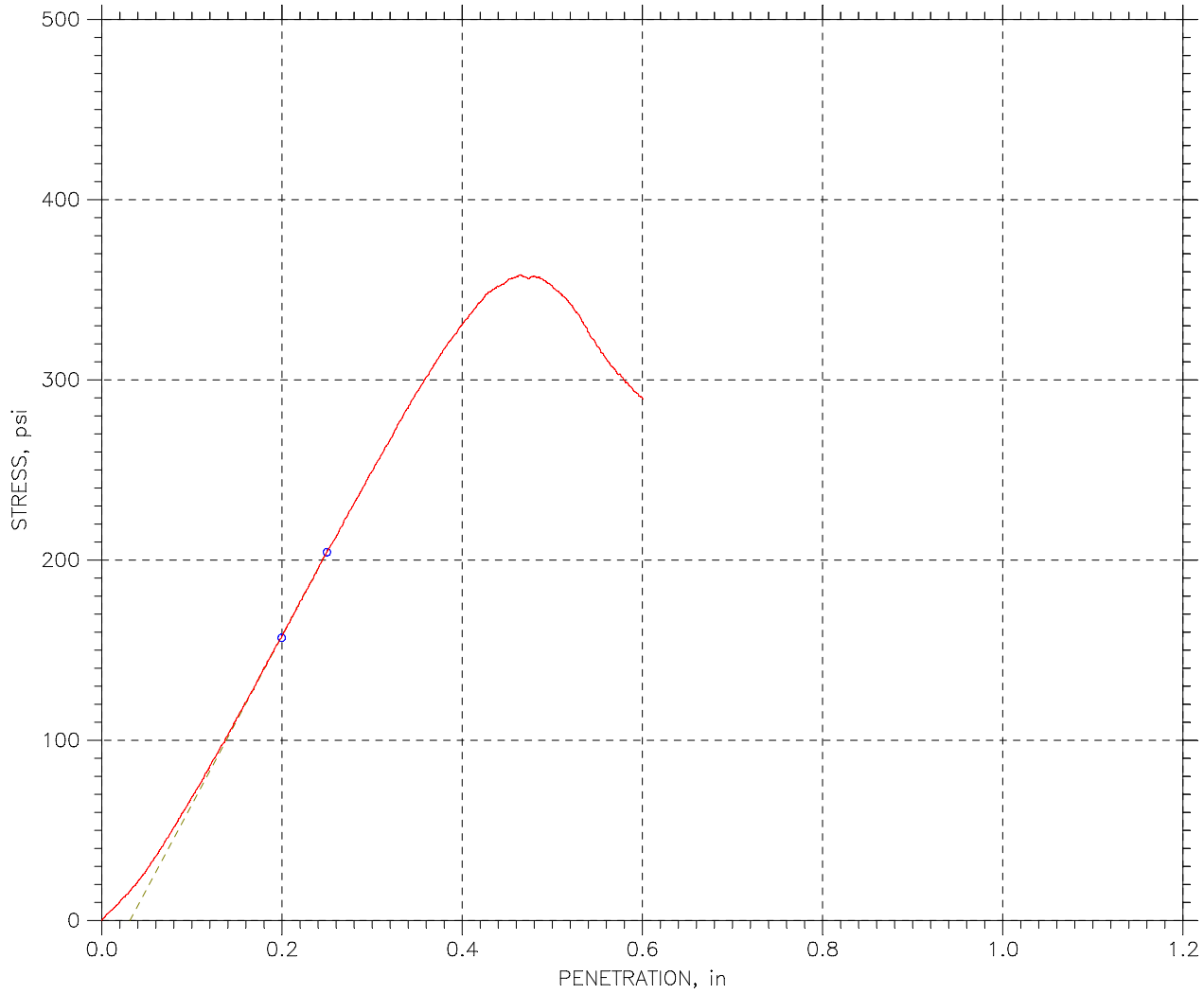
GeoTesting EXPRESS

CALIFORNIA BEARING RATIO TEST REPORT

by ASTM D1883



Sample Height: 4.58 in	California Bearing Ratio				
Sample Area: 28.274 in^2	at 0.1 in: 10	at 0.3 in: 15	at 0.5 in: 13		
Sample Volume: 0.07494 ft^3	at 0.2 in: 12	at 0.4 in: 15			
Sample Mass: 4135.5 gm					
Sample Condition: Soaked	Water Content		Before	Top	Average
Swell: 0.00 %	Tare ID		D1488	A2966	D2372
Surcharge: 4540 gm	Tare Mass, gm		8.3	8.34	8.52
Void Ratio: 0.50	Mass Tare + Wet Soil, gm		296.34	341.07	425.46
Wet Unit Weight: 121.66 pcf	Mass Tare + Dry Soil, gm		268.97	309.96	381.06
Dry Unit Weight: 110.1 pcf	Water Content, %		10.50	10.31	11.92

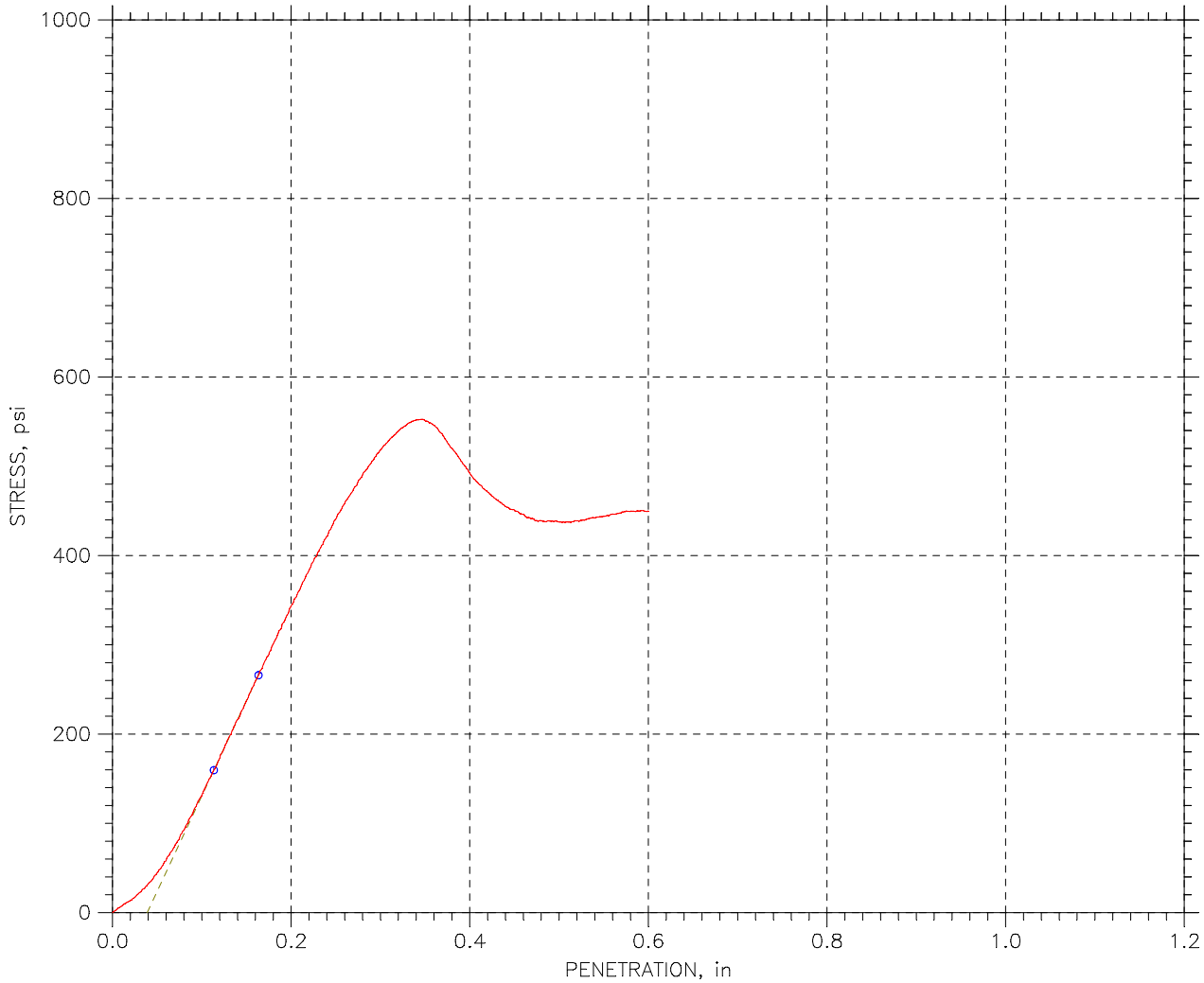
Project: Route 28 Improvements	Location: Harwich, MA	Project No.: GTX-310073
Boring No.: C3,5,6,7	Tested By: cwd	Checked By: emm
Sample No.: Subgrade	Test Date: 6/19/19	Depth: ---
Test No.: CBR-1	Sample Type: remolded	Elevation: ---
Description: Moist, yellowish brown sand with silt		
Remarks: Target Compaction: 95% of the maximum dry density (115.8 pcf) at the optimum moisture content (10.5%).		

Fri, 21-JUN-2019 12:05:28

GeoTesting EXPRESS

CALIFORNIA BEARING RATIO TEST REPORT

by ASTM D1883



Sample Height: 4.58 in	California Bearing Ratio			
Sample Area: 28.274 in^2	at 0.1 in: 21	at 0.3 in: 29	at 0.5 in: 17	
Sample Volume: 0.07494 ft^3	at 0.2 in: 28	at 0.4 in: 20		
Sample Mass: 4342.7 gm				
Sample Condition: Soaked	Water Content	Before	Top	Average
Swell: 0.01 %	Tare ID	D2377AV	A2306	D1115
Surcharge: 4540 gm	Tare Mass, gm	16.73	8.1	8.43
Void Ratio: 0.40	Mass Tare + Wet Soil, gm	705.8	311.29	293.16
Wet Unit Weight: 127.76 pcf	Mass Tare + Dry Soil, gm	653.01	284	262.36
Dry Unit Weight: 117.97 pcf	Water Content, %	8.30	9.89	12.13

Project: Route 28 Improvements	Location: Harwich, MA	Project No.: GTX-310073
Boring No.: C8,4A,2,1	Tested By: cwd	Checked By: emm
Sample No.: Subgrade	Test Date: 6/19/19	Depth: ---
Test No.: CBR-2	Sample Type: remolded	Elevation: ---
Description: Moist, brown silty sand		
Remarks: Target Compaction: 95% of the maximum dry density (124.0 pcf) at the optimum moisture content (8.3%).		

Fri, 21-JUN-2019 12:08:23

Attachment F – Pavement Design Calculation Package

COMMONWEALTH OF MASSACHUSETTS
MassHighway

PAVEMENT DESIGN
NEW AND RECONSTRUCTED PAVEMENTS

NEW PAVEMENT.

City/Town	HARWICH, MA		
Route No.	ROUTE 28	Highway System	
From Station	NA	To Station	NA
No. of Lanes	2 TRAVEL LANES		
Date Pavement Designed	7/15/2019	Pavement Designer	AR

RECOMMENDED PAVEMENT STRUCTURE

Surface Course: 455.23 SUPERPAVE SURFACE COURSE 12.5 (SSC - 12.5) - 2"

Intermediate Course: 455.31 SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC - 12.5) - 2"*

Base Course: 455.41 SUPERPAVE - BASE COURSE 25.0 (SBC - 25.0 - 4"*

Sub-base:

Sub-grade: DENSE GRADED CRUSHED STONE M2.01.7 - 4"/ GRAVEL BORROW M1.03.0 - 8"

SILTY GRAVEL AND SAND (A-2-4 (0))
AASHTO

* BECAUSE ADJACENT EXISTING LANES WILL be RECLAIMED (SEE ATTACHED "RECONSTRUCTED PAVEMENT" SHEETS), USE CROSS SECTION OF RECONSTRUCTED PAVEMENT; i.e., 2" of SSC-12.5), 25" of SIC-12.5, 5" of SBC-37.5, and 12" of RECLAIMED PAV. BORROW M1.09-0

NEW AND RECONSTRUCTED PAVEMENTS

DATA SHEET 1: PAVEMENT STRUCTURAL DESIGN DATA

City/Town HARWICH, MA Route No. ROUTE 28

From Station — To Station —

No. of Lanes __ Highway System _____ Date 11/6/19

Current ADT 12,132

Terminal Serviceability Index (T.S.I) = 2.5

(a) Day of Opening A.D.T. (Date year)[1] 2017	12132
(b) Future A.D.T. (Date (a) + 20 years)[2]	15101
(c) Mean A.D.T. = [(a) + (b)] / 2	13,617
(d) Mean A.D.T. in One Direction = (c) / 2	6809
(e) A.D.T. Truck Percentage ("T" A.D.T.)	5.6%
(f) Mean Truck A.D.T. In One Direction (d) x (e)	381
(g) ESAL Application per 1000 Trucks and Combinations Exhibit 9-2	880
(h) Number of ESALs Per Day in One Direction (f) X (g) / 1000 (T_{16})	335

Comments:

1 Anticipated traffic when facility is opened to travel.
2 Under certain conditions this may change to a larger or shorter period.

NEW AND RECONSTRUCTED PAVEMENTS

DATA SHEET 2: DETERMINATION OF STRUCTURAL MUMBER (SN)

Design Lane ESAL Applications (T_{18})

For 2-Lane Undivided Highway

Design Lane T_{18} = 1.00 x Total T_{18}* = 1.00 x 335 = 335

For 4 (Total Lanes) Lane Divided Highway

Design Lane T_{18} = 0.90 x Total T_{18}* = 0.90 x ..... = —

Design 6 or More (Total Lanes) Divided Highway

Design Lane T_{18} = 0.80 x Total T_{18}* = 0.80 x .....= —

Design DBR + SSV Exhibits 9-4, 9-5 & 9-7, Sections 9.3 & 9.4

Subbase GRAVEL DBR = 40 SSV = 7.8

Subgrade A-2-4(0) DBR = 10 SSV = 4.3

Design Structural Number (SN)

Apply Design SSV and Design Lane T_{18} from above to Design Nomograph (Exhibit 9-8)

	From Exhibit 9-8	+15%
Above Subbase .....=	2.5	2.88
Above Sugrade ..... =	3.9	4.49

*From Line (h) of Data Sheet 1.

NEW AND RECONSTRUCTED PAVEMENTS

DATA SHEET 3: PAVEMENT STRUCTURAL NUMBER (SN)

$$SN = D_1^{a_1} + D_2^{a_2} + D_3^{a_3} + D_4^{a_4} + D_5^{a_5}$$

Surface Course
Material: 2" SSC-12.5 $D_1^{a_1}$= 2 x 0.44 = 0.88

Intermediate Course
Material: 2" SIC-12.5 $D_2^{a_2}$= 2 x 0.44 = 0.88

Base Course
Material: 4" SBC-25.0 $D_3^{a_3}$= 4 x 0.34 = 1.36

Total SN Above Sub-base = 3.12 > 2.88

Sub-base (Foundation)
Material: 4" crushed stone $D_4^{a_4}$= 4 x 0.14 = 0.56
8" gravel $D_5^{a_5}$= 8 x 0.11 = 0.88

Total SN Above Sub-grade = 4.56 > 4.49

Where: D_1 = Surface Course Thickness, inches
D_2 = Intermediate Course Thickness, inches
D_3 = Base Course Thickness, inches
D_4 = Sub-base Course Thickness, inches
D_5 = Sub-base Course Thickness, inches
a_1 = Coefficient of Relative Strength, Surface Course
a_2 = Coefficient of Relative Strength, Intermediate Course
a_3 = Coefficient of Relative Strength, Base Course
a_4 = Coefficient of Relative Strength, Sub-base Course
a_5 = Coefficient of Relative Strength, Sub-base Course

Comments:

101 Walnut Street
Watertown, MA 02472
Telephone (617) 924-1770
Fax (617) 924-2286
www.vhb.com

DESIGN DESIGNATION DATA

Job Number: 13137.01
Date: 11-Jun-19
Preparer: KB
Checked by:

Route 28 Main Street
ATR on Weds 8/9/17 used

Average Daily Traffic (ADT) =		6,254	+	5,878	=	12,132 vpd
Seasonally Adjusted ADT =		12,132	*	0.00%	=	12,132 vpd
K Factor =		475 / 12,132	+	426	=	0.07
D =		475 / (475 + 426)			=	52.7% NB
Peak Hour % Trucks =		53 / 901	+	0	=	5.9%
Daily % Trucks =		677 / 12,132	+	0	=	5.6%
Design Year ADT =	Background:	12,132	*	(1+.01)^12	=	15,101
	Project:					0
	Other Specific Projects:					0
				Total:		15,101 vpd
DHV =		15,101	*	0.07	=	1,121 vph
DDHV =		1,121	*	52.7%	=	591 vph

\\vhb\gbl\proj\Wat-TE\13137.01\ssheets\Traffic\Design Designation Data

Proposed Route 28 Improvements, Harwich, MA
LGCI Project: 1828
7/15/2019
by Abner Reis

Pavement Section for Route 28 Improvements
(Above the subbase using Imported Gravel)

Pavement Layer calculator
Pavement Thickness Calculation

Required Structural Number	2.88	(Above subbase using imported gravel)
W18 (million ESALs)	0.335	(Based on Data by Stephen Rhoads of VHB)

Layer Coefficients		(use values from Ref. 2 Exhibit 9-10 and Ref. 3 Figure 3)
a1	0.44	Hot Mix Asphalt - Surface Course
a2	0.44	Hot Mix Asphalt - Intermediate Course
a3	0.34	Hot Mix Asphalt - Base Course

Calculated SN = a1*D1 + a2*D2 + a3*D3 + a4*D4 + a5*D5

Calculated SN =	3.12	(from Figure 3.1 AASHTO 1993)
D1=(Design Value)	2	Hot Mix Asphalt - Surface Course
D2=(Design Value)	2	Hot Mix Asphalt - Intermediate Course
D3=(Design Value)	4	Hot Mix Asphalt - Base Course

Final Pavement Layers:

Surface + Intermadiate	4 inches
Base	4 inches
Subbase (Stone + Gravel)	12 inches

Proposed Route 28 Improvements, Harwich, MA
LGCI Project: 1828
7/15/2019
by Abner Reis

Pavement Section for Route 28 Improvements (Above the subgrade using Imported Gravel for Subbase)

Pavement Layer calculator
Pavement Thickness Calculation

Required Structural Number	4.49	(Above sub-grade)
W18 (million ESALs)	0.335	(Based on Data by Stephen Rhoads of VHB)

Layer Coefficients		(use values from Ref. 2 Exhibit 9-10 and Ref. 3 Figure 3)
a1	0.44	Hot Mix Asphalt - Surface Course
a2	0.44	Hot Mix Asphalt - Intermediate Course
a3	0.34	Hot Mix Asphalt - Base Course
a4	0.14	Crushed stone - Subbase
a5	0.11	Reclaimed Gravel - Subbase

Calculated SN = a1*D1 + a2*D2 + a3*D3 + a4*D4 + a5*D5

Calculated SN =	4.56	(from Figure 3.1 AASHTO 1993)
D1=(Design Value)	2	Hot Mix Asphalt - Surface Course
D2=(Design Value)	2	Hot Mix Asphalt - Intermediate Course
D3=(Design Value)	4	Hot Mix Asphalt - Base Course
D4=(Design Value)	4	Crushed stone - Subbase
D5=(Design Value)	8	Reclaimed Gravel - Subbase

Final Pavement Layers:

Surface + Intermadiate	4 inches
Base	4 inches
Subbase (Stone + Gravel)	12 inches

COMMONWEALTH OF MASSACHUSETTS
MassHighway

RECONSTRUCTED PAVEMENT

PAVEMENT DESIGN
NEW AND RECONSTRUCTED PAVEMENTS

City/Town	HARWICH, MA		
Route No.	ROUTE 28	Highway System	
From Station	NA	To Station	NA
No. of Lanes	2		
Date Pavement Designed	7/15/2019	Pavement Designer	AR

RECOMMENDED PAVEMENT STRUCTURE

Surface Course: 455.23 SUPERPAVE SURFACE COARSE 12.5 (SSC - 12.5) - 2"

Intermediate Course 455.31 SUPERPAVE INTERMEDIATE COARSE 12.5 (SIC - 12.5) - 2.5"

Base Course: 455.41 SUPERPAVE BASE COARSE 37.5 (SBC - 375) - 5"

Sub-base: RECLAIMED PAVEMENT BORROW M1.09.0 - 12"

Sub-grade: SILTY GRAVEL AND SAND (A-2-4(0)) AASHTO

NEW AND RECONSTRUCTED PAVEMENTS

DATA SHEET 1: PAVEMENT STRUCTURAL DESIGN DATA

City/Town _____ Route No. _____

From Station _____ To Station _____

No. of Lanes ___ Highway System _____ Date _____

Current ADT 12,132

Terminal Serviceability Index (T.S.I) = 2.5

(a) Day of Opening A.D.T. (Date year)[1] 2017	12132
(b) Future A.D.T. (Date (a) + 20 years)[2]	15101
(c) Mean A.D.T. = [(a) + (b)] / 2	13,617
(d) Mean A.D.T. in One Direction = (c) / 2	6809
(e) A.D.T. Truck Percentage ("T" A.D.T.)	5.6%
(f) Mean Truck A.D.T. In One Direction (d) x (e)	381
(g) ESAL Application per 1000 Trucks and Combinations Exhibit 9-2	880
(h) Number of ESALs Per Day in One Direction (f) X (g) / 1000 (T_{18})	335

Comments:

1 Anticipated traffic when facility is opened to travel.
2 Under certain conditions this may change to a larger or shorter period.

NEW AND RECONSTRUCTED PAVEMENTS

DATA SHEET 2: DETERMINATION OF STRUCTURAL MUMBER (SN)

Design Lane ESAL Applications (T_{18})

For 2-Lane Undivided Highway

Design Lane T_{18} = 1.00 x Total T_{18}* = 1.00 x 335 = 335

For 4 (Total Lanes) Lane Divided Highway

Design Lane T_{18} = 0.90 x Total T_{18}* = 0.90 x ..... = —

Design 6 or More (Total Lanes) Divided Highway

Design Lane T_{18} = 0.80 x Total T_{18}* = 0.80 x ..... = —

Design DBR + SSV Exhibits 9-4, 9-5 & 9-7, Sections 9.3 & 9.4

Subbase Recl. Gravel DBR = 20 SSV = 6.2

Subgrade A-2-4(0) DBR = 10 SSV = 4.3

Design Structural Number (SN)

Apply Design SSV and Design Lane T_{18} from above to Design Nomograph (Exhibit 9-8)

	From Exhibit 9-8	+15%
Above Subbase .....=	3.1	3.56
Above Sugrade ..... =	3.9	4.49

*From Line (h) of Data Sheet 1.

NEW AND RECONSTRUCTED PAVEMENTS

DATA SHEET 3: PAVEMENT STRUCTURAL NUMBER (SN)

$$SN = D_{1}^{a}{}_{1} + D_{2}^{a}{}_{2} + D_{3}^{a}{}_{3} + D_{4}^{a}{}_{4} + D_{5}^{a}{}_{5}$$

Surface Course
Material: 2" SSC-12.5 $D_{1}^{a}{}_{1}$= 2 x 0.44 = 0.88

Intermediate Course
Material: 2.5 SSC-12.5 $D_{2}^{a}{}_{2}$= 2.5 x 0.44 = 1.10

Base Course
Material: 5" SBC-25.0 $D_{3}^{a}{}_{3}$= 5 x 0.34 = 1.70

Total SN Above Sub-base = 3.68 > 3.56

Sub-base (Foundation)
Material: 12" Recl. Gravel $D_{4}^{a}{}_{4}$= 12 x 0.08 = 0.96

$D_{5}^{a}{}_{5}$=

Total SN Above Sub-grade = 4.64 > 4.49

Where: D_1 = Surface Course Thickness, inches
D_2 = Intermediate Course Thickness, inches
D_3 = Base Course Thickness, inches
D_4 = Sub-base Course Thickness, inches
D_5 = Sub-base Course Thickness, inches
a_1 = Coefficient of Relative Strength, Surface Course
a_2 = Coefficient of Relative Strength, Intermediate Course
a_3 = Coefficient of Relative Strength, Base Course
a_4 = Coefficient of Relative Strength, Sub-base Course
a_5 = Coefficient of Relative Strength, Sub-base Course

Comments:

101 Walnut Street
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DESIGN DESIGNATION DATA

Job Number: 13137.01
Date: 11-Jun-19
Preparer: KB
Checked by:

Route 28 Main Street
ATR on Weds 8/9/17 used

Average Daily Traffic (ADT) =		6,254	+	5,878	=	12,132 vpd
Seasonally Adjusted ADT =		12,132	*	0.00%	=	12,132 vpd
K Factor =		475 / 12,132	+	426	=	0.07
D =		475 / (475 + 426)			=	52.7% NB
Peak Hour % Trucks =		53 / 901	+	0	=	5.9%
Daily % Trucks =		677 / 12,132	+	0	=	5.6%
Design Year ADT =	Background:	12,132	*	(1+.01)^12	=	15,101
	Project:					0
	Other Specific Projects:					0
				Total:		15,101 vpd
DHV =		15,101	*	0.07	=	1,121 vph
DDHV =		1,121	*	52.7%	=	591 vph

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Proposed Route 28 Improvements, Harwich, MA
LGCI Project: 1828
7/15/2019
by Abner Reis

Pavement Section for Route 28 Improvements (Above the subbase using Reclaimed Gravel)

Pavement Layer calculator
Pavement Thickness Calculation

Required Structural Number	3.56	(Above subbase using reclaimed gravel)
W18 (million ESALs)	0.335	(Based on Data by Stephen Rhoads of VHB)

Layer Coefficients		(use values from Ref. 2 Exhibit 9-10 and Ref. 3 Figure 3)
a1	0.44	Hot Mix Asphalt - Surface Course
a2	0.44	Hot Mix Asphalt - Intermediate Course
a3	0.34	Hot Mix Asphalt - Base Course

Calculated SN = a1*D1 + a2*D2 + a3*D3 + a4*D4 + a5*D5

Calculated SN =	3.68	(from Figure 3.1 AASHTO 1993)
D1=(Design Value)	2	Hot Mix Asphalt - Surface Course
D2=(Design Value)	2.5	Hot Mix Asphalt - Intermediate Course
D3=(Design Value)	5	Hot Mix Asphalt - Base Course

Final Pavement Layers:

Surface + Intermadiate	4.5 inches
Base	5 inches
Subbase (Stone + Gravel)	12 inches

Proposed Route 28 Improvements, Harwich, MA
LGCI Project: 1828
7/15/2019
by Abner Reis

Pavement Section for Route 28 Improvements (Above the subgrade using Reclaimed Gravel for Subbase)

Pavement Layer calculator
Pavement Thickness Calculation

Required Structural Number	4.49	(Above sub-grade)
W18 (million ESALs)	0.335	(Based on Data by Stephen Rhoads of VHB)

Layer Coefficients		(use values from Ref. 2 Exhibit 9-10 and Ref. 3 Figure 3)
a1	0.44	Hot Mix Asphalt - Surface Course
a2	0.44	Hot Mix Asphalt - Intermediate Course
a3	0.34	Hot Mix Asphalt - Base Course
a4	0.08	Crushed stone - Subbase
a5	0.08	Reclaimed Gravel - Subbase

Calculated SN = a1*D1 + a2*D2 + a3*D3 + a4*D4 + a5*D5

Calculated SN =	4.64	(from Figure 3.1 AASHTO 1993)
D1=(Design Value)	2	Hot Mix Asphalt - Surface Course
D2=(Design Value)	2.5	Hot Mix Asphalt - Intermediate Course
D3=(Design Value)	5	Hot Mix Asphalt - Base Course
D4=(Design Value)	0	Crushed stone - Subbase
D5=(Design Value)	12	Reclaimed Gravel - Subbase

Final Pavement Layers:

Surface + Intermadiate	4.5 inches
Base	5 inches
Subbase (D.G. C. S. + Gravel)	12 inches

COMMONWEALTH OF MASSACHUSETTS
MassHighway

PAVEMENT RESURFACING OVERLAY DESIGN

City/Town	HARWICH, MA		
Route No.	ROUTE 28	Highway System	
From Station	NA	To Station	NA
No. of Lanes	2		
Date Pavement Designed	7/20/2019	Pavement Designer	AR

EXISTING PAVEMENT STRUCTURE

Depth	Existing HMA Pavement Course
1 1/4"	HMA surface course
1 3/4"	HMA intermediate course
6"	HMA base course or Penetrated Stone *
—	Sub-base
—	Sub-grade

H= 9"

* Includes 3" OF MCADAMS. (BASED ON C-8).

PROPOSED MILLING

4" Proposed Milling Depth
5" Existing HMA Depth After Milling Depth **

** Includes 3" OF MACADAM.

RECOMMENDED PAVEMENT DESIGN OVERLAY THICKNESS

Depth	HMA Description
2" 455.23	SUPERPAVE (SSC-12.5)
2" 455.31	SUPERPAVE (SIC-12.5)

NEW AND RECONSTRUCTED PAVEMENTS

DATA SHEET 1: PAVEMENT STRUCTURAL DESIGN DATA

City/Town HARWICH, MA Route No. Route 28

From Station — To Station —

No. of Lanes 2 Highway System — Date 7/20/19

Current ADT 12,132

Terminal Serviceability Index (T.S.I) = 2.5

(a) Day of Opening A.D.T. (Date year)[1] 2017	12132
(b) Future A.D.T. (Date (a) + 20 years)[2]	15101
(c) Mean A.D.T. = [(a) + (b)] / 2	13,617
(d) Mean A.D.T. in One Direction = (c) / 2	6809
(e) A.D.T. Truck Percentage ("T" A.D.T.)	5.6%
(f) Mean Truck A.D.T. In One Direction (d) x (e)	381
(g) ESAL Application per 1000 Trucks and Combinations Exhibit 9-2	880
(h) Number of ESALs Per Day in One Direction (f) X (g) / 1000 (T_{18})	335

Comments:

1 Anticipated traffic when facility is opened to travel.
2 Under certain conditions this may change to a larger or shorter period.

PAVEMENT RESURFACING OVERLAY DESIGN

DATA SHEET 2: ACTUAL SN OF THE EXISTING PAVEMENT STRUCTURE

a) Soil Support Values of Existing Granular Base and/or Sub-base

Dense Graded or Penetrated Crushed Stone Sub-base	=	
Gravel Base and/or Sub-base	=	6.2
Sub-grade	=	4.3

(b) Actual Structural Number (SN) of Each Layer of the Existing Pavement Structure

(1) Depth		(2) Coefficient Exhibit 9-10	(3) RF Exhibit 9-11	SN ((1)X(2)X(3)
3"	HMA SURFLINT	0.44	0.7	0.92
3"	HMA BASE	0.34	0.7	0.71
3"	~~Dense Graded or Penetrated Crushed Stone Sub-base~~	0.24	0.7	0.50
12"	Gravel Base/Sub-base	0.05	1.0	0.60
			Total SN =	2.73

(c) Actual Structural Number (SN) Above Each Layer of the Existing Pavement Structure

Above Top Of:	SN* HMA	SN* Pentrat. Stone	SN* Sand-Bd. Stone	SN* Gravel	Total SN*
Dense Graded-Penetrated Crushed Stone Sub-base	1.63				1.63
Gravel Base and/or Sub-base	1.63	0.50			2.13
Sub-grade	1.63	0.50		0.60	2.73

*From Table (b) Above
**Accumulated SN Values from layers Above
***Gravel Base (for low volume design < 2000 adt)

PAVEMENT RESURFACING OVERLAY DESIGN

DATA SHEET 3: DETERMINATION OF HMA OVERLAY THICKNESS

(a) Required Structural Number (SN) Above Each Layer of the Existing Pavement Structure

	SN	+15%
Above Top of Dense Graded or Penetrated Crushed Stone Sub-base =		
Above Top of Gravel Base and/or Sub-base =	2.50	2.88
Above Top of Sub-grade =	3.90	4.49 *

* BASED ON

(b) SN Deficiency to be Corrected with the HMA Overlay Thickness

Above Top Of:	Required SN*	Actual SN**	SN Difference
Dense Grade or Penetrated Crushed Stone Sub-base			
Gravel Base and/or Sub-base	2.88	2.13	0.75
Sub-grade	4.49	2.73	1.76

*From (a) Data Sheet #3
**From (c) Data Sheet #2

(c) Thickness of Hot Mix Asphalt Overlay

$$\text{Depth} = \frac{\text{Largest SN Difference}}{0.44} = \frac{1.76}{0.44} = 4.00$$ Use 4" //

* SN BASED ON NOMOGRAPH PROVIDED IN THE AASHTO INTERIM DESIGN GUIDE OF PAVEMENT STRUCTURES, 1972, CHAPTER III, REVISED, 1981

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DESIGN DESIGNATION DATA

Job Number: 13137.01
Date: 11-Jun-19
Preparer: KB
Checked by:

Route 28 Main Street
ATR on Weds 8/9/17 used

Average Daily Traffic (ADT) =		6,254	+	5,878	=	12,132 vpd
Seasonally Adjusted ADT =		12,132	*	0.00%	=	12,132 vpd
K Factor =		475 / 12,132	+	426 / 12,132	=	0.07
D =		475 / (475 + 426)			=	52.7% NB
Peak Hour % Trucks =		53 / 901	+	0 / 901	=	5.9%
Daily % Trucks =		677 / 12,132	+	0 / 12,132	=	5.6%
Design Year ADT =	Background:	12,132	*	(1+.01)^12	=	15,101
	Project:					0
	Other Specific Projects:					0
				Total:		15,101 vpd
DHV =		15,101	*	0.07	=	1,121 vph
DDHV =		1,121	*	52.7%	=	591 vph

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Proposed Route 28 Improvements, Harwich, MA
LGCI Project: 1828
7/9/2019
by Abner Reis

Pavement Section for Route 28 Improvements

For Alternative 3: Two layers of Reclaimed Asphalt Pavement (RAP) over the existing Base layer of Hot-Mix Asphalt (HMA) over existing layer of Mcadam over existing gravel (Subbase) - Mill depth: 4 inches

Pavement Layer calculator
Pavement Thickness Calculation

Structural Number	**3.3**	**Required Structural Number (from Figure 3.1 AASHTO 1993)**
W18 (million ESALs)	**2.5**	**(Based on Data by Stephen Rhoads of VHB)**

Layer Coefficients		(use values from Ref. 2 Exhibit 9-10 and Ref. 3 Figure 3)
a1	0.44	*RAP*– Hot Mix Asphalt - New Surface Layer
a2	0.44	*RAP*– Hot Mix Asphalt - New Intermediate Layer
a3	0.238	Hot Mix Asphalt - Existing Base Layer used reduction factor RF = 0.7
a4	0.168	Hot Mix Asphalt - Existing Base Layer used reduction factor RF = 0.7
a5	0.05	Existing Gravel (subbase) - Does not meet MassDOT Specs.

Drainage Coefficients (from Table 2.4 AASHTO 1993)

m2	1.05	Drainage factor of Layer 2	Fair Drainage with saturation 1 to 5% of the time
m3	0.8	Drainage factor of Layer 3	fair Drainage with saturation 5 to 25% of the time

SN = a1*D1 + a2*D2*m2 + a3*D3*m2+ a4*D4*m3

SN =	3.30	(from Figure 3.1 AASHTO 1993)
D1=(assumed)	2.0	*RAP*– Hot Mix Asphalt - New Surface Layer
D2=(assumed)	2.0	*RAP*– Hot Mix Asphalt - New Intermediate Layer
D3=(assumed)	2.0	Existing Base Layer: 2.0 inches
D4=(assumed)	3.0	Existing Mcadam Layer: 3.0 inches, total thickness = 9 inches based on core No. 8
D4 = (calculated)	**11.7**	**(Required existing Gravel thickness)**

Final Pavement Layers:			SAY,		
Surface	2.0 inches		2.0 inches		
Intermediate	2.0 inches		2.0 inches		
Base	2.0 inches		2.0 inches		
Mcadam	3.0 inches		3.0 inches		
Subbase	11.7 inches		12.0 inches	**SN = 3.31**	
		=	1.00 feet	**(PROVIDED)**	

8/5/2019

COMMONWEALTH OF MASSACHUSETTS
MassHighway

PAVEMENT RESURFACING OVERLAY DESIGN

City/Town	HARWICH, MA		
Route No.	Route 28	Highway System	
From Station	NA	To Station	NA
No. of Lanes	2		
Date Pavement Designed	7/20/2019	Pavement Designer	AR

EXISTING PAVEMENT STRUCTURE

Depth	Existing HMA Pavement Course
2 3/4"	HMA surface course
2 1/2"	HMA intermediate course
3 1/4"	HMA base course or Penetrated Stone
12"	Sub-base
	Sub-grade

H = 8.5"

PROPOSED MILLING

4" Proposed Milling Depth
4.5 Existing HMA Depth After Milling Depth

RECOMMENDED PAVEMENT DESIGN OVERLAY THICKNESS

Depth		HMA Description
2"	455.23	SUPER PAVE (SSC - 12.5)
2"	455.31	SUPER PAVE (SIC - 12.5)

NEW AND RECONSTRUCTED PAVEMENTS

DATA SHEET 1: PAVEMENT STRUCTURAL DESIGN DATA

City/Town HARWICH, MA Route No. ROUTE 28

From Station — To Station —

No. of Lanes 2 Highway System ~ Date 7/20/19

Current ADT 12,132

Terminal Serviceability Index (T.S.I) = 2.5

(a) Day of Opening A.D.T. (Date year)[1] 2017	12132
(b) Future A.D.T. (Date (a) + 20 years)[2]	15101
(c) Mean A.D.T. = [(a) + (b)] / 2	13,617
(d) Mean A.D.T. in One Direction = (c) / 2	6809
(e) A.D.T. Truck Percentage ("T" A.D.T.)	5.6%
(f) Mean Truck A.D.T. In One Direction (d) x (e)	381
(g) ESAL Application per 1000 Trucks and Combinations Exhibit 9-2	880
(h) Number of ESALs Per Day in One Direction (f) X (g) / 1000 (T_{18})	335

Comments:

1 Anticipated traffic when facility is opened to travel.
2 Under certain conditions this may change to a larger or shorter period.

PAVEMENT RESURFACING OVERLAY DESIGN

DATA SHEET 2: ACTUAL SN OF THE EXISTING PAVEMENT STRUCTURE

a) Soil Support Values of Existing Granular Base and/or Sub-base

Dense Graded or Penetrated Crushed Stone Sub-base	=	—
Gravel Base and/or Sub-base	=	6.2
Sub-grade	=	4.3

(b) Actual Structural Number (SN) of Each Layer of the Existing Pavement Structure

(1) Depth		(2) Coefficient Exhibit 9-10	(3) RF Exhibit 9-11	SN ((1)X(2)X(3)
5.25	HMA SURFLINT	0.44	0.7	1.62
3.25	HMA BASE	0.34	0.7	0.77
	Dense Graded or Penetrated Crushed Stone Sub-base			
12"	Gravel Base/Sub-base	0.08	1.0	0.96
			Total SN =	3.35

(c) Actual Structural Number (SN) Above Each Layer of the Existing Pavement Structure

Above Top Of:	SN* HMA	SN* Pentrat. Stone	SN* Sand-Bd. Stone	SN* Gravel	Total SN*
Dense Graded-Penetrated Crushed Stone Sub-base					
Gravel Base and/or Sub-base	2.39	—	—		2.39
Sub-grade	2.39	—	—	0.96	3.35

*From Table (b) Above
**Accumulated SN Values from layers Above
***Gravel Base (for low volume design < 2000 adt)

PAVEMENT RESURFACING OVERLAY DESIGN

DATA SHEET 3: DETERMINATION OF HMA OVERLAY THICKNESS

(a) Required Structural Number (SN) Above Each Layer of the Existing Pavement Structure

	SN	+15%
Above Top of Dense Graded or Penetrated Crushed Stone Sub-base =		
Above Top of Gravel Base and/or Sub-base =	2.5	2.88
Above Top of Sub-grade =	3.90	4.49 *

(b) SN Deficiency to be Corrected with the HMA Overlay Thickness

Above Top Of:	Required SN*	Actual SN**	SN Difference
Dense Grade or Penetrated Crushed Stone Sub-base			
Gravel Base and/or Sub-base	2.88	2.39	0.49
Sub-grade	4.49	3.35	1.14

*From (a) Data Sheet #3
**From (c) Data Sheet #2

(c) Thickness of Hot Mix Asphalt Overlay

could use 3"

Depth = Largest SN Difference / 0.44 = $\frac{1.14}{0.49}$ = 2.59" BUT FOR CONSISTENCY USE 4"

* SN BASED ON NOMOGRAPH PROVIDED IN THE AASHTO INTERIM DESIGN GUIDE OF PAVEMENT STRUCTURES, 1972, CHAPTER III, REVISED, 1981.

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DESIGN DESIGNATION DATA

Job Number: 13137.01
Date: 11-Jun-19
Preparer: KB
Checked by:

Route 28 Main Street
ATR on Weds 8/9/17 used

Average Daily Traffic (ADT) =		6,254	+	5,878	=	12,132 vpd
Seasonally Adjusted ADT =		12,132	*	0.00%	=	12,132 vpd
K Factor =		475 / 12,132	+	426 / 12,132	=	0.07
D =		475 / (475 + 426)			=	52.7% NB
Peak Hour % Trucks =		53 / 901	+	0 / 901	=	5.9%
Daily % Trucks =		677 / 12,132	+	0 / 12,132	=	5.6%
Design Year ADT =	Background:	12,132	*	(1+.01)^12	=	15,101
	Project:					0
	Other Specific Projects:					0
				Total:		15,101 vpd
DHV =		15,101	*	0.07	=	1,121 vph
DDHV =		1,121	*	52.7%	=	591 vph

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Proposed Route 28 Improvements, Harwich, MA
LGCI Project: 1828
7/9/2019
by Abner Reis

Pavement Section for Route 28 Improvements

For Alternative 2: Two layers of Reclaimed Asphalt Pavement (RAP) over the existing Base layer of Hot-Mix Asphalt (HMA) over existing gravel (Subbase) - Mill depth: 4 inches

Pavement Layer calculator
Pavement Thickness Calculation

Structural Number	**3.3**	**Required Structural Number (from Figure 3.1 AASHTO 1993)**
W18 (million ESALs)	**2.5**	**(Based on Data by Stephen Rhoads of VHB)**

Layer Coefficients		(use values from Ref. 2 Exhibit 9-10 and Ref. 3 Figure 3)
a1	0.44	*RAP*- Hot Mix Asphalt - New Surface Layer
a2	0.44	*RAP*- Hot Mix Asphalt - New Intermediate Layer
a3	0.238	Hot Mix Asphalt - Existing Base Layer used reduction factor RF = 0.7
a4	0.08	Existing Gravel (subbase) - Does not meet MassDOT Specs.

Drainage Coefficients (from Table 2.4 AASHTO 1993)

m2	1.05	Drainage factor of Layer 2	Fair Drainage with saturation 1 to 5% of the time
m3	0.8	Drainage factor of Layer 3	fair Drainage with saturation 5 to 25% of the time

SN = a1*D1 + a2*D2*m2 + a3*D3*m2+ a4*D4*m3

SN =	3.30	(from Figure 3.1 AASHTO 1993)
D1=(assumed)	2.0	*RAP*- Hot Mix Asphalt - New Surface Layer
D2=(assumed)	2.0	*RAP*- Hot Mix Asphalt - New Intermediate Layer
D3=(assumed)	4.5	(Assumed base thickness based on core No. 3 - Total Thickness = 8.5 inches)
D4 = (calculated)	**6.5**	**(Required existing Gravel thickness)**

Final Pavement Layers:			SAY,		
Surface	2.0 inches			2.0 inches	
Intermediate	2.0 inches			2.0 inches	
Base	4.5 inches			4.5 inches	
Subbase	6.5 inches			12.0 inches	**SN = 3.70**
			=	1.00 feet	**(PROVIDED)**

8/5/2019

DOCUMENT A00805

TOWN OF DENNIS WATER DISTRICT

WATERWORKS MATERIAL SPECIFICATIONS

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SPECIFICATIONS FOR WATERWORKS MATERIAL

DENNIS WATER DISTRICT
P O BOX 2000
80 OLD BASS RIVER RD
SOUTH DENNIS MA 02660-1613

Water Distribution Pipe

All new water main pipe shall be Ductile Iron Pipe, conforming with AWWA/ANSI Specifications C151/A21.51 (most recent edition). Thickness class 52 with push-on joints, complete with plain rubber gaskets and joint lubricant, conforming with AWWA/ANSI Specifications C111/A21.11 (most recent edition), cement lined with paint seal coat, tar-coated on the outside, conforming with AWWA/ANSI Specifications C104/A21.4 and C150/A21.50. Seal coat shall be NSF-61 approved.

Fused High Density Polyethylene Pipe (HDPE) water main may be used in special circumstances and may only be used under special approval in applications where Ductile Iron may not be suitable. HDPE pipe shall meet the latest version of AWWA C901/C906, ASTM D2239, ASTM D2737, ASTM D3035 and F714. All requests will be reviewed and approved by the District.

Fittings

All new fittings shall be tar coated, double cement lined, short body ductile iron fittings, all fittings must be AMERICAN MADE ONLY and shall be in accordance with and meet all applicable terms and provisions of ANSI/AWWA C153/A21.10.93, current revision. NSF-61 approved.

Restrained Joints

All new fittings must use restrained joint glands and be Meg-A-Lug type as manufactured by EBBA Iron, Series 2100, or approved equal. Some applications will require thrust blocks in addition to retainer glands.

Fire Hydrants

All Hydrants shall have 5 1/4" valve opening (open left), 6" Mechanical joint connection to main , 5' depth of Bury, 2 - 2 ½" NST steamer nozzle caps and 1 4 ½" pumper connection, painted Dennis's standard white bonnet and nozzle caps, high luster fire red enamel barrel to grade line, and black tar coated below grade line, Double inner and outer positive automatic drains, at least 250 lbs. service pressure, dry top model with positive self-oiling system, must have reversible main valve and shall conform to AWWA C502. Hydrants to be Mueller Super Centurion 250 traffic model or American Darling B-84-B5.

Gate Valves

All gate valves shall meet AWWA specifications C509, open left, 2" square operating nut, Triple "o" ring seal stuffing box, 250-pound operating pressure, The resilient wedge valve shall be 100% elastomer-encapsulated with extra-long polymer guides to stabilize the wedge. Valve interior & exterior surfaces shall be Epoxy coated which meets AWWA C550 standards. Valve shall be Mueller A-2360-20. Owner is standardized on these valves.

Tapping Sleeves & Gate Valve

Tapping sleeves shall be Cast Iron Body w/ test plugs, standard mechanical joint ends complying with AWWA standards, sleeves to be Mueller H-615. Owner is standardized on these fittings.

Valves to be resilient seat type tapping valves, one end flange to attach to tapping sleeve the other to be mechanical joint for ductile iron pipe, 250 psi maximum working pressure. Valves to be Mueller T-2360. Owner is standardized on these valves.

Stainless Steel Tapping sleeves, w/ test plug, S. S. Flange, Gasket to be full 360-degree seal, Nuts, Bolts and Washers to be stainless. Working pressure 250 psi. Sleeve to be Mueller H-304.

Gate and Service Boxes

All service Boxes shall be 4 ½’ - 5 ½’ Domestic Erie Service Boxes both small base and large base w/plug cover. Each box shall include a ½" x 30" SS service box rod.

All Gate Boxes shall be 2 piece sliding type, cover marked “WATER”, top section 24" bottom 30", 5 1/4" shaft. Boxes to be North American Made, Bibby Manufacturing or equal.

Corporation Stops

Compression Corporations shall be, inlet threads conforming to AWWA C-800 latest revision; outlet connection shall be of the conductive compression type for type "K" copper service pipe or CTS PE Plastic Tubing SDR-9 having same O.D. fitting, to be Mueller B-25008N, Ford FB1000.

Curb Stops

Curb stops shall be, stop and waste, with waste hole, open ¼ turn to left, inlet and outlet connection shall be the conductive compression type for type "K" copper service pipe of CTS PE Plastic Tubing SDR-9 having same O.D. fitting to be Mueller H-15219N, Ford BC44.

Service Saddles

Service saddles shall be ductile Iron with 12 mill Epoxy Coating with 2 Stainless Steel Straps. Saddles to meet AWWA/ANSI Standard C800 and NSF61 for use in potable water. All saddles shall have the AWWA CC standard thread. Saddles shall be manufactured by Smith Blair series 317, Mueller DR 2S or equal.

Water Service Tubing

All water service tubing shall be a minimum of 1” in diameter and be Polyethylene (PE) Water service pipe meeting AWWA C901-08 standard for copper tubing sized (CTS) pipe rated for 200 PSI minimum. Tubing must be ANSI/NSF 61 certified for use with potable water. #12-gauge solid blue tracer wire shall be used with all PE tubing put into service.

Angle Meter Stops

All meter valves shall be Right Angle Meter Stop Compression Connection for CTS O.D. tubing. Fitting to be Mueller B-24258-1N with handles, Ford BA43-342W-HB-34-Q-NL.

DOCUMENT A00806

TOWN OF HARWICH –
WATER DEPARTMENT

WATER RULES AND REGULATIONS

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Town of Harwich, Massachusetts

Water Department

Water Rules and Regulations

Adopted by

Board of Water & Wastewater Commissioners

Updated 6/16/22

Introduction

Under authority of the General Laws, Acts of the State Legislature of the Commonwealth of Massachusetts, the following rules and regulations are hereby established by the Town of Harwich in the county of Barnstable, and hereby made and shall be considered a part of the contract between the Harwich Water Department and every person or persons liable for water charges or other charges subject to our jurisdiction, and the filing of an application to take water, or the taking of water, shall be considered express assent to be bound by these rules and regulations and any other changes which may hereinafter be made.

By the virtue of Massachusetts General Law Chapter 41 and other authority and powers, the Water/Wastewater Commissioners of the Town of Harwich, Massachusetts establish the following Rules and Regulations relating to the provision of water by the Harwich Water Department. All customers on the Harwich Water System are bound by these Rules and Regulations and future amendments thereto and are further bound to take water only for purposes stated in an application made by the customer for water service, made to and approved by the Harwich Water Department.

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Section 1: Definitions

1.1 **Backflow** – The flow of water or other fluids, mixtures or substances into the distribution pipes of a potable water source.

1.2 **Backflow Prevention Device** –An approved mechanical device designed to prevent Backflow.

1.3 **Contractors and Developers** – Contractors and Developers shall mean an individual, firm, corporation or any entity who installs water mains and their appurtenances.

1.4 **Corporation Stop** – A shut off valve near the main that is used to isolate water from the main from the service connection.

1.5 **Cross Connection** – An actual or potential connection between a distribution pipe of potable water supplied by the public water system and any waste pipe, soil pipe, sewer, drain or any other contaminated or hazardous source. Without limiting the generality of the foregoing, the term "cross connection" shall also include any bypass arrangement, jumper connection, removal Section, swivel or changeover connection and any other temporary or permanent connection through which Backflow can or may occur.

1.6 **Curb Stop** – Part of the water service, usually located at or near the owner's property line, where the Town has complete access and control to shut off the water supply to the premises.

1.7 **Customer** – The term "customer" shall mean the individual, firm, corporation or any entity listed as the owner of the property. Customer shall mean the Owner of the Premise / Property, who shall be responsible for payment of bills for charges for water and sewer service to the property whether or not the premises is occupied by the Owner or the Owner's authorized representative.

1.8 **Department** – "Department" shall mean the Town of Harwich Water Department.

1.9 **Irrigation/Sewer Deduct Meter** – Meter used for the purpose of determining water use for lawn sprinklers or other approved process use that are either owned and maintained by the Water Department or the Owner of the Property.

1.10 **Main** – A "main" shall mean the supply pipe laid in the street from which property connections are made. The Department shall consider part of the main to include from the corporation stop to the street side of the curb stop.

1.11 **Meter Pit** – An underground vault enclosing a meter.

1.12 **Service** – A "service" shall mean the pipe running from the curb stop and a curb box into property. Customer Water Service shall be defined as the entire water service excluding any corporation stop and/or valves directly associated with the water main. The Customer will be assessed for any repairs, replacements, or other services rendered to the Customer Water Service.

1.13 Superintendent – "Superintendent" shall mean the Superintendent of the Water Department or the Superintendent's designee.

Additional Definitions

Additional definitions as applicable are adopted as set forth in Massachusetts Universal State Plumbing Code, 248 CMR and in the Massachusetts Board of Fire Prevention Regulations, 527 CMR.

Section 2: General Provisions

2.1 Contractual Agreement

Acceptance of service shall bind the customer to the laws, rules, regulations and policies of the Commonwealth of Massachusetts, the Town of Harwich and the Harwich Water Department, and shall form a part of the contract with every customer and shall be adhered to and govern the relations between the Department and the customer who is connected to the municipal water system and is bound hereby.

2.2 Application for Water Service

All applications for any new installations, alterations, replacements or change to water service shall be submitted for approval to the Superintendent or Superintendent's designee to the water office by the owner of the property or their authorized agent in writing. All applications shall include an engineered plan stamped by the Board of Health locating the septic system on the property. A building permit must be acquired before a service tap can be furnished.

2.3 Ownership Responsibilities & Liability

All pipes, valves, taps and other appurtenances between the municipal water main and the curb stop up to the property line are the property and responsibility of the Department. All piping, valves, equipment and any other appurtenances "downstream" of the curb stop are the property and responsibility of the customer although such items are required to meet the standards and specifications of the Department. An exception to the above is the primary water meter, which will always be the property of the Department.

2.4 Responsibility for Charges

Customers of water shall be charged with and held responsible for all water passing through their water meter. All charges remain with the account until paid regardless of sale.

2.5 Availability of Municipal Water

Application will be accepted for review subject to there being an existing municipal water main in a street or right-of-way abutting the premises to be served, but approval of an application shall in no way obligate the Department to extend its mains to provide water to a property.

2.6 Location, Plans and Specifications

The Department has the exclusive right as to the location of any and all water services, fire service lines, hydrants and water meters on the distribution system. Plans for said construction and or replacement shall be submitted with the application showing the curb

box connection, the service line to the structure and the meter location. In the event that more than one meter is serviced by one service line, there will be a manifold used to provide a separate meter hookup for each designation. This must be provided on each preliminary plan before final approval is given. Any service line over 100' must have a meter pit closest to the curb stop or property line before their meter installation is approved.

2.7 Construction

Owner of property desiring construction, alterations or attachments connected with the water supply shall submit plans and specifications for the proposed work to the Superintendent for inspection and approval and for a determination as to whether the same is permissible. The Superintendent shall determine the terms, charges and conditions under which the proposed use shall be permitted.

2.8 Private Wells

All private wells used for irrigation shall not be connected to the Harwich water system or domestic plumbing at any time. Should any violation be noted, the Department reserves the right to shut the water off until the situation is resolved and all fees have been paid.

2.9 Right of Entry

Owner or occupants of any premises served by the Harwich water system shall, upon presentation by Department personnel of their credentials, authorize entry to their premises without a warrant for the purpose of inspecting and surveying their water system for new installation, cross connection, leak detection or to remove, repair, read or replace the water meter at any time the department deems necessary. When such access is refused, the water shall be shut off and shall not be turned on until such access has been allowed and fees have been paid.

2.10 Fires

In the event of a large fire all customers shall curtail the use of water in the affected area.

2.11 Conditions under Which Service is Furnished

The Town does not guarantee constant pressure or uninterrupted service, nor does it assure the customer either a full volume of water or the required pressure necessary to effectively operate hydraulic elevators, sprinkler systems or other appliances, the same being subject to all the variable conditions that occur in the supply of water from the Town's water system.

2.12 No Liability for Interruption of Service

No customer shall be entitled to damages or to have payment refunded for any interruption of supply, occasioned by accident to any portion of the works, 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 Department, such as excessive drought, excessive use of and waste of water by customers or by leaks or defects in the pipes or appliances owned by customer or other customers.

2.13 No Liability for Dirty Water

The Town shall not be responsible for damages caused by dirty water resulting from opening or closing of any gate, use of any hydrant, the breaking of any pipe, or maintenance of the water system.

2.14 No Liability for Customer's Pipes

The Town assumes no liability for conditions, which exist in customer's pipes and cause trouble coincident with or following the repairs of any main, service pipe, meter or other appliances belonging to the Department.

2.15 No Liability for Collapsed Boilers, Etc.

The Department reserves the right at any time and without notice to shut off the water in mains for the purposes of making repairs, extensions or for other necessary purposes. Customers having boilers or other appliances on their premises depending on the pressure in pipes to keep them supplied with water are hereby CAUTIONED against danger from these sources and are required to provide, at their own expense, suitable safety appliances to protect themselves against such danger as per Massachusetts Drinking Water Regulations 310 CMR 22.22. In any event, it is expressly stipulated that the Department will not be liable for any damage resulting from water having been shut off either through accident or necessity.

2.16 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 Department shall endeavor to give timely notice to as many customers affected thereby as time and the character of the repairs or the accident will permit and shall, so far as practical, use its best efforts to prevent inconvenience and damage arising from any such cause. However, failure to give such notice shall not render the Department responsible or liable for any damages that may result from the shutting off of the water or any coincident conditions.

2.17 Restriction of Water Use

The Department reserves the right in periods of declared drought or emergencies or when, by Declaration of a State of Water Emergency under Massachusetts General Laws Chapter 21G are deemed essential to the protection of the public health, safety and welfare, to restrict water supply for secondary or non-essential purposes such as watering of lawns and gardens (either by hand or sprinkler) and vehicle washing (EXCEPT for sanitary purposes such as rubbish trucks). The Department shall have the right to fix the hours and periods when water may be used for such purposes. Any such restrictions will be promulgated by means of Special Water Regulations or By-Laws adopted by the Harwich Board of Water/Wastewater Commissioners. During this time the filling of swimming pools, hydro seeding, soaker hoses and power washing are strictly prohibited.

2.18 Easements

In any case where an existing municipal water main or appurtenances are located on private property and a recorded easement does not exist, an implied easement is deemed to exist with the same force and effect as a recorded one.

2.19 Liability for Freeze Ups

It is the responsibility of all water service customers to ensure that all plumbing, fixtures, meters and appliances are protected from freezing. The customer shall make any repairs, which may be necessary to prevent leaks and damage. Neither the Town nor the Department shall be held responsible for loss or damage to any plumbing, fixtures, meters or appliances due to freezing and any repairs to same made by the Department shall be paid for by the customer.

Section 3: Charges

3.1 Establishment of Rates

Rates chargeable for water and payable by the customer shall be determined by the Harwich Board of Water/Wastewater Commissioners as instructed under Massachusetts General Laws Chapter 41 § 69B.

3.2 Bills Payable

Bills for water service are due and payable upon issuance of the bill. The failure of the customer or his/her agent to receive notice of their water bill or other related charges does not relieve them from the obligation for payment or from the consequences of nonpayment. All charges are due and payable upon issuance of billing and are past due THIRTY (30) DAYS after the date of the billing. The records of water supplied in the Department shall be sufficient basis for billing and to commence action for nonpayment against present and or consequent owners of record.

3.3 Overdue Charges

Any overdue charge including late fees or interest charges may be collected by any legal means, including a lien on the property or shutting off the water service as an action of contract as provided under the provisions of Massachusetts General Laws Chapter 40 § 42A-42F.

3.4 Payment Plans

If a payment plan is requested, the account must not be in arrears by more than two billing periods. If a payment plan is requested after the original billing due date, a late penalty will be assessed to the account. If the terms of the payment plan agreement are not kept, the plan becomes void.

3.5 Shut-Off for Non-Payment

The Water Department may shut off the flow of water to a property if the water customer has failed or refused to pay the lawful charges associated with the account. A water shut-off notice will be issued by means of a notice card left at the property and or by certified postal mail directed to the last address furnished to the department giving at least 36 business hours' notice as required by law. If the full balance is not paid within the 36 business hours, the water service may be terminated by department personnel between the hours of eight anti meridian and four post meridian, Monday through Friday. After the service has been shut off, the account will be assessed a reconnection fee to have the water reinstated and any associated administrative costs.

The balance must be paid in full before the water service can be reinstated. If the turn on is requested after regular operating hours, the after-hours rate will be assessed and the

balance is to be paid no later than the next business day. If the water cannot be turned off due to special circumstances, a lien will be placed against the property. The property owner or tenant may at any time appear before the Board of Water/Wastewater Commissioners. The property owner may also appeal a Board's decision to the Appellate Tax Board within three months of the date hereof pursuant to the provisions of G. L. c. 59, §§ 64 to 65B, inclusive.

3.6 Collection of Miscellaneous Water Charges

All department services and materials rendered at a property shall be subject to the same conditions as charges for water.

3.7 Delinquent Accounts

No person who owes an overdue bill shall be entitled to further use of water or services at the same or any other premises until such charges are paid in full, together with any associated fees.

3.8 Claims for Adjustments on Bills

All claims for adjustments of water bills shall be made within thirty (30) days of the billing due date. Abatements will be made for clerical errors, misreads or failure of Department equipment. Abatements will not be issued for water leaks or high consumption, unless otherwise determined by the Board of Water/Wastewater Commissioners.

When determining abatements for domestic water leaks (excluding irrigation leaks), usage from three similar usage quarters can be averaged and any usage above may be considered for adjustment at the first-tier rate as a one-time disaster forgiveness occurrence.

3.9 All Water to be Metered and to be Paid

All water must be metered and paid for whether used or wasted. A minimum charge shall be assessed for water service from the date the water is connected to the town water supply, unless otherwise determined by the Board of Water/Wastewater Commissioners.

3.10 Leaks

The Department shall have the right to shut off water supplied to any property where a leak exists or is believed to exist. Any such leaks must be repaired and must pass inspection by the Department before water will be restored. In addition, each customer shall be responsible for the cost of any repairs to any private portions of the water system as well as the cost of water.

3.11 Service Tap Renewals or Replacements

In the event a new service tap is required or requested it shall be considered a service renewal using the existing main tap. If a new main tap is needed, applicable charges will apply.

Section 4: Meters

4.1 Meter Installation

A shut-off valve at the meter inlet shall be the first fitting inside of a serviced building and shall be installed by the Department. A ball valve as the first fitting "downstream" of the meter shall be installed at the expense of the customer. The meter shall be located in a clean, dry, warm and accessible location. A certified Plumber must complete any connection past the meter. Any service line over 100' must have a meter pit closest to the curb stop or property line before their meter installation is approved.

The appropriate size, type and location of the meter shall be determined and approved by the Department and based on the AWWA Manual Sections M22 and M6 or as amended. All meters will be remote read as required by the Department. Any meter larger than 2" must be a compound meter. Meter and installation are at the expense of the owner. Routine meter maintenance shall be provided by Department.

4.2 Customers to Pay for Meter Repairs

Meter repair or replacements due to damage caused by accident or negligence shall be charged to the customer.

4.3 Meters Purchased from Department

All water meters must be purchased from the Department. Only these meters may be used on its water system.

4.4 Meter Removal

Water meters shall not be removed from the water system by anyone other than Department personnel. Once a meter has been removed, it is the responsibility of the owner to maintain custody of the water meter at the property. Violation of this rule shall be considered meter tampering and be subject to applicable fines.

4.5 Meter Pits

Installation of meter pits shall be at the customer's expense. When it is necessary or expedient to locate the meter in an underground box or vault approved by the Department, the customer shall bear the expense of same and shall bear the responsibility of reasonable care and maintenance of said box or vault such as keeping it clean and dry. The customer shall not be permitted to cover the pit or in any way hinder access to the water meter. Meter pit covers must remain exposed at all times. Pits shall be furnished with inlet and outlet connections that accept a variety of Mueller underground service connection fittings that meet requirements of the latest revised AWWA Standard C800-89. For the purpose of standardization, the meter pit shall be Mueller with specifications determined by the Superintendent or Superintendent's designee.

4.6 Meter Tampering

A penalty or charge will be levied for each incident of tampering, installation alteration, and removal of a water meter by anyone not authorized by the Department. In addition, the Department reserves the right to pursue further prosecution in accordance with Massachusetts General Law Chapter 165 § 11.

4.7 Water Department's Right to Change Meters

If, in the opinion of the Superintendent, a meter does not fit the conditions of the service installation, the Department has the right to change such meter. Such a change shall be made in accordance with current regulations and paid by the customer.

4.8 When Meter is Out of Order

If a meter fails to register, the customer shall be charged based on the best available information concerning water use.

4.9 Repairing Meters

The Department shall have the right to remove, repair or replace any meter at any time it so determines.

4.10 Access to the Meter

It shall be the duty of all customers to ensure that meters on service connections be readily accessible at all times to Department personnel. Failure to provide access or remove any obstruction which prevents access to the meter within three days after being notified by the department shall cause the water to be shut off to the premises and it shall not be turned on until all obstructions are removed, all regulations complied with, and all expenses for shutting off and turning on the water are paid.

4.11 Residential Meter Testing vs. Testing Meters by Request

If during any dispute where a water meter reading is being contested, a customer may request to have the meter sent to a certified testing facility at the owner's expense. Should the Department request to have the meter tested, it will be at the Department's expense. If as a result of the test the meter is found to register over two (2) percent more water than actually passes through it, the meter shall be replaced. At that time, they may receive abatement. Their bill will also be adjusted in accordance with the result of this test.

However, if it appears that the customer was charged or has paid for less water than they should have been charged or should have paid, they 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 Department. If the Department chooses to change a meter at any time, it is not an admission that there is something wrong with the present meter.

4.12 Commercial/Industrial Meter Testing

The Superintendent can require that a large commercial or industrial meter be tested if there is reason to believe that said meter is not registering water accurately. Based on AWWA Standard C700, all meters shall be tested by agents or representatives of the Department.

Commercial/Industrial Meter Testing will be done at the expense of Department. If Superintendent requires such testing, the owner will be notified via certified mail. The owner will have 10 business days from receipt of letter to notify the Water Department of what action has been taken for the repair or replacement of the meter and 20 business days to have the actual repair or replacement completed. Failure to respond to the first notice will result in a second notice informing the owner that if in 10 business days they have not responded, the water service to the building will be shut off. The billing will be based on the highest quarterly usage out of the last four billing cycles.

4.13 Irrigation/Sewer Deduct Meter

Properties served by the Towns wastewater collections system may install, at the owner's expense, a second meter to monitor outdoor usage. Properties electing to install an irrigation/sewer deduct meter will have two (2) water meters, one meter will register all water entering the property and the second meter capturing only outdoor usage not contributing flow to the municipal sewer system. Outdoor usage captured by the second meter will NOT be subject to sewer usage fees. Irrigation/Sewer Deduct meters shall be installed in accordance with the Department Irrigation/Sewer Deduct Meter Policy.

Section 5: Service, Pipes and Fixtures

5.1 Service Pipes

Customers must keep their water pipes and fixtures in good repair and protected from freezing temperatures at their own expense. They shall be held responsible for any damage resulting from their failure to do so. They shall prevent any waste of water.

5.2 Joint Use of Pipes or Trenches

Water service pipes will NOT under any circumstances be placed in the same trench with other pipes, conduits or similar structures such as gas lines, electrical conduit, sewer pipe, etc.

5.3 Portion of Service Pipe Furnished by Water Department

New service connections shall be made by the Department and brought to the meter. The Customer shall be charged the current rate for tapping and connection fees.

5.4 Right to Repair and Replace Service Pipes

The pipe from the property line to the meter is the responsibility of the customer and all the repairs to the same shall be made at customer's expense unless covered by the Service Tight Protection plan. All service pipes between the street line and the meter must be repaired or replaced by the Department when it deems it necessary for the protection of the supply or the supplying of satisfactory water service. The cost shall be charged to the customer. The Department also reserves the right to assess the condition of "owner responsibility" service piping, valves, etc. on a periodic basis in order to determine the functional and physical adequacy of the stated appurtenance and, if such is determined to be inadequate, the Water Superintendent may order the owner to replace such at the owner's expense. Failure to take corrective actions as prescribed by the Superintendent will be cause for termination of water service to those premises. In addition, each customer of water furnished by the Department shall be responsible in case of a break or a leak in the service pipe for both water loss and cost of repairs. Costs will be actual or estimated as determined by the Department.

5.5 Temporary Service from Adjacent Premises

When permission to open a permanently paved street is refused by the Highway Department or when, for any physical reason, it is impossible to open a street and the applicant requests that water be furnished temporarily from an adjacent service, the same may be done at the expense of the customer if approved by the Superintendent.

5.6 Materials on Private Premises
All fittings supplied by the Department to the customer shall be billed to the customer.

5.7 Irregular Service
Services that are not used for permanent and or habitable structures must be approved by the Department before any use is allowed.

5.8 One Service to Each Unit
The Department will only allow one (1) service connection per unit. A meter shall be placed in each individual unit located in a building. This includes all commercial or industrial buildings, new Condos and Town Houses.

5.9 Requests for Turning On or Shutting Off Water
Requests for turning on or shutting off a water service for repairs shall be made during normal business hours, except in case of an emergency. Customers shall be charged for turn on and turn off of each such service. Only Department personnel shall open and or close curb stops. Should the customer require after hour turn on or turn off, they shall be billed at the overtime rate. The Department shall not be held responsible for or perform any work downstream of meter.

5.10 Seasonal Service
All seasonal service requests for water turn on or shut off will require a two-week notice for completion (the two-week notice begins in advance of water turn on request date and for shut off requests, the two-week window begins after the property has been drained) and will be done between the hours of 7:00 a.m. and 3:30 p.m., Monday through Friday except for emergencies. All prior bills, charges, fees and liens must be paid in full prior to service being activated. If a seasonal customer fails to schedule their 2-week notice and wishes to pay the out of rotation fee, they shall be billed at the overtime rate. See applicable Rates and Fees. The owner shall be responsible for having the service properly winterized prior to scheduling the water to be shut off by the Department.

5.11 No Pipes Furnished in Winter
No new water mains shall be installed from November 15th through March 15th unless weather permits. The only other exception allowed are circumstances deemed an emergency. Applications must be received by November 1st for installation by November 15th. Installation of services beyond the end of an existing water main shall not be allowed. The main must be extended (including necessary hydrants and appurtenances) to the furthest limit of the customer's property at their expense. Water mains shall be looped when required by the Superintendent.

5.12 Service Pipe Trenches
Service pipes shall not be placed within 10 feet of any other utilities, except under special conditions and with the approval of the Superintendent. The Department shall not be responsible for damage to other utilities laid within 10 feet of a water service or water main.

5.13 Standby Fire Protection
Customers desiring standby fire protection must submit a water service application to the Department. The Department shall furnish water for a fire protection service in

accordance with the specifications for that sprinkler system. All equipment for this purpose shall be installed entirely at the expense of the customer and with the approval of the Superintendent. Such pipes shall not be used for supplying water for any other purpose than the fire system. The fire system must be arranged so that Department personnel can make easy inspection. Whenever it is considered necessary for the protection of the water supply and in the interest of the Town, the Superintendent shall have the right to require the installation of meters, alarms, backflow devices or other accessories. The installation and upkeep of such equipment shall be done so at the customer's expense. All installations and testing must be completed in accordance with Massachusetts General Laws.

5.14 Water Supply Availability

The Department shall make the determination as to the availability of adequate water supply for such services. The Department shall not bear responsibility to extend existing water mains in order to provide adequate water supply for such service. No fire service connection shall be less than a six (6) inch diameter and shall not be used for anything other than fire protection.

No water shall be taken or used through private fire systems for the purpose of testing unless the Superintendent issues written permission. Such test must be conducted under the supervision of the Department.

5.15 No Right to Furnish Water to Others

A customer shall not be permitted to supply the premises of another person with water, except in special emergencies and then only with the approval of the Superintendent.

5.16 Use of Fire Hydrants

The use of all fire hydrants is restricted to employees of the Water Department or by persons given specific authorization by the Water Department. During emergencies members of the Fire Department of the Town of Harwich and or other towns lending mutual aid are authorized to operate fire hydrants. In the event that a hydrant is to be used for any other purpose, the Department must be notified and a hydrant meter installed. If the hydrant meter is needed longer than a 24-hour period during frigid weather, the Superintendent or his/her acting agent may require the removal and reinstallation of the meter in order to protect it from freezing. All labor and usage charges incurred from the use of the hydrant, are the responsibility of the requesting party. Hydrants are not to be used to fill swimming pools. Any unauthorized use of fire hydrants without written permission of the Harwich Water Department will result in a $1,000.00 Fine.

5.17 Cross Connection Control

If, in the opinion of the Superintendent, the installation of an approved backflow preventer (s) on the property side of a meter is considered necessary for the safety of the water system, such approved device(s) shall be immediately installed at the expense of the customer after due notice in writing has been given to the customer by the Superintendent. Said device(s) shall be installed and tested in accordance with the drinking water regulations of Massachusetts, 310 CMR 22.22. All tests shall be performed by the Department or agent and shall be charged as set forth in § 8. Failure to install or properly maintain a Department approved device, may result in the water being

shut off to the property until compliance requirements are met. In addition, all private water lines running below grade shall be fit with a testable backflow device.

Section 6: Requirements & Specifications for Laying Water Mains

6.1 Materials and Installations

All materials to be used in conjunction with any and all water mains and installations of the same shall be in strict accordance with these "Specifications for Water Mains and Service Installation" of these regulations. All water mains and appurtenances shall be installed by the Department employees or a Contractor who has been approved by the Department.

6.2 Pipe Size

All water mains shall be sized by the Department in conjunction with the Master Plan of the distribution system, or as calculated by the Department or its consulting engineers. All new water mains shall have the minimum diameter of eight (8) inches. Piping for hydrant services shall have the minimum diameter of six (6) inches.

6.3 Fire Hydrant Spacing

Fire hydrants shall be spaced at a minimum distance of 500 feet in residential zoned areas; 250 feet in commercial, business, and industrial zoned areas. The Fire Chief can request a different spacing standard depending on the situation. The applicant must show proof that the Fire Chief has approved all proposed fire hydrant locations. Measurements shall be taken along traveled way, whether public or private. Space and additional fire hydrants shall begin at the closest existing hydrant. An additional fire hydrant shall be placed at the dead end of all water mains.

6.4 Fire Hydrant Access

No person shall obstruct access to a fire hydrant. Fire hydrants shall have a three-foot clear radius measured from the center of the stem of the top of the hydrant. No foliage, fencing, parking space, or other object shall obstruct the clear area. No person may landscape to change the grade around the base of the hydrant so as to prevent the use of a four inch cap. Location where existing objects such as, but not limited to, buildings, walls, fences, trees, on sloping grades that does not permit a three (3) foot clearance radius, may be granted a waiver by the Water Department. Before any waiver of this Regulation is granted, all other possible locations must be considered. Existing hydrant locations shall not be altered or moved for any reason unless determined by the Superintendent.

6.5 Cost of Water Mains and Hydrants

In private division of lands, commercial, business or industrial complexes, and all other areas not presently serviced by Harwich water system, the developer or owner shall be responsible for all costs with regard to water main installation(s), hydrants and connection(s) to existing system and or maintenance of already installed water mains and hydrants. All water mains shall be installed to the furthest property line.

6.6 Need for Water Mains

The developer or owner of a division of land where water is available within 500 feet will be required to serve and supply the development with water in accordance with these

regulations. Any property that has existing public water service and is a division of land, the developer or owner will be required to upgrade the water mains and services to comply with these rules and regulations before the transfer of any parcel. Industrial, commercial, condominiums or multi-family residential, and like buildings that are not a division of land shall be reviewed by the Water Superintendent and the Fire Chief on an individual basis. They shall still be governed by these Rules and Regulations and be required to install and maintain water mains and fire hydrants.

6.7 Application for Water Main Installations

An application for water main installation shall be completed by the developer or owner and submitted to the Department for review and approval before any work can proceed. All applications must contain the complete information requested and an engineered construction plan prepared by a Massachusetts Registered Professional Engineer. Payment of all required tapping fees, and installation fees including the service availability charge and any other fees established by the Board of Water/Wastewater Commissioners shall be made at the time of application.

Water main installations must be performed by an approved contractor listed on the Department's certified Water Main Installer list. Water main inspections must be performed by an approved inspector listed on the Department's certified Water Main Inspector list.

Contractors and/or Inspectors interested in becoming certified, must first submit a letter of interest, credentials, certificates of insurance and three letters of reference for similar work performed in nearby, surrounding towns, to the Board of Water/Wastewater Commissioners for approval. Once approved, the contractor and/or inspector must complete 3 water main installations and/or inspections within the town of Harwich during a probationary timeframe. Upon the successful completion of 3 jobs that meet or exceed the Department's expectations, the contractor and/or inspector will be added to the certified list of Water Main Installers and/or certified Water Main Inspectors.

6.8 Pipe and Fittings

All water main pipes shall conform in design and manufactured to the latest issue.

ANSI/AWWA standard C151-91 Class 52 "Ductile-Iron pipe, Centrifugal cast, for water or other liquids". The pipes shall be supplied in lengths not to exceed 20 feet. Pipe shall have a pressure class of 300.

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 ins. through 48 in. for water and other liquids".

All pipe and fittings shall have a 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 shall be manufactured domestically 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".

6.9 Valves

All valves shall conform in design and manufactured to the latest issue of AWWA standard C500 "Resilient-Seated gate valves for water supply", rated at 150-psi working pressure and a minimum 300-psi pressure test.

All valves shall have a 2-inch operating nut, mechanical joint hubs (except for wet taps), and open in a counter clockwise direction. If shallow depth of burial or other conditions of service requires 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.

6.10 Hydrants

Hydrants shall comply with the following:

- Direction of Opening – Right Open
- Bury Length – 5.5 feet
- Height (bury Line to Opening Nut) – 28.75 inches minimum
- Model – Traffic (Breakaway Design)
- Color – Safety Blue Body
- All chains must be removed.

All hydrants shall have a permanently mounted marking device approved by the Department.

All hydrants must meet applicable parts of ANSI/AWWA C502 standard. In the event that a hydrant is not in service or temporarily taken out of service, the hydrant is to be clearly marked with an out of service ring and notification provided to the Fire Department.

6.11 Cover over Pipe

Pipe shall have five (5) feet of cover measured to finish grade of the street. Pipe to be hand covered one (1) foot with sand or stone free gravel and compacted and tamped around pipe to give good support and protection.

In case of any excavation, ground water swamps or when any unsuitable materials are encountered, the Contractor shall replace it with good material to provide proper support and alignment of the pipeline. In some cases, the Contractor shall use crushed stone for bedding covered with sand. Trench backfill shall be suitable material taken from excavation, approved common borrow or gravel hauled in. No mud, frozen earth, stones larger than 3/4" or other objectionable materials is to be used for refilling.

6.12 Ledge

All ledges shall be removed to width of two (2) feet or greater than the diameter of the pipe and one (1) foot below the underside of the pipe. A bed of sand shall be placed in the trench prior to laying pipe.

6.13 Blasting Precautions

All blasting shall be discussed with the Superintendent and or the Engineer's and the decision shall be made on individual bases.

6.14 Survey Markers

Survey markers (line and grade) shall be required on all newly proposed streets. Pipes shall be laid within the roadway layout (easement in certain cases) as shown on plans approved by the Harwich Planning & Zoning Board.

6.15 Excavation within the Limits of Public Ways

Permission shall be obtained from the Highway Department before any excavation can begin within any Town way. Road restoration shall be completed in accordance with local or state regulations. A street opening permit shall be obtained from Massachusetts Department of Public Works before any excavation can begin on any State Highway. This work shall be performed in accordance with permit.

6.16 Service Pipes

Each service shall consist of a corporation stop, curb stop, curb box, ball valve and a meter and remote reader as soon as the water service enters building.

6.17 Testing of Water Mains

Before acceptance by the Department, the pipe shall be pressure tested and chlorinated in accordance with "Installation of Ductile-Iron Water Mains and Appurtenances" AWWA Designation C600 latest edition. No one shall pressure test or chlorinate an installation without notifying the Department at least 48 hours prior. An employee of the Department must be present for the duration of the pressure test and chlorination to witness and sign the chain of custody forms. All pressure test reports shall consist of actual distance of pipe and size, and the number of valves and hydrants. The Town shall furnish a water meter to measure water usage for disinfection and flushing. A sample of water taken after the disinfection of water pipes shall be delivered to a testing laboratory approved by the Commonwealth of Massachusetts. The contractor must then deliver two consecutive copies of the test results with zero background to the Superintendent. Before final approval is given by the Superintendent, the contractor must submit an as-built drawing to the Department. It is at this time the Superintendent shall then determine whether the pipes (project) may be accepted into the Town's water system.

6.18 Tapping Sleeves & Valves: Gate & Butterfly Valves

Tapping sleeves & valves, gate and butterfly valves shall be furnished in accordance with the requirements of the latest revised AWWA Standards C509-94 and C504-94. Tapping sleeves and valves shall be of the same manufacturer. Gate valves 6" through 12" shall be mechanical joint, bronze mounted, resilient seat wedge type, open left (counterclockwise) with 2" operating nut. For the purpose of standardization, tapping sleeves and valves, gate and butterfly valves shall be Mueller.

6.19 Gate Boxes

Buffalo #5663 slide type 24" top with flange at top of box with 30" bottom. Boxes to be cast iron, bituminous coated with cast iron covers for heavy traffic use. Covers shall be identified with legend "WATER".

6.20 Water Mains on Private Roads

It is the sole responsibility of the residents or owner(s) of private roads to repair and maintain all water mains and appurtenances, valves and hydrants. It is also the responsibility of residents and or owner(s) to maintain sufficient amount of soil coverage

over any water main. All water mains are required to maintain a minimum of a 5' depth below finish grade at all times. The Department is not responsible for water mains on private roads.

6.21 Road Layout

Any privately owned pipes and or wires in the Town's road layout are not the responsibility of the Department. Any items in the road layout that are damaged will not be paid for by the Town of Harwich.

Section 7: Violations

7.1 Violations of Regulations

Any violation of these regulations may result in the Superintendent and/or the Board of Water/Wastewater Commissioners ordering a fine in accordance with Massachusetts General Laws Chapter 165, § 11 and/or the shutting off of the water to the violator's premises. If the water is shut off for violations of rules it shall not be turned on again until the Department is satisfied that there shall not be further cause of complaint and charges have been paid.

7.2 Discontinuance of Service

A water service may be discontinued for any reason such as nonpayment of water bills, fees, charges and liens or for violations of any rules and regulations contained herein, and in accordance with Massachusetts General Law Chapter 40 §42. A water service may be terminated without notice for fraudulent use. Reconnection of terminated service will be done ONLY during normal working hours of the Department; a reconnection fee shall be applied. Water service will not be reconnected until all charges have been paid in full.

7.3 Inactive Services

If an account does not have a meter and has been inactive for more than 24 months, the Department may disconnect and cap the service from the distribution system. If the property owner wishes to keep the service connected to the system, he or she must apply for an extension that may not exceed one year unless there is a special condition made and set forth by the Board of Water/Wastewater Commissioners.

7.4 Cross Connections

Whoever maintains a cross connection in violation of M.G.L. c. 111, § 160A, shall be:

1. punished by a fine of not more than $25,000 for each day such violation occurs or continues, or by imprisonment for not more than one year, or both such fine and imprisonment, or
2. subject to a civil penalty not to exceed $25,000 per day for each day that such violation occurs or continues.

Water will be turned off immediately until violation has been corrected. There will be a Turn on and Turn off fee assessed per violation. There is also a testing fee per device, see non water related fees.

7.5 Treatment

No treatment by any unauthorized personnel shall be permitted. If anyone is found adding any treatment to Town's water, they will be subject to fines established by the Board of Commissioners for each individual offense.

7.6 Mandatory Water Use Restrictions

Any customer found in violation of a water ban shall be fined as follows:

- First Offense – written warning
- Second Offense - $100.00 dollars
- Third and any subsequent offense - $300.00 dollars

7.7 Swimming Pools

The filling of swimming pools with the use of a fire hydrant is strictly prohibited. Violators will be subject to penalties in accordance with Massachusetts General Laws, Chapter 165.

7.8 Unauthorized Water Use

Whoever unlawfully and intentionally damages a water meter or prevents such meter from registering the quantity of water supplied through it or uses or causes to be used water without consent of Department shall be fined in accordance with Massachusetts General Law, Chapter 165, §11.

7.9 Defacing and Littering Upon Town Owned Property

Any person or persons willfully defacing and or littering upon Town owned property located within its watershed shall be fined no less than $300.00 dollars.

7.10 Tampering

All gates, valves, shutoffs, water meters and standpipes and any other portion of the municipal system, are the sole property of the Department, and are not to be opened, closed, removed or in any way tampered with or made inaccessible. Only personnel authorized by the Superintendent may operate any portion of the municipal system. Violators will be subject to charges or penalties determined by the Board of Water/Wastewater Commissioners.

7.11 Markouts

No excavator shall, except in an emergency, make an excavation where town water exists unless notice is given to the Department at least 72 business hours before excavation. If an excavation is made without the request of a water mark out, the excavator shall be held solely responsible for any and all damages and injuries caused, and any penalties or legal action that may be brought against excavator, company, or its representatives.

7.12 Utility Markout Policy

a) Utility shall submit road cut permit request directly to the Highway Department.
b) Utility shall submit markout request to the Department 72 hours before markout is needed, for 10 or less residences. For 10+ residences, a 2-week notice is required. Bad weather may alter this schedule.
c) There will be a fee charged per markout(s) per fee schedule.
d) The markout package shall include the following:
    - Utility's work order/reference and dig safe number

- A map/diagram highlighting area of utility service work to commence.
- Dig safe documentation
- Project start date
- Contact name, number and/or email address of contact.

As of 8/20/13, utility shall provide a complete markout package as noted in item D above. For large projects, Utility Representative must deliver by hand a complete markout package.

Each utility shall not submit more markout request than the utility can complete within thirty (30) days of initial work request(s). If work is not completed within thirty (30) days, a new markout request is required and the utility will be charged for the new markout.

Each utility will receive a monthly bill for services rendered. Payment will be due within 60 days. Late payment will result in late fee charge as per fee schedule.

If payment is not made within 3 months (90 days), the Department will cease all markouts until balance is paid.

Section 8: Rates & Charges

8.1 Setting Fees and Charges

Fees and charges are subject to change upon approval of the Board of Water/Wastewater Commissioners and after all legally advertised public hearings and meetings have been completed.

See Appendix for Current Rates and Fees

Section 9: Irrigation Systems

9.1 Irrigation System Notification

All properties with irrigation systems must notify the Department. If a property owner has not notified the Department, the water may be shut off to the property until proper notification has been filed.

9.2 Irrigation Backflow Device

All irrigation systems must have a testable backflow device. All tests will be conducted by a State Certified Licensed Backflow Device tester. If a system is found to be operating without an approved backflow device, the water may be shut off to the property until all Department compliance requirements are met.

9.3 Irrigation/Sewer Deduct Meter

See Section 4.13 Irrigation/Sewer Deduct Meter

Section 10: Service Tight Program

10.1 Service Tight Program

The Town offers a voluntary Service Tight Protection Plan; this program offers eligible customers the right to apply for enrollment into the Service Tight Program for all services

2” and under from the curb stop to the water meter. Condominiums, apartments, multi-unit properties and service lines after meter pits are not eligible under this plan. All enrollees must agree to and meet all conditions set forth in the Service Tight Program. This service will have an automatic fee, billed quarterly and will provide all services mentioned in the program brochure.

Delinquent accounts over ninety (90) days will be automatically unenrolled and will not be eligible for re-enrollment until all account charges have been paid in full. The Department reserves the right to cancel this program at any time. The Service Tight Program is not transferrable.

Enrollment begins ninety (90) days after application is received. The Customer may cancel the Service Tight Program at any time by placing their request in writing to the Harwich Water Department, 196 Chatham Rd. Harwich, MA 02645.

If the customer chooses to cancel the plan prior to the initial waiting period, they may do so in writing. If cancellation is requested after the billing period, no refund will be given. When the customer chooses to sign up for this service, it is the customer’s responsibility to become familiar with the Service Tight Plan guidelines.

The department reserves the right to change the terms and conditions of the policy at any time. Please refer to the applicable Rates and Fees. The Harwich Water Department reserves the right to deny plan coverage for any reason.

Appendix A. Schedule of Rates and Fees

	WATER RATES 7/1/22	SEWER RATES 7/16/21	
Base Rate	45.00	75.00	QUARTERLY
1,000 – 8,000 Gallons	1.42	0.00	WATER; PER 1,000 GAL. SEWER; INCL. IN BASE
8,001 – 15,000 Gallons	2.92	5.43	PER 1,000 GALLONS
15,001 – 40,000 Gallons	4.35	5.83	PER 1,000 GALLONS
40,001 + Remaining Gals	6.31	6.05	PER 1,000 GALLONS

FIRE PROTECTION		
Residential	40.00	QUARTERLY
Commercial	65.00	QUARTERLY

BACKFLOW PREVENTION TEST FEES FREQUENCY OF INSPECTION IS BASED ON DEVICE TYPE		
First Device	70.00	PER DEVICE, ANNUAL OR SEMI-ANNUAL BILLING
Re-Test	45.00	PER DEVICE
Backflow/Cross-Connection Survey	100.00	PER HOUR

SERVICE TIGHT PROTECTION PLAN		
Up to and Including 2” Line	68.00	PER YEAR, BILLED QUARTERLY

ADMINISTRATIVE & COLLECTION FEES		
Notice Fee – Violation | Collection	10.00	PER VIOLATION | COLLECTION NOTICE
Copies/Computer Printout (950 CMR)	.05	PER COPY
Research Request	22.00	PER HOUR
Return Check Fee	25.00	PER ITEM
Demand Charge	25.00	PER DEMAND NOTICE
Unauthorized Hydrant Use	1,000.00	EACH OFFENSE
Tampering Fee (MGL, Chapter 65, §11): Triple the amount of damages sustained thereby or $1,000.00		

SERVICE FEES		
Service Call During Working Hours	50.00	PER HOUR (1 HOUR MINIMUM)
Service Call After Hours*	200.00	UP TO 4 HRS
Missed Appointment	50.00	FEE
Electrician Labor/Water Services	50.00	PER HOUR
Transfer of Property Final Read	60.00	PER REQUEST
Seasonal Turn On/Off or Plumbing	50.00	EACH
Out-of-Rotation On/Off	50.00	FEE DURING WORKING HOURS
Reconnection Fee	50.00	PER HOUR (EXCL. COST FOR TURN OFF)
Mark Out Request <=2 REQUESTS	25.00	PER MARK OUT, UP TO 2 REQUESTS
Mark Out Request >2 REQUESTS	50.00	PER HOUR
Meter Test (MGL, Chapter 40, §39I)	3.00	PLUS 1 HR. SERVICE CALL
Hydrant Use Setup/Removal	100.00	PER DAY
Hydrant Meter Usage	20.00	PER 1,000 GALS

Private Hydrant Inspection	50.00	PER HOUR
Fire Flow Test	50.00	PER HOUR

***DISCLOSURE:** A SERVICE CALL ON A HOLIDAY IS ADDITIONAL AND APPROXIMATELY DOUBLE THE OVERTIME RATE PRICING.

WATER SERVICE, WATERMAIN EXTENSION, & FIRE SERVICE FEES DOES NOT INCLUDE PRICE OF METER AND VALVE		
Water Service Application Fee	50.00	EACH
Water Service Renewal	SUBJECT TO QUOTE	Application Fee + Time & Materials
New Water Service	SUBJECT TO QUOTE	Application Fee + System Development Fee + Time & Materials
Water Main Extension	SUBJECT TO QUOTE	Application Fee + System Development Fee
Fire Service	SUBJECT TO QUOTE	Application Fee + System Development Fee

SYSTEM DEVELOPMENT FEE SCHEDULE					
1” Tap	500.00	4” Tap	2,000.00	10” Tap	5,000.00
1.5” Tap	750.00	6” Tap	3,000.00	12” Tap	6,000.00
2” Tap	1,000.00	8” Tap	4,000.00	16” Tap	8,000.00

METERS NOTE PRICING IS SUBJECT TO CHANGE			
5/8” E-Coder	408.06	2” E-Coder	1,475.03
3/4" E-Coder	524.08	2” E-Coder Compound	3,403.17
1” E-Coder	689.50	3” E-Coder Compound	4,878.62
1 ¼” E-Coder	1,222.06	4” E-Coder Compound	6,142.25

Authentication

Upon due notice and hearing, we the undersigned, acting as Water/Wastewater Commissioners of the Town of Harwich, do this June 16, 2022, adopt the foregoing "Rules and Regulations of the Harwich Water Department".

Board of Water & Wastewater Commissioners:

Gary Carreiro, Chairman

Judith Underwood, Vice Chair

Allin Thompson, Clerk

Noreen Donahue

John Gough

Adopted	February 25, 1935
Revised	January 1, 1961
Revised	January 1, 2001
Revised	January 10, 2006
Revised	May 1, 2008
Revised	May 15, 2009
Revised	June 19, 2009
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Rates/Fees	March 1, 2010
Revised	July 27, 2010
Revised	December 7, 2010
Rates/Fees	April 26, 2011

Rates/Fees	March 13, 2012
Rates/Fees	March 19, 2013
Rates/Fees	March 17, 2015
Revised	October 30, 2015
Fees	October 30, 2015
Fees	April 13, 2016
Fees	September 13, 2017
Rates (Quarterly Billing)	March 21, 2018
Rules/Regs Revised	May 26, 2021
Rates	July 1, 2021
Rates	June 16, 2022

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TOWN OF HARWICH –

SEWER & WATER SPECIAL PROVISIONS

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ITEM 251.03

3 INCH HIGH-DENSITY POLYETHYLENE FORCEMAIN

PART 1 GENERAL

1.1 SECTION INCLUDES

A. This section defines the minimum requirements for supply and installation of High-Density Polyethylene (HDPE) pressure piping and associated appurtenances.

1. All jointing and gasketing materials, harnessing, and other miscellaneous appurtenances and accessories shall be provided.

1.2 RELATED SECTIONS

A. Related Work Specified Elsewhere:

1. ITEM 142. – CLASS B TRENCH EXCAVATION

2. ITEM 156.3 – CRUSHED STONE FOR BACKING

3. ITEM 251.0125 – 1.25 INCH HDPE LOW PRESSURE SEWER SERVICE

4. ITEM 256. – FORCEMAIN MANUAL AIR RELEASE VALVE – COMPLETE

5. ITEM 257. – FORCEMAIN FLUSHING ASSEMBLY – COMPLETE

6. ITEM 349.03 – 3 INCH GATE VALVE

7. ITEM 384.125 - 1.25 INCH CURB STOP

8. ITEM 903. – 3000 PSI, 1.5 INCH, 470 CEMENT CONCRETE

1.3 QUALITY ASSURANCE

A. Manufacturers Qualifications: Piping for each service or system specified herein shall be provided by a manufacturer who has thoroughly familiarized himself with the design intent of the system and will provide piping suitable for the service intended.

B. Source Quality Control: All pipe shall be marked with a class designation thereon. The name or trademark of the manufacturer shall also be marked on the pipe.

C. Each type of pipe shall be obtained from no more than one manufacturer.

D. Reference Standards: Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.

1. ASTM D 2657, Standard Practice for Heat Joining Polyethylene Pipe and fittings.

2. ASTM D 2683, Standard Specifications for socket type Polyethylene fittings for outside diameter-controlled Polyethylene Pipe and Tubing.

3. ASTM D 2837, Standard Testing Methods for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials.

4. ASTM D 3261, Specifications for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Plastic Pipe and Tubing.

5. ASTM D 3350, Standard Specifications for Polyethylene Plastic Pipe and Fitting Materials.

6. PPI TR- 3, Policies and Procedures for Developing Recommended Hydrostatic Design Stress for Thermoplastic Pipe Materials.

7. PPI TR-4, Recommended Hydrostatic Strengths and Design Stresses for Thermoplastic Pipe and Fitting Compounds.

8. ANSI/NSF, Standard No. 61 for Drinking Water Systems Components- Health Effects.

9. AWWA C901, Standards for Polyethylene (PE) Pressure Pipe and Tubing 1/2 inches through 3 inches for Water Service.

E. Shop Tests:

1. Piping manufacturer shall maintain a continuous quality control program. All Polyethylene molding materials used to manufacture pipe and fittings under this Section shall be tested for conformance to the requirements of AWWA C901.

1.4 SUBMITTALS

A. Shop Drawings: CONTRACTOR shall submit for approval Shop Drawings showing the following:

1. Detailed procedures to be used in jointing and installing piping system including manufacturer's recommendations.

2. Interfacing of piping system to equipment, appurtenances, and other types of pipe.

3. Detail requirements for burial, supports, anchors, guides, expansion joints, and all accessories required for a satisfactory piping system.

4. Affidavit of Compliance in accordance with AWWA C901.

PART 2 PRODUCTS

2.1 MATERIALS

A. General

1. Polyethylene (HDPE) pipe shall be suitable for pressure service.

2. All piping shall be restrained, where required and where shown on the drawings. Lengths of harnessed piping shall be as shown on harnessing length schedule.

3. All buried piping shall be designed for the required earth cover plus the American Association of State Highway Officials HS-20 Loading (including impact), in Roads.

4. For Polyethylene (HDPE) piping installations, any required mechanical joint ductile iron fittings, couplings, and adapters shall be as specified in MassDOT Specifications.

B. Polyethylene (HDPE) Pipe

1. Materials used in the manufacture of the polyethylene pipe shall be PE 4710, high density polyethylene meeting the requirements of ASTM D 3350, cell classification of 445474C.

2. The material shall have a minimum hydrostatic design basis of 320 psi at 73 degrees Fahrenheit when tested in accordance with PPI TR-3 and shall be listed in the name of the pipe manufacturer in PPI TR-4.

3. Polyethylene pipe shall be manufactured in accordance with AWWA C901 for sizes 1/2 inches through 3 inches.

4. The pipe and fittings shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material.

5. All piping and tubing furnished for use for this item shall meet the following requirements, unless indicated otherwise on the Contract Drawings:

   a. Nominal 3-Inch HDPE: DR 11

6. Restrained joints for polyethylene piping shall be accomplished by completion of butt fusion joints.

7. Restrained polyethylene pipe connections to stainless steel or carbon steel mechanical joint fittings shall be accomplished by use of a HDPE adapter piece which must be butt fused to the plain end of the HDPE piping. The adapter piece shall be PE 4710, with the same DR rating as the HDPE piping which it will be fused to.

8. When transitioning from one pipe material to HDPE pipe flex-restraints are required, and an electrofusion flex restraint by Central Plastics shall be used with a concrete collar to prevent pull outs from expansion of HDPE pipe, or approved equal.

9. Product and manufacturer: HDPE piping shall be manufactured by:

   a. Plexco

   b. ISCO Industries

   c. Or equal

C. Butt Fusion Fittings:

1. Fittings shall be made of HDPE material with a minimum material designation of PE 4710 and with a minimum Cell Classification as noted in B.1. Fittings shall have a minimum pressure rating equal to or greater than the pipe to which they are joined unless otherwise specified on the plans or accepted by the OWNER/ENGINEER. All fittings shall meet the requirements of AWWA C901 or AWWA C906.

   a. Molded fittings shall comply with the requirements of ASTM D 3261

   b. All fabricated elbows, tees, reducing tees, and end caps shall be produced and meet the requirements of ASTM F 2206, holding an ISO 9001 quality system certificate. Each fitting will be marked per ASTM F 2206 Section 10 including nominal size and

fitting EDR, which will meet or exceed the pipe DR identification for the project. Fabricated fittings shall be manufactured using a McElroy DataLogger to record fusion pressure and temperature and shall be stamped with unique joint number that corresponds to the joint report. A graphic representation of the temperature and pressure data for all fusion joints made producing fittings shall be maintained for a minimum of 5 years as part of the quality control and will be available upon request of OWNER/ENGINEER. Test results validate ASTM section 7.3 and 9 shall be provided to OWNER/ENGINEER upon request.

c. Socket fittings shall meet ASTM D 2683.

D. Magnetic Tape Marker:

1. All Polyethylene (HDPE) pipe shall have a magnetic tape marker laid directly above the pipe for the full length of the pipe and approximately 18 inches below ground surface. At each concrete structure, cleanout, and/or valve box, the CONTRACTOR shall install the tape in such a manner where the tape runs up the exterior wall of the structure and is affixed at the top. The tape shall be affixed in such a fashion where the OWNER can attach his detection device to the tape to produce a stronger signal for pipeline detection.

2. Tape shall be 3 inches wide consisting of two (2) exterior plies of polyethylene with an aluminum alloy foil core.

3. Tape shall be manufactured by Paul Potter Warning Tape, Alarm Tape, or approved equal.

4. Tape shall be green color and shall be labeled "Sewer" in black letters.

5. Splices, where needed, shall be made in accordance with manufacturer's recommendations.

6. At completion of the project, before final payment, the CONTRACTOR shall test the entire length of the pipe using pipe location equipment. Tests shall be made only in the presence of the Owner and ENGINEER. Any section of tape not continuous or that is undetectable shall be removed and relayed.

PART 3 SUMMARY OF WORK

Under this Item, the CONTRACTOR shall provide all labor, materials, tools, and equipment necessary to furnish, install and complete the 3-Inch HDPE Force Main, at all installed depths, as specified herein and defined on the Contract Drawings.

The work under these Items generally includes, but is not limited to the following:

a. 3-Inch HDPE Force Main shall be installed via traditional open-cut methods, pneumatic mole methods, HDD methods, or other methods as approved by the Engineer. 3-Inch HDPE Force Main installation method shall be the responsibility of the Contractor, with Engineer’s approval, unless explicitly stated on the Contract Drawings that a certain installation method is required.

b. All excavation to a depth of 5 feet, test pits, shown or as necessary to complete the work, sheeting, shoring and bracing, trench protection, dewatering, encasement materials, backfilling (excluding pipe bedding), and removal and proper disposal of excess material.

c. All sawcutting of pavement and concrete road sub-base where encountered.

d. The use of an approved trench box and/or sheeting and shoring is required in all open excavations.

e. Required permits and fees, protection of existing utilities and structures, temporary support and/or relocation of utilities, removal and replacement of fences, signs, structures, or other items required to complete the work, and obtaining additional work areas as may be required for the CONTRACTOR's construction operations.

f. Relocation of utilities where shown on the Drawings and where necessary to complete the construction. Relocation of utilities necessary and required for installation of the new facilities, whether shown or not, shall be included under this Item, and no separate payment will be made for the work.

g. Furnishing and installing 3-Inch HDPE Force Main piping at all installed depths, couplings necessary to connect to existing and proposed piping, spool pieces, adapters, concrete and encasement materials.

h. Testing of all new pipe and appurtenances, furnishing water for flushing and testing operations. Proper disposal upon completion of the work.

i. All costs and work associated with tie back and support of utility poles as required by owners of the poles.

j. Removal and replacement of storm drains where removed or disturbed during construction, replacement of driveway culverts, catch basins and receivers where removed, damaged or disturbed.

k. All work and associated costs required for the crossing of other utilities as shown on the Drawings and as required.

l. Temporary and permanent restoration of grass areas, driveways, sidewalks, and aprons.

m. All soil erosion and sedimentation control measures necessary and required during performance of the work.

PART 4 MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT

A. The work under this item will be measured per lineal foot of 3 Inch HDPE Forcemain, Installed at all depths, paid for under this item shall be the length as measured along the horizontal centerline of the installed forcemain without deductions for fittings or wye branches, and at all installed depths.

B. Excavation below a depth of 5'-0" necessary to install piping and fittings shall be included for payment under other items of the contract.

4.2 BASIS FOR PAYMENT

A. Payment under this item shall be made at the unit price per lineal foot, and shall include the cost to complete the work as described in Part 3.

END OF SECTION

ITEM 251.0125

1.25 INCH HDPE LOW PRESSURE SEWER SERVICE

PART 1 GENERAL

1.1 DESCRIPTION

A. Scope:

1. CONTRACTOR shall furnish all labor, materials, equipment, and incidentals required to furnish, and install HDPE low pressure sanitary sewer service as shown and required

2. The extent of piping as shown on the Contract Drawings.

B. Coordination:

1. Review installation procedures under other Sections and coordinate the work that is related to this Section.

C. Related Work Specified Elsewhere:

1. ITEM 142. – CLASS B TRENCH EXCAVATION

2. ITEM 156.3 – CRUSHED STONE FOR BACKING

3. ITEM 251.03 – 3 INCH HDPE FORCEMAIN

4. ITEM 381. – SERVICE BOX

5. ITEM 384.125 - 1.25 INCH CURB STOP

6. ITEM 903. – 3000 PSI, 1.5 INCH, 470 CEMENT CONCRETE

1.2 QUALITY ASSURANCE

A. Requirements of regulatory agencies

1. Comply with the applicable requirements of all governing agencies and following codes:

a. State and Local Plumbing Codes.

1.3 SUBMITTALS

A. Shop Drawings: CONTRACTOR shall submit for approval Shop Drawings showing the following:

1. Submit for approval detailed drawings and data on pipe, fittings, specials, gaskets, and other appurtenances showing conformance with the specifications.

1.4 PRODUCT DELIVERY, HANDLING AND STORAGE

A. Delivery: All necessary precautions shall be taken to prevent damage to pipe, fittings and other materials during shipment and delivery. All materials shall be securely fastened to truck or rail car to prevent movement or damage during shipment. Inspector shall examine all materials before unloading.

B. Handling: All pipe materials shall be handled to prevent damage. Pipe and fittings shall not be dropped, rolled, or pushed off from any height on delivery, storage, or installation.

C. Storage: All pipe materials shall be stored off the ground. Pipe ends shall be secured by caps or plugs. Do not store pipe or fittings in sunlight. Pipe shall be stored to prevent sagging or bending. Store off the ground, under cover and in a dry location.

PART 2 PRODUCTS

2.1 MATERIALS

A. General

1. Polyethylene (HDPE) pipe shall be suitable for pressure service.

2. All piping shall be restrained, where required and where shown on the drawings. Lengths of harnessed piping shall be as shown on harnessing length schedule.

3. All buried piping shall be designed for the required earth cover plus the American Association of State Highway Officials HS-20 Loading (including impact), in Roads.

4. For Polyethylene (HDPE) piping installations, any required mechanical joint ductile iron fittings, couplings, and adapters shall be as specified in MassDOT Specifications.

B. Low Pressure Sanitary Sewer Services

1. The following are components of the low-pressure sanitary sewer services:

a. 1.25” diameter, DR 11 HDPE pipe conforming to the specifications outlined in Subsection 2.1 C, D, and E(below), shall be utilized for low pressure sanitary sewer services.

b. Low pressure sanitary sewer services shall be installed at 5’-0” minimum cover in all areas.

C. Polyethylene (HDPE) Pipe

1. Materials used in the manufacture of the polyethylene pipe shall be PE 4710, high density polyethylene meeting the requirements of ASTM D 3350, cell classification of 445474C.

2. The material shall have a minimum hydrostatic design basis of 320 psi at 73 degrees Fahrenheit when tested in accordance with PPI TR-3 and shall be listed in the name of the pipe manufacturer in PPI TR-4.

3. Polyethylene pipe shall be manufactured in accordance with AWWA C901 for sizes 1/2 inches through 3 inches.

4. The pipe and fittings shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material.

5. All piping and tubing furnished for use for this item shall meet the following requirements, unless indicated otherwise on the Contract Drawings:

   a. Nominal 1.25-Inch HDPE: DR 11

6. Restrained joints for polyethylene piping shall be accomplished by completion of butt fusion joints.

7. Restrained polyethylene pipe connections to stainless steel or carbon steel mechanical joint fittings shall be accomplished by use of a HDPE adapter piece which must be butt fused to the plain end of the HDPE piping. The adapter piece shall be PE 4710, with the same DR rating as the HDPE piping which it will be fused to.

8. When transitioning from one pipe material to HDPE pipe flex-restraints are required, and an electrofusion flex restraint by Central Plastics shall be used with a concrete collar to prevent pull outs from expansion of HDPE pipe, or approved equal.

9. Product and manufacturer: HDPE piping shall be manufactured by:

   a. Plexco

   b. ISCO Industries

   c. Or equal

D. Butt Fusion Fittings:

1. Fittings shall be made of HDPE material with a minimum material designation of PE 4710 and with a minimum Cell Classification as noted in C.1. Fittings shall have a minimum pressure rating equal to or greater than the pipe to which they are joined unless otherwise specified on the plans or accepted by the OWNER/ENGINEER. All fittings shall meet the requirements of AWWA C901.

   a. Molded fittings shall comply with the requirements of ASTM D 3261

   b. All fabricated elbows, tees, reducing tees, and end caps shall be produced and meet the requirements of ASTM F 2206, holding an ISO 9001 quality system certificate. Each fitting will be marked per ASTM F 2206 Section 10 including nominal size and fitting EDR, which will meet or exceed the pipe DR identification for the project. Fabricated fittings shall be manufactured using a McElroy DataLogger to record fusion pressure and temperature and shall be stamped with unique joint number that corresponds to the joint report. A graphic representation of the temperature and pressure data for all fusion joints made producing fittings shall be maintained for a minimum of 5 years as part of the quality control and will be available upon request of OWNER/ENGINEER. Test results validate ASTM section 7.3 and 9 shall be provided to OWNER/ENGINEER upon request.

   c. Socket fittings shall meet ASTM D 2683.

E. Magnetic Tape Marker:

1. All Polyethylene (HDPE) pipe shall have a magnetic tape marker laid directly above the pipe for the full length of the pipe and approximately 18 inches below ground surface. At each concrete structure, cleanout, and/or valve box, the CONTRACTOR shall install the tape in such a manner where the tape runs up the exterior wall of the structure and is affixed at the top. The tape shall be affixed in such a fashion where the OWNER can attach his detection device to the tape to produce a stronger signal for pipeline detection.

2. Tape shall be 3 inches wide consisting of two (2) exterior plies of polyethylene with an aluminum alloy foil core.

3. Tape shall be manufactured by Paul Potter Warning Tape, Alarm Tape, or approved equal.

4. Tape shall be green color and shall be labeled "Sewer" in black letters.

5. Splices, where needed, shall be made in accordance with manufacturer's recommendations.

6. At completion of the project, before final payment, the CONTRACTOR shall test the entire length of the pipe using pipe location equipment. Tests shall be made only in the presence of the Owner and ENGINEER. Any section of tape not continuous or that is undetectable shall be removed and relayed.

PART 3 SUMMARY OF WORK

Under this Item, the CONTRACTOR shall provide all labor, materials, tools, and equipment necessary to furnish, install and complete the 1.25-Inch HDPE Low Pressure Sewer Service, at all installed depths, as specified herein and defined on the Contract Drawings.

A. The work under these Items generally includes, but is not limited to the following:

1. 1.25-Inch HDPE Low Pressure Sewer Service shall be installed via traditional open-cut methods, pneumatic mole methods, HDD methods, or other methods as approved by the Engineer. 1.25-Inch HDPE Low Pressure Sewer Service installation method shall be the responsibility of the Contractor, with Engineer’s approval, unless explicitly stated on the Contract Drawings that a certain installation method is required.

2. All excavation to a depth of 5 feet, test pits, shown or as necessary to complete the work, sheeting, shoring and bracing, trench protection, dewatering, encasement materials, backfilling (excluding pipe bedding), and removal and proper disposal of excess material.

3. All sawcutting of pavement and concrete road sub-base where encountered.

4. The use of an approved trench box and/or sheeting and shoring is required in all open excavations.

5. Required permits and fees, protection of existing utilities and structures, temporary support and/or relocation of utilities, removal and replacement of fences, signs, structures, or other items required to complete the work, and obtaining additional work areas as may be required for the CONTRACTOR’s construction operations.

6. Relocation of utilities where shown on the Drawings and where necessary to complete the construction. Relocation of utilities necessary and required for installation of the new facilities, whether shown or not, shall be included under this Item, and no separate payment will be made for the work.

7. Furnishing and installing 1.25 Inch HDPE Force Main piping at all installed depths, couplings necessary to connect to existing and proposed piping, spool pieces, adapters, concrete and encasement materials.

8. Testing of all new pipe and appurtenances, furnishing water for flushing and testing operations. Proper disposal upon completion of the work.

9. All costs and work associated with tie back and support of utility poles as required by owners of the poles.

10. Removal and replacement of storm drains where removed or disturbed during construction, replacement of driveway culverts, catch basins and receivers where removed, damaged or disturbed.

11. All work and associated costs required for the crossing of other utilities as shown on the Drawings and as required.

12. Temporary and permanent restoration of grass areas, driveways, sidewalks, and aprons.

13. All soil erosion and sedimentation control measures necessary and required during performance of the work.

PART 4 MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT

A. The work under this item will be measure per lineal foot of 1.25 Inch HDPE Low Pressure Sewer Service, Installed at all depths, paid for under this item shall be the length as measured along the horizontal centerline of the installed forcemain without deductions for fittings or wye branches, and at all installed depths.

B. Excavation below a depth of 5’-0” necessary to install piping and fittings shall be included for payment under other items of the contract.

4.2 BASIS FOR PAYMENT

A. Payment under this item shall be made at the unit price per lineal foot, and shall include the cost to complete the work as described in Part 3.

END OF SECTION

ITEM 256.

FORCEMAIN MANUAL AIR RELEASE VALVE - COMPLETE

PART 1 GENERAL

1.1 DESCRIPTION

A. Work Specified

The work specified shall include all labor, material, equipment, services and incidentals necessary to furnish and install all forcemain manual air release valves as shown, specified and required.

1.2 RELATED SECTIONS

A. Related Work Specified Elsewhere:

1. ITEM 142. – CLASS B TRENCH EXCAVATION
2. ITEM 156.3 – CRUSHED STONE FOR BACKING
3. ITEM 251.03 – 3 INCH HDPE FORCEMAIN
4. ITEM 381. – SERVICE BOX
5. ITEM 384.1 – 1 INCH CURB STOP
6. ITEM 903. – 3000 PSI, 1.5 INCH, 470 CEMENT CONCRETE

1.3 QUALITY ASSURANCE

A. Manufacturer’s Qualifications

1. Manufacturer shall have a minimum of 5 years’ experience producing forcemain manual air release valves and shall show evidence of at least five installations in satisfactory operation.
2. Parts Interchangeability: It is the intent of these specifications that all materials furnished herein shall be compatible with similar materials of other manufacturers.

B. Reference Standards

1. ASTM A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
2. ASTM A354, Standard Specification for Quenched and Tempered Alloy Steel Bolts, Studs and Other Externally Threaded Fasteners
3. ASTM B62, Standard Specification for Composition Bronze or Ounce Metal Castings

4. AWWA C110, Ductile Iron and Gray-Iron Fittings

5. AWWA C512, Air-Release, Air/Vacuum, and Combination Air Valves for Water and Wastewater Service.

6. AWWA C800, Underground Service Line Valves and Fittings

7. NSF/ANSI Standard 61

8. Underwriter's Laboratories (UL)

9. International Organization for Standardization (ISO)

10. Factory Mutual Research Corporation

1.4 SUBMITTALS

A. Shop Drawings: Submit for approval the following:

1. Manufacturer's literature, illustrations, specifications, detailed drawings, data and descriptive literature on forcemain manual air release valves.

2. Deviations from Drawings and Specifications.

3. Engineering data including dimensions, materials, size and weight.

4. Fabrication, assembly, installation and wiring diagrams.

B. Operation and Maintenance Data: Submit complete manuals including:

1. Copies of all Shop Drawings, test reports, maintenance data and schedules, description of operation, and spare parts information.

C. Shop Tests: Submit for approval the following:

1. Hydrostatic tests for each valve when required by the valve specifications included herein.

D. Certificates:

1. Where specified or otherwise required by ENGINEER, submit test certificates.

2. The CONTRACTOR shall submit certificates of compliance with the applicable referenced standards.

3. Submit certificate of compliance with NSF/ANSI Standard 61 for all products under this section, including interior coatings, by an independent, authorized laboratory.

E. Delivery Tickets:

1. Furnish delivery tickets indicating the valve manufacturer, valve type and class, identifying that the valves are new and from a manufacturer that has been submitted and approved.

F. Testing Criteria:

1. CONTRACTOR must provide manufacturer's test specifications for all pipe, tapping sleeves, tees, stops, and valves prior to field testing.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. During delivery and handling, all materials shall be braced and protected from any distortion or damage; any such distortion or damage shall be basis for rejection of the materials.

B. Equipment used for unloading shall be covered with wood or rubber to avoid damage to the exterior of the valves and accessories. Do not drop or roll materials off trucks. All valves and appurtenances shall be handled with padded slings or other appropriate equipment. The use of cables, hooks or chains will not be permitted.

C. The materials shall be inspected before and after unloading. Materials that are found to be cracked, gouged, chipped, dented or otherwise damaged will not be accepted.

D. Interiors of valves and appurtenances shall be kept free from dirt and foreign matter.

E. Store valves and appurtenances on heavy wood blocking or platforms so they are not in contact with the ground.

F. Valves and appurtenances shall be unloaded opposite to or as close to the place where they are to be used as is practical to avoid unnecessary handling.

PART 2 PRODUCTS

2.1 MATERIALS

A. Polyethylene (HDPE) Pipe

1. Materials used in the manufacture of the polyethylene pipe shall be PE 4710, high density polyethylene meeting the requirements of ASTM D 3350, cell classification of 445474C.

2. The material shall have a minimum hydrostatic design basis of 320 psi at 73 degrees Fahrenheit when tested in accordance with PPI TR-3 and shall be listed in the name of the pipe manufacturer in PPI TR-4.

3. Polyethylene pipe shall be manufactured in accordance with AWWA C901 for sizes 1/2 inches through 3 inches.

4. The pipe and fittings shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material.

5. All piping and tubing furnished for use for this item shall meet the following requirements, unless indicated otherwise on the Contract Drawings:

a. Nominal 1-Inch HDPE: SDR 11

6. Restrained joints for polyethylene piping shall be accomplished by completion of butt fusion joints.

7. Restrained polyethylene pipe connections to stainless steel or carbon steel mechanical joint fittings shall be accomplished by use of a HDPE adapter piece which must be butt fused to the plain end of the HDPE piping. The adapter piece shall be PE 4710, with the same DR rating as the HDPE piping which it will be fused to.

8. When transitioning from one pipe material to HDPE pipe flex-restraints are required, and an electrofusion flex restraint by Central Plastics shall be used with a concrete collar to prevent pull outs from expansion of HDPE pipe, or approved equal.

9. Product and manufacturer: HDPE piping shall be manufactured by:

   a. Plexco

   b. ISCO Industries

   b. Or equal

B. Curb Stops and Boxes

1. Curb boxes shall be at least 2-1/4-inch shaft size two-piece slide type. They shall be adjustable from 42-inch to 66-inch. Curb boxes shall be constructed of cast iron and thoroughly coated with two coats of asphaltum varnish.

2. Curb box shall be as manufactured by Bibby-Ste-Croix 94E or 95E pending final bury depth, or approved equal.

3. Curb box top section shall include a cast iron sewer cover which shall be of the “Erie Style” with the word “sewer” cast into it and shall include a brass pentagon screw.

4. Curb boxes shall be completely and thoroughly coated with bitumastic paint.

5. Curb stops shall be PVC compression style with two rubberized O-ring seals to provide pressure-tight seal, as manufactured by Blair, or approved equal.

C. Solid Concrete Block

1. Solid Concrete Blocks shall be furnished and installed as described in MassDOT Item 903 - 3000 PSI, 1.5 INCH, 470 CEMENT CONCRETE.

PART 3 EXECUTION

3.1 INSPECTION AND PREPARATION

A. During installation of all pipe, valves, stops, boxes, and caps, the CONTRACTOR shall verify that all items are clean and free of defects in material and workmanship and function properly.

B. All valves and stops shall be closed and kept closed until otherwise directed by the ENGINEER.

3.2 INSTALLATION

A. Install pipe, valves, stops, boxes, and caps as shown on the Drawings and in accordance with the manufacturer’s recommendations.

B. All valves and stops shall be kept in the closed position until otherwise directed by the ENGINEER.

C. Install all valves and stops so that handwheels, levers, or wrenches can be conveniently turned from operating area and as approved by the ENGINEER.

D. Install all valves and stops plumb and level unless otherwise approved. Valves and stops shall be installed free from distortion and strain caused by misaligned piping, equipment or other causes.

E. CONTRACTOR shall operate each valve and stop full open to full close in the presence of ENGINEER. The number of turns shall be recorded and provided to OWNER with the Record Drawings.

3.3 FIELD TESTS AND ADJUSTMENTS

A. Adjust all parts and components as required to provide correct operation.

B. Conduct functional field-test of each complete valve assembly in the presence of the ENGINEER to demonstrate that each part and all components together function correctly. All testing equipment required shall be provided.

PART 4 SUMMARY OF WORK

Under this Item, the CONTRACTOR shall provide all labor, materials, tools, and equipment necessary to furnish, install and complete the Forcemain manual air release valve - complete, at all installed depths, as specified herein and defined on the Contract Drawings.

The work under these Items generally includes, but is not limited to the following:

A. Forcemain manual air release valve - complete shall be installed via traditional open-cut methods, pneumatic mole methods, HDD methods, or other methods as approved by the ENGINEER. Forcemain manual air release valve installation method shall be the responsibility of the CONTRACTOR, with ENGINEER'S approval, unless explicitly stated on the Contract Drawings that a certain installation method is required.

B. All excavation to a depth of 5 feet, test pits, shown or as necessary to complete the work, sheeting, shoring and bracing, trench protection, dewatering, encasement materials, backfilling (excluding pipe bedding), and removal and proper disposal of excess material.

C. All sawcutting of pavement and concrete road sub-base where encountered.

D. The use of an approved trench box and/or sheeting and shoring is required in all open excavations.

E. Required permits and fees, protection of existing utilities and structures, temporary support and/or relocation of utilities, removal and replacement of fences, signs, structures, or other items required to complete the work, and obtaining additional work areas as may be required for the CONTRACTOR's construction operations.

F. Relocation of utilities where shown on the Drawings and where necessary to complete the construction. Relocation of utilities necessary and required for installation of the new facilities, whether shown or not, shall be included under this Item, and no separate payment will be made for the work.

G. Furnishing and installing all, piping, tees, stops, service boxes, caps, backfill, excavation, bedding, testing, couplings, fittings, concrete, valves, and appurtenances as shown in the contract drawings to complete installation of Forcemain manual air release valve - complete.

H. Testing of all new pipe and appurtenances, furnishing water for flushing and testing operations. Proper disposal upon completion of the work.

I. All costs and work associated with tie back and support of utility poles as required by owners of the poles.

J. Removal and replacement of storm drains where removed or disturbed during construction, replacement of driveway culverts, catch basins and receivers where removed, damaged or disturbed.

K. All work and associated costs required for the crossing of other utilities as shown on the Drawings and as required.

L. Temporary and permanent restoration of grass areas, driveways, sidewalks, and aprons.

M. All soil erosion and sedimentation control measures necessary and required during performance of the work.

PART 5 MEASUREMENT AND PAYMENT

5.1 METHOD OF MEASUREMENT

A. The work under this item will be measured per each forcemain manual air release valve - complete.

5.2 BASIS FOR PAYMENT

A. Payment under this item shall be made at the unit price per each and shall include the cost to complete the work as described in Part 4.

END OF SECTION

ITEM 257.

FORCEMAIN FLUSHING ASSEMBLY - COMPLETE

PART 1 GENERAL

1.1 DESCRIPTION

A. Work Specified

The work specified shall include all labor, material, equipment, services and incidentals necessary to furnish and install all forcemain flushing assembly's as shown, specified and required.

1.2 RELATED SECTIONS

A. Related Work Specified Elsewhere:

1. ITEM 142. – CLASS B TRENCH EXCAVATION
2. ITEM 156.3 – CRUSHED STONE FOR BACKING
3. ITEM 251.03 – 3 INCH HDPE FORCEMAIN
4. ITEM 349.03 – 3 INCH GATE VALVE
5. ITEM 357.03 – 3 INCH GATE BOX
6. ITEM 903. – 3000 PSI, 1.5 INCH, 470 CEMENT CONCRETE

1.3 QUALITY ASSURANCE

A. Parts Interchangeability: It is the intent of these specifications that all materials furnished herein shall be compatible with similar materials of other manufacturer's.

B. Reference Standards

1. ANSI B16.1, Cast Iron Pipe Flanges and Flanged Fittings
2. ASTM A48, Standard Specification for Gray Iron Castings
3. ASTM A126, Standard Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings
4. ASTM A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
5. ASTM A354, Standard Specification for Quenched and Tempered Alloy Steel Bolts, Studs and Other Externally Threaded Fasteners
6. ASTM B62, Standard Specification for Composition Bronze or Ounce Metal Castings

7. AWWA C110, Ductile Iron and Gray-Iron Fittings

8. AWWA C115, Flanged Ductile-Iron Pipe with Ductile Iron or Gray Iron Threaded Flanges

9. AWWA C500, Standard for Metal-Seated Gate Valves for Water Supply Service

10. AWWA C509, Standard for Resilient Seated Gate Valves for Water Supply Service

11. AWWA C800, Underground Service Line Valves and Fittings

12. NSF/ANSI Standard 61

13. Underwriter's Laboratories (UL)

14. International Organization for Standardization (ISO)

15. Factory Mutual Research Corporation

1.4 SUBMITTALS

A. Shop Drawings: Submit for approval the following:

1. Manufacturer's literature, illustrations, specifications, detailed drawings, data and descriptive literature on forcemain flushing assembly's.

2. Deviations from Drawings and Specifications.

3. Engineering data including dimensions, materials, size and weight.

4. Fabrication, assembly, installation and wiring diagrams.

B. Operation and Maintenance Data: Submit complete manuals including:

1. Copies of all Shop Drawings, test reports, maintenance data and schedules, description of operation, and spare parts information.

C. Shop Tests: Submit for approval the following:

1. Hydrostatic tests for each valve when required by the valve specifications included herein.

D. Certificates:

1. Where specified or otherwise required by ENGINEER, submit test certificates.

2. The CONTRACTOR shall submit certificates of compliance with the applicable referenced standards.

3. Submit certificate of compliance with NSF/ANSI Standard 61 for all products under this section, including interior coatings, by an independent, authorized laboratory.

E. Delivery Tickets:

1. Furnish delivery tickets indicating the valve manufacturer, valve type and class, identifying that the valves are new and from a manufacturer that has been submitted and approved.

F. Testing Criteria:

1. CONTRACTOR must provide manufacturer's test specifications for all pipe, tapping sleeves, tees, boxes, reducers, frame and grates, caps, connectors, and valves prior to field testing.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. During delivery and handling, all materials shall be braced and protected from any distortion or damage; any such distortion or damage shall be basis for rejection of the materials.

B. Equipment used for unloading shall be covered with wood or rubber to avoid damage to the exterior of the valves and accessories. Do not drop or roll materials off trucks. All valves and appurtenances shall be handled with padded slings or other appropriate equipment. The use of cables, hooks or chains will not be permitted.

C. The materials shall be inspected before and after unloading. Materials that are found to be cracked, gouged, chipped, dented or otherwise damaged will not be accepted.

D. Interiors of valves and appurtenances shall be kept free from dirt and foreign matter.

E. Store valves and appurtenances on heavy wood blocking or platforms so they are not in contact with the ground.

F. Valves and appurtenances shall be unloaded opposite to or as close to the place where they are to be used as is practical to avoid unnecessary handling.

PART 2 PRODUCTS

2.1 MATERIALS

A. General

1. Manual valve operators shall turn left to open unless otherwise specified. Valves shall indicate the direction of operation.

2. Valve shall be treated as a bulkhead (dead end) condition and pipe joints shall be restrained on both sides of the valve for the lengths as shown, specified, or required.

3. All bolts, nuts and studs shall, unless otherwise approved, shall conform to ASTM A307, Grade B; or ASTM A354. All bolts, nuts and studs on or required to connect submerged or buried valves shall be fluorocarbon coated.

4. Gasket material and installation shall conform to manufacturer's recommendations.

B. Polyethylene (HDPE) Pipe

1. For requirements of HDPE Piping, refer to Specification Section 251.03 – 3 INCH HDPE FORCEMAIN

C. Frames and covers

1. For manholes, provide frames and covers as follows:

a. For sewer manholes, frames and covers shall conform to the following:

1) Made from merchantable gray cast iron, tough, even grained, and free from all flaws or defects, ASTM A48, Class 30, cast iron, or equal.

b. Frame and cover shall be rated for HS-20 loading, latest revision.

c. Machined to ensure proper fit and even bearing in all positions.

d. Covers shall be furnished to meet the details shown on the drawings.

e. Covers shall be labeled “SEWER” with 2-inch-high lettering.

D. Gate Valves

1. Gate Valves shall be furnished and installed as described in MassDOT Specifications for Item 349.03 – 3 INCH GATE VALVE

E. Ball Valves

1. Ball valves shall be 1.5 Inch PVC true union.

F. Gate Boxes

1. Gate boxes shall be furnished and installed as described in MassDOT Specifications for Item 357.03. – 3 INCH GATE BOX

G. Solid Concrete Block

1. Solid Concrete Blocks shall be furnished and installed as described in MassDOT Specifications for Item 903 - 3000 PSI, 1.5 INCH, 470 CEMENT CONCRETE.

PART 3 EXECUTION

3.1 INSPECTION AND PREPARATION

A. During installation of all pipe, valves, stops, boxes, and caps, the CONTRACTOR shall verify that all items are clean and free of defects in material and workmanship and function properly.

B. All valves and stops shall be closed and kept closed until otherwise directed by the ENGINEER.

3.2 INSTALLATION

A. Install pipe, valves, stops, boxes, and caps as shown on the Drawings and in accordance with the manufacturer’s recommendations.

B. All valves and stops shall be kept in the closed position until otherwise directed by the ENGINEER.

C. Install all valves and stops so that handwheels, levers, or wrenches can be conveniently turned from operating area and as approved by the ENGINEER.

D. Install all valves and stops plumb and level unless otherwise approved. Valves and stops shall be installed free from distortion and strain caused by misaligned piping, equipment or other causes.

E. CONTRACTOR shall operate each valve and stop full open to full close in the presence of ENGINEER. The number of turns shall be recorded and provided to OWNER with the Record Drawings.

3.3 FIELD TESTS AND ADJUSTMENTS

A. Adjust all parts and components as required to provide correct operation.

B. Conduct functional field-test of each complete valve assembly in the presence of the ENGINEER to demonstrate that each part and all components together function correctly. All testing equipment required shall be provided.

PART 4 SUMMARY OF WORK

Under this Item, the CONTRACTOR shall provide all labor, materials, tools, and equipment necessary to furnish, install and complete the Forcemain flushing assembly - complete, at all installed depths, as specified herein and defined on the Contract Drawings.

The work under these Items generally includes, but is not limited to the following:

A. Forcemain flushing assembly - complete shall be installed via traditional open-cut methods, pneumatic mole methods, HDD methods, or other methods as approved by the ENGINEER. Forcemain manual air release valve installation method shall be the responsibility of the CONTRACTOR, with ENGINEER'S approval, unless explicitly stated on the Contract Drawings that a certain installation method is required.

B. All excavation to a depth of 5 feet, test pits, shown or as necessary to complete the work, sheeting, shoring and bracing, trench protection, dewatering, encasement materials, backfilling (excluding pipe bedding), and removal and proper disposal of excess material.

C. All sawcutting of pavement and concrete road sub-base where encountered.

D. The use of an approved trench box and/or sheeting and shoring is required in all open excavations.

E. Required permits and fees, protection of existing utilities and structures, temporary support and/or relocation of utilities, removal and replacement of fences, signs, structures, or other items required to complete the work, and obtaining additional work areas as may be required for the CONTRACTOR's construction operations.

F. Relocation of utilities where shown on the Drawings and where necessary to complete the construction. Relocation of utilities necessary and required for installation of the new facilities, whether shown or not, shall be included under this Item, and no separate payment will be made for the work.

G. Furnishing and installing all, piping, tees, valve boxes, caps, hose connector couplings, frames and covers, subbase, backfill, bedding, excavation, testing, couplings, fittings, concrete, valves, and appurtenances as shown in the contract drawings to complete installation of Forcemain flushing assembly - complete.

H. Testing of all new pipe and appurtenances, furnishing water for flushing and testing operations. Proper disposal upon completion of the work.

I. All costs and work associated with tie back and support of utility poles as required by owners of the poles.

J. Removal and replacement of storm drains where removed or disturbed during construction, replacement of driveway culverts, catch basins and receivers where removed, damaged or disturbed.

K. All work and associated costs required for the crossing of other utilities as shown on the Drawings and as required.

L. Temporary and permanent restoration of grass areas, driveways, sidewalks, and aprons.

M. All soil erosion and sedimentation control measures necessary and required during performance of the work.

PART 5 MEASUREMENT AND PAYMENT

5.1 METHOD OF MEASUREMENT

A. The work under this item will be measure per each forcemain flushing assembly - complete.

5.2 BASIS FOR PAYMENT

A. Payment under this item shall be made at the unit price per each, and shall include the cost to complete the work as described in Part 4.

END OF SECTION

SPECIAL PROVISIONS

HARWICH WATER DEPARTMENT

ROUTE 28 WATERMAIN REPLACEMENT PHASE 1

SCOPE OF WORK

The work to be performed under this contract consists of the installation of 12" DIP Watermain, 3" HDPE low pressure sewer main, and new drainage structures and piping.

All parts of the Massachusetts Highway Department Specifications for roads and bridges shall apply except as noted herein.

DEFINITIONS

"Owner" is the Town of Harwich.

ITEM 346.075 – ¾ INCH SERVICE PIPE REMOVED AND REPLACED FT
ITEM 346.1 – 1 INCH SERVICE PIPE REMOVED AND REPLACED FT
ITEM 346.15 – 1.5 INCH SERVICE PIPE REMOVED AND REPLACED FT
ITEM 346.2 – 2 INCH SERVICE PIPE REMOVED AND REPLACED FT

PART 1 GENERAL

1.1 QUALITY ASSURANCE

A. Comply with applicable requirements of all governing agencies and State and local plumbing codes.

1.2 SUBMITTALS

A. Shop Drawings: Submit for approval the following:

1. Manufacturer's literature, catalog information and other data for products covered under this Section of Specifications.

2. Submit certificates of compliance with referenced standards.

PART 2 PRODUCTS

2.1 MATERIALS

A. Polyethylene (PE) for 1/2-Inch Pipe Through 3-Inch Water Service - AWWA C901 polyethylene (PE) pressure pipe with material conforming to ASTM D3350, Type PE 3408 pressure class PC 200, nominal inside diameter 1-inch copper tube size, ultraviolet light protected.

B. Fittings for use with polyethylene (PE) pipe and tubing shall be manufactured and furnished by the pipe supplier and in conformance with AWWA C901 requirements.

C. Joints for polyethylene (PE) pipe shall be jointed by the butt fusion method in a manner recommended by the pipe manufacturer.

D. Materials Furnished by the Town

1. The Town shall provide and install meters for all service connections.

a. Water meters provided by the Town. Contractor shall coordinate with the Water Department for the installation of the meter.

2. The Contractor shall furnish and install meter appurtenances including 2-inch long radius sleeve into the building for up to 1-inch water service connections as required by the Town. Larger service needs to be coordinated with Water Department on sleeve size.

PART 3 EXECUTION

3.1 INSTALLATION - GENERAL

A. When shown on the Contract Drawings, or ordered by the Owner, water services shall be furnished and installed, and to the extent shown or ordered by the Owner.

B. Corporations shall be installed in the “run” of the water main at the required locations or, if the pipe is required to be tapped to receive special saddles, such fittings shall be located at the required locations and installed as specified, and in a manner satisfactory to the Owner. The requirements for proper pipe foundation, bedding, joint assembly, etc., shall be observed when installing the water services. All corporation installations shall be “wet” taps.

C. After installation, water services shall be thoroughly flushed only by Town of Harwich Water Department personnel and shall not be backfilled until the installation has been observed and approved by the Owner and their location has been measured and recorded by the Contractor on a standard form (see form at end of this Section) provided by the Owner, and such record shall then be transmitted to the Owner with the record drawings.

D. Contractor shall repair any indoor plumbing problems within residence as a result of his work performed. A licensed plumber shall make all necessary repairs and all work shall be the Contractor’s cost.

E. Service locations shown on the Contract Drawings are shown schematically only. The actual service locations shall be determined by the OWNER and CONTRACTOR in the field.

F. Install magnetic locating tape, trace wire, along the centerline of the installed water main for the entire length at a maximum depth of 2 feet 0 inches below finished grade. Magnetic locating tape or trace wire shall be installed on mains and services.

PART 4 METHOD OF MEASUREMENT

These items shall be measured on a per linear foot basis.

PART 5 PAYMENT

Payment for these items shall be made per the Contract unit price per linear foot, including all labor, material, equipment, and other costs to furnish and install these items.

END OF SECTION

ITEM 349.03 – 3 INCH GATE VALVE EA

PART 1 GENERAL

1.1 QUALITY ASSURANCE

A. Comply with applicable requirements of all governing agencies and State and local plumbing codes.

1.2 SUBMITTALS

A. Shop Drawings: Submit for approval the following:

1. Manufacturer's literature, catalog information and other data for products covered under this Section of Specifications.

2. Submit certificates of compliance with referenced standards.

PART 2 PRODUCTS

2.1 MATERIALS

A. Buried gate valves shall be resilient seated, non-rising stems, 2-inch operating nuts, O-ring seal and shall open counterclockwise (left).

1. Underground gate valves shall be of the iron body, bronze mounted type conforming to AWWA Standard C500.

2. Mechanical joint type designed for underground use at 250 psi.

3. Underground gate valves shall be Mueller, Kennedy Valve Manufacturing Company, J&S Valves, or equal.

PART 3 EXECUTION

3.1 INSTALLATION – GENERAL

A. Valve details are shown on the Drawings.

B. Refer to drawings for locations of valves to be installed on this project.

C. Valves shall be open left.

D. After installation of valves, provide information on location of structures on red-line drawings. All structures shall be located via swing ties.

PART 4 METHOD OF MEASUREMENT

These items shall be measured on a per each basis.

PART 5 PAYMENT

Payment for these items shall be made per the Contract unit price per each, including all labor, material, equipment, and other costs to furnish and install these items.

END OF SECTION

ITEM 357.03 – 3 INCH GATE BOX EA

PART 1 GENERAL

1.1 QUALITY ASSURANCE

A. Comply with applicable requirements of all governing agencies and State and local plumbing codes.

1.2 SUBMITTALS

A. Shop Drawings: Submit for approval the following:

1. Manufacturer's literature, catalog information and other data for products covered under this Section of Specifications.

2. Submit certificates of compliance with referenced standards.

PART 2 PRODUCTS

2.1 MATERIALS

A. Valve boxes shall be provided for all buried valves.

B. Valve boxes shall be made of good quality cast iron and shall be of the sectional adjustable type. The long section shall be a minimum of 5 inches in inside diameter and fit around the stuffing box of the valve; or over the valve operator, if a two-section box is used; or to fit a circular or oval-base section if a three-section box is used.

C. The upper section shall be arranged to screw on over the adjoining long section and shall also be full diameter. Screw-type valve boxes shall be used unless otherwise specified. Valve boxes shall be provided with cast iron lids or covers.

D. Lids or covers shall be marked “Sewer”. An arrow shall be provided on the cover to indicate the direction in which the valve is turned to open; this arrow shall be labeled with the word “OPEN”.

E. The overall length of each valve box shall be sufficient to permit the top of the box to be set flush with the established finished grade. Asphalt concrete to be compacted 12 inches wide around the upper section for a depth of 12 inches below finished grade.

F. Valve boxes shall be set truly vertical and fully supported until sufficient backfill has been placed and compacted to ensure vertical alignment of the box.

PART 3 EXECUTION

3.1 INSTALLATION – GENERAL

A. Valve boxes shall be installed vertically, and valve box extensions shall not impede use of T-wrench.

B. Boxes shall be set and maintained centered and plumbed over the cap nut of the valve with box cover flush with surface of finished pavement or as directed by the ENGINEER.

C. During installation of all valve boxes, the CONTRACTOR shall verify that all items are clean and free of defects in material and workmanship and function properly.

3.2 FIELD TESTS AND ADJUSTMENTS

A. Adjust all parts and components as required to provide correct operation.

B. Conduct functional field test of each complete valve assembly in the presence of the ENGINEER to demonstrate that each part and all components together function correctly. All testing equipment required shall be provided by CONTRACTOR.

PART 4 METHOD OF MEASUREMENT

These items shall be measured on a per each basis.

PART 5 PAYMENT

Payment for these items shall be made per the Contract unit price per each, including all labor, material, equipment, and other costs to furnish and install these items.

END OF SECTION

ITEM 371.06 – 6 INCH COUPLING **EA**
ITEM 371.08 – 8 INCH COUPLING **EA**
ITEM 371.12 – 12 INCH COUPLING **EA**

PART 1 GENERAL

1.1 QUALITY ASSURANCE

A. Comply with applicable requirements of all governing agencies and State and local plumbing codes.

1.2 SUBMITTALS

A. Shop Drawings: Submit for approval the following:

1. Manufacturer's literature, catalog information and other data for products covered under this Section of Specifications.

2. Submit certificates of compliance with referenced standards.

PART 2 PRODUCTS

2.1 MATERIALS

A. Couplings to be ductile iron fittings, Smith Blair Model 441, or equal with stainless steel bolts and nuts. The couplings shall receive two coats of coal tar epoxy paint on all exterior surfaces prior to installation.

PART 3 EXECUTION

3.1 INSTALLATION - GENERAL

A. Install couplings as shown, specified and as recommended by the manufacturer.

B. Request instructions from the ENGINEER before proceeding if there is a conflict between the manufacturer's recommendations and the Contract Drawings or Specifications.

C. Pipe, fittings, and accessories that are cracked, damaged or in poor condition or with damaged linings will be rejected and shall be replaced at the CONTRACTOR’s expense.

PART 4 METHOD OF MEASUREMENT

These items shall be measured on a per each basis.

PART 5 PAYMENT

Payment for these items shall be made per the Contract unit price per each, including all labor, material, equipment, and other costs to furnish and install these items.

END OF SECTION

ITEM 376.3 – HYDRANT - REMOVED AND STACKED EA

PART 1 GENERAL

1.1 QUALITY ASSURANCE

A. Comply with applicable requirements of all governing agencies and State and local plumbing codes.

1.2 SUBMITTALS

A. Shop Drawings: Submit for approval the following:

1. Manufacturer's literature, catalog information and other data for products covered under this Section of Specifications.

2. Submit certificates of compliance with referenced standards.

PART 2 PRODUCTS

2.1 MATERIALS

A. All hydrants shall be of the compression or gate type conforming to the latest specifications of the ANSI/AWWA C502, and shall be of a make that has been adopted by the Owner as a standard.

B. Hydrants shall have a non-rising stem. Hydrants shall be of heavy, anti-freeze compression action type with positive automatic type drain.

C. All hydrants shall breakaway at ground level upon severe impact without flooding the area.

D. Hydrants shall be supplied with 6-inch mechanical joint inlet connection.

E. Hydrants shall have a minimum 5-1/4-inch diameter valve opening. They shall be equipped with two 2-1/2-inch hose nozzles and one 4-1/2-inch steamer nozzle. The pipe threads shall be National Standard Thread.

F. Hydrant barrels shall be painted red. Cap and bonnet to be painted reflective white.

G. Hydrants shall open counter-clockwise (left).

H. Hydrants shall be designed for 150 psig working pressure.

I. Hydrants shall be American-Darling B62B, Kennedy Guardian, Mueller Centurion II, or approved equal.

PART 3 EXECUTION

3.1 INSTALLATION - GENERAL

A. Hydrants shall be set at locations specified on the Contract Drawings and shall be of such length that, with the frost ring at the ground surface grade, there shall be 5 feet of cover over the connecting pipe.

B. Hydrants shall be set so that the barrel is truly vertical, and shall be properly backfilled so that the barrel will remain truly vertical.

C. They shall be placed with 3 cubic feet of crushed stone pocket to provide drainage for the hydrant.

PART 4 METHOD OF MEASUREMENT

These items shall be measured on a per each basis.

PART 5 PAYMENT

Payment for these items shall be made per the Contract unit price per each, including all labor, material, equipment, and other costs to furnish and install these items.

END OF SECTION

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DOCUMENT A00808

PROJECT UTILITY COORDINATION FORM

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Project Utilities Coordination (PUC) Form

CONTACTS AND GENERAL UTILITY INFORMATION

9/4/2025
Revision Date:

City/Town:	Project File #:	PUC Completed by:	Utility Pole Set:	
Dennis Harwich	608742	cjl/jhl	Dennis Eversource / Harwich Verizon	
Route/Street:	**Resident Engineer:**	**Mass DOT PM:**	**Scheduled Ad Date:**	**Total Poles Relocated:**
Route 28 (Main Street)		Thomas Currier	9/6/2025	40

9/4/2025
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Consultant:	Contact:	Office #	Cell #	Email
VHB	Stephen Rhoads	617-607-2723		srhoads@vhb.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
Eversource Electric	Ned Sadowski		413-537-6594	ned.sadowski@eversource.com	x		x			x			x		x
Open Cape	Corinne Green	508-524-5903		Corinne@opencape.org	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
Dennis Street Lights	Tom Andrade	508-760-6166		tandrade@town.dennis.ma.us		x			Town owned Street lights to be relocated under Item 823.72	x			x		x
Harwich Street Lights	Lincoln Hooper	508-430-7555		lhooper@harwichdpw.com	x		x		Town owned Street lights	x			x		x
National Grid Gas	Melissa Owens	781-907-2845		Melissa.Owens@nationalgrid.com		x		x	No known conflicts, no relocations needed. See 4/14/25 email.				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 Towns of Dennis and Harwich. The information provided is the best available information prior to project advertisement.

Proposal No. 608742-132267

PUC FORM - CONTINUED

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

9/4/2025
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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 ?	
					Exclusive Utility on site	Concurrent Utilities	Contractor Off-Site	Contractor Concurrent		
	C = Contractor	U = Utility Co.			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)
	C		>Contractor to notify the Utilities 30 days prior to the start of any work. >Contractor to perform clearing & grubbing, tree trimming, and required slope work.							
			UTILITY OPERATIONS							
Task: 1			***Verizon***							
		U	VERIZON LINE TO PLACE ALL NEW POLES (34 POLES)	27	x			x		
		U	VERIZON LINE TO PLACE NEW ANCHORS, GUYING, AND STRAND	19	x			x		
			Sub-Total	**46**						
Task: 2			***Eversource Electric***							
		U	ES Pole Sets	7	x			x		
		U	Frame and prep poles for wire pull	38	x			x		
		U	Wire Pull and Clip in	55	x			x		
		U	OH Equipment	9	x			x		
		U	OH Cut Overs	42	x			x		
		U	UG Cable	26	x			x		
		U	UG Cut Overs	22	x			x		
		U	Demo	17	x			x		
			Sub-Total	**216**						
Task: 3			***Harwich DPW - Lighting***							
		U	Remove 14 streetlights from existing utility poles	2	x			x		
		U	Reattached 14 streetlights to utility poles	2	x			x		
			Sub-Total	**2**						
	C		>Contractor to relocate utility pole-mounted cobrahead streetlights on utility poles in Dennis.							
Task: 4			***Open Cape***							
		U	Site set-up. Place hardware on newly relocated poles. 32 new set-ups.	1	x			x		
		U	Release stored cable at 2 location, release cable supports at 32 pole locations.	1	x			x		
		U	Redistrubuite cable over 3,934' of poleline, transfer to new locations.	1	x			x		
		U	Place and Fasten cable supports and cable on 32 new set-ups. Refasten cabling to existing poles.	0.5	x			x		
		U	Remake slack location and document remaining stored cable footage. Break down work location.	0.5	x			x		
			Sub-Total	**4**						
Task: 5			***Comcast***							
		U	Rebuild new plant on Route 28 Dennis/Harwich from pole 42/2 to pole 37/435.	24	x			x		
		U	Delash fiber, swing and attach to new pole line.	8	x			x		
		U	Cold splicing of new plant.	6	x			x		
		U	Activation of new plant.	2	x			x		
		U	Wreckout old plant from poles to be removed	4	x			x		
			Sub-Total	**44**						
	C		>Contractor to install telephone conduits and manholes prior to Verizon's underground work.							
Task: 6			***Verizon***							
		U	VERIZON LINE TO PLACE ALL NEW AERIAL COPPER CABLES	12	x			x		
		U	VERIZON LINE TO PLACE ALL NEW AERIAL FIBER CABLES	4	x			x		
		U	VERIZON LINE TO ROD & ROPE EXISTING DUCTS	12	x			x		
		U	VERIZON LINE TO PLACE ALL NEW UNDERGROUND COPPER CABLES IN DUCTS	2	x			x		
		U	VERIZON LINE TO PLACE ALL NEW UNDERGROUND FIBER CABLES IN DUCTS	10	x			x		
		U	VERIZON CWI TO MOVE ALL RISERS TO NEW POLE LOCATIONS	5	x			x		
		U	VERIZON LINE TO PLACE ALL NEW TERMINALS AND DROPS	2	x			x		
		U	VERIZON SPLICE TO JOIN ALL NEW AERIAL COPPER CABLE & TRIM OUT OLD	30	x			x		
		U	VERIZON SPLICE TO JOIN ALL NEW AERIAL FIBER CABLE & TRIM OUT OLD	2	x			x		
		U	VERIZON SPLICE TO JOIN ALL NEW UNDERGROUND COPPER CABLE & TRIM OUT OLD	3	x			x		
		U	VERIZON SPLICE TO JOIN ALL NEW UNDERGROUND FIBER CABLE & TRIM OUT OLD	13	x			x		
		U	VERIZON LINE TO REMOVE ALL OLD FIBER CABLE (AERIAL & UNDERGROUND)	9	x			x		
		U	VERIZON LINE TO REMOVE ALL OLD COPPER CABLE (AERIAL & UNDERGROUND)	12	x			x		
		U	VERIZON LINE TO REMOVE ALL OLD TERMINALS & DROP WIRES	5	x			x		
		U	VERIZON LINE TO REMOVE ALL OLD ANCHORS, GUYING, AND STRAND	6	x			x		
		U	VERIZON LINE TO REMOVE ALL OLD POLES (35 POLES)	30	x			x		
			Sub-Total	**157**						

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 ?	
			Exclusive Utility on site	Concurrent Utilities	Contractor Off-Site	Contractor Concurrent	Potential Access Restraint (Yes/No)	Reason/Note (optional)
			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		
C = Contractor U = Utility Co.								
Task: 7	***NGRID - Gas***							
U	**Adj. GG's	3	x			x		
	Sub-Total	**3**						

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 Duration, Not Provided By Utility Company.

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DOCUMENT A00809

VERIZON DETAILS AND SPECIAL PROVISIONS

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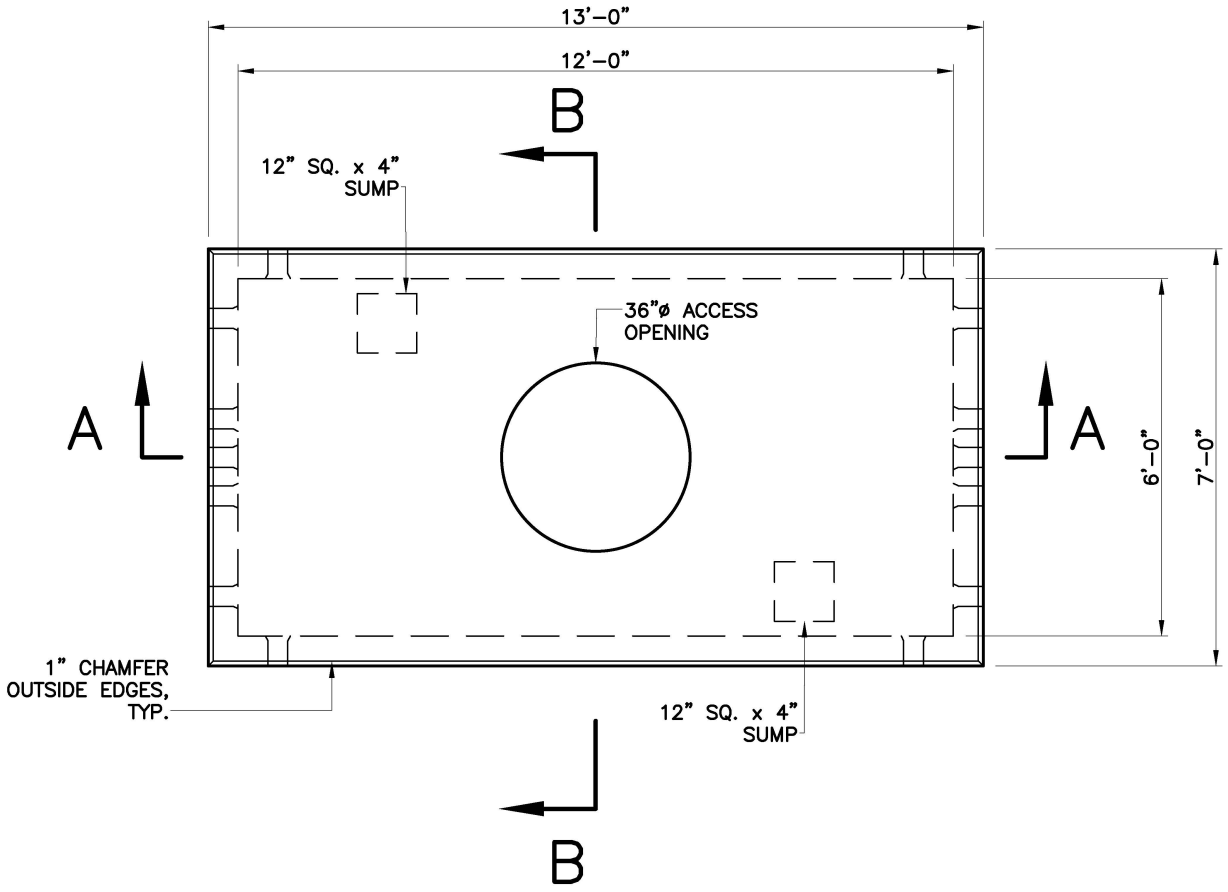
SHEA CONCRETE PRODUCTS
New England's Premier Precaster
800-696-7432 (SHEA)
www.sheaconcrete.com
MAILING ADDRESS: 87 HAVERHILL RD AMESBURY, MA 01913

MANHOLE 6' X 12' X 7'



PLAN

NOTES:

1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
2. DESIGN LOADING: AASHTO HS20-44, 0 TO 5 FEET COVER.
3. STEEL REINFORCEMENT CONFORMS TO ASTM A615, GRADE 60.
4. MINIMUM STEEL COVER 1".

SHEA PRODUCT ID:	FILE NAME:			
MH-6127	MH 6X12X7			
WEIGHT (LBS):	DRAWN BY:	DATE:	PAGE:	
36880	L.P.	2/6/2018	I.C.11-1	

NPCA CERTIFIED PLANT

Specifications subject to change without notice

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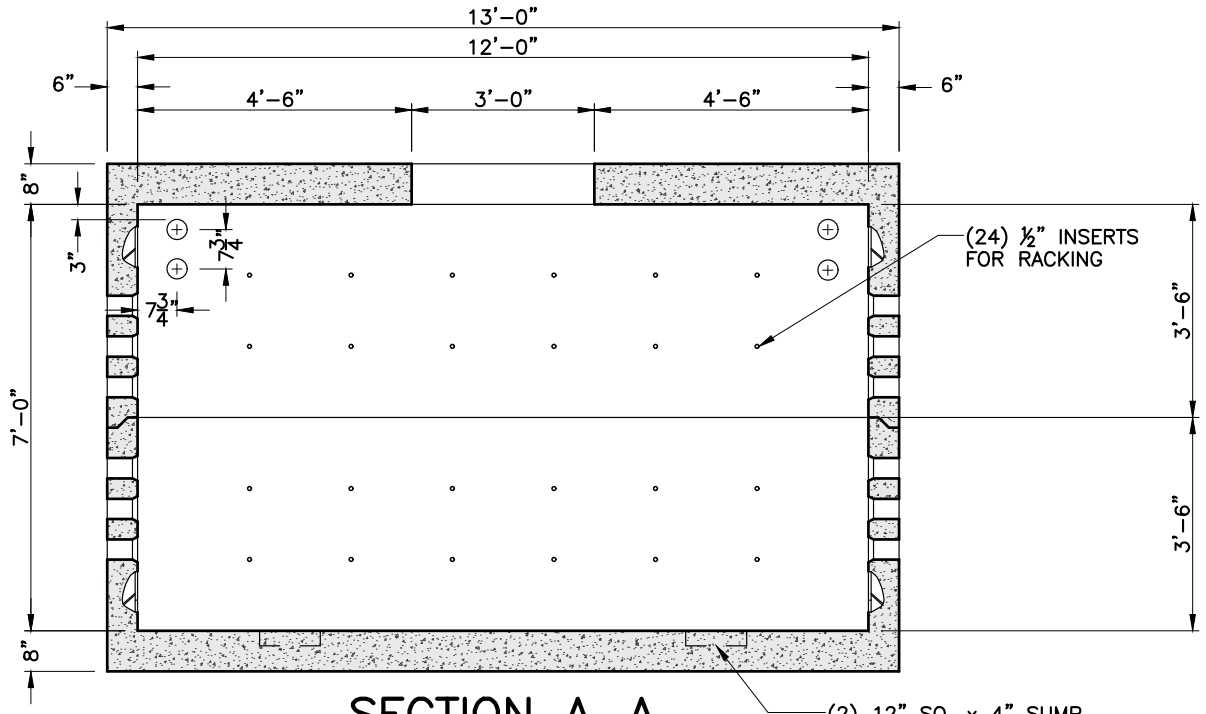
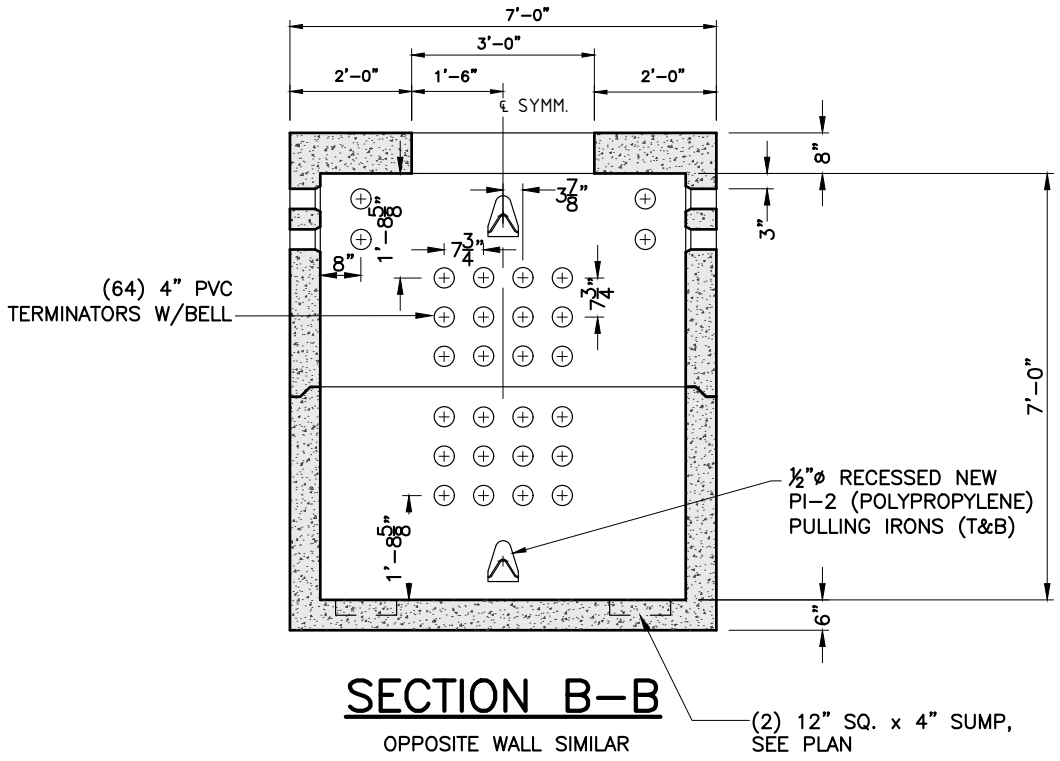


SECTION A-A

OPPOSITE WALL SIMILAR



SECTION B-B

OPPOSITE WALL SIMILAR

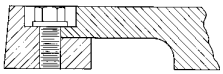
SHEA PRODUCT ID: MH-6127	FILE NAME: MH 6X12X7			
WEIGHT (LBS): 36880	DRAWN BY: L.P.	DATE: 2/6/2018	PAGE: I.C.11-2	NPCA CERTIFIED PLANT

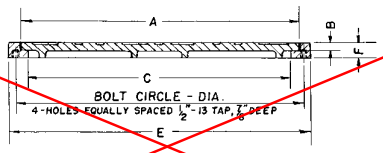
Specifications subject to change without notice

R-1749 Series
Telephone Design Large Manhole Frame, Solid Lid

Light Duty

Specify if security bolting required (2 per lid).





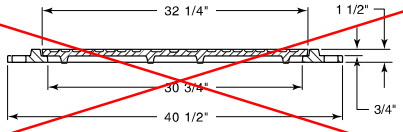
Dimensions in inches

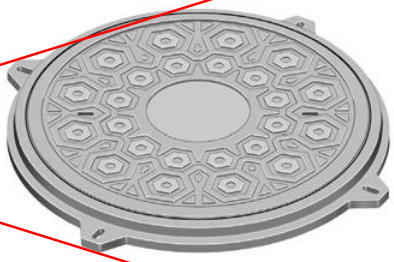
Catalog No.	A	B	C	E	F	Anchor Bolt Circle
R-1749-A	29 1/4	3/4	27 3/4	32	1 1/2	30-1/2
R-1749-B	32 1/4	3/4	30 3/4	35	1 1/2	33-1/2

R-1749-B1
Manhole Frame, Solid Lid

Light Duty

Furnished with four 3/4" x 1" anchor slots on 37" diameter bolt circle.





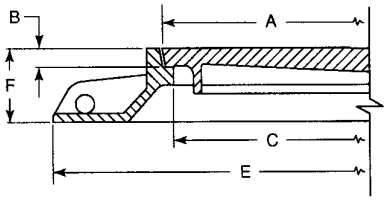
R-1750 Series
Telephone Design Large Manhole Frame, Solid Lid

Heavy Duty

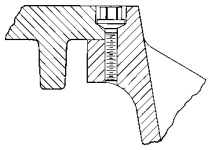
Furnished with machined horizontal and vertical bearing surfaces.

Covers can be bolted to frame with two pentagon head special monel security bolts upon request.

Wrenches available to fit special bolt at extra cost. Advise quantity required.



Illustrating R-1750-B

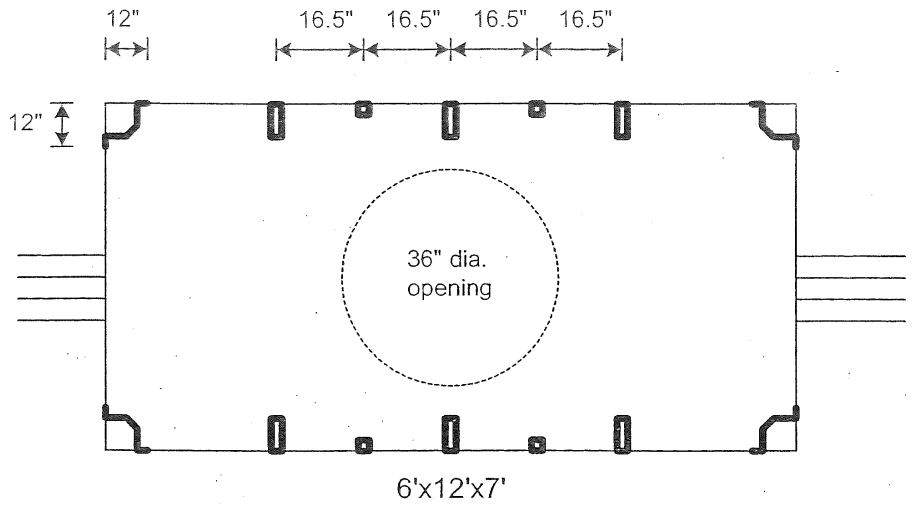


Dimensions in inches

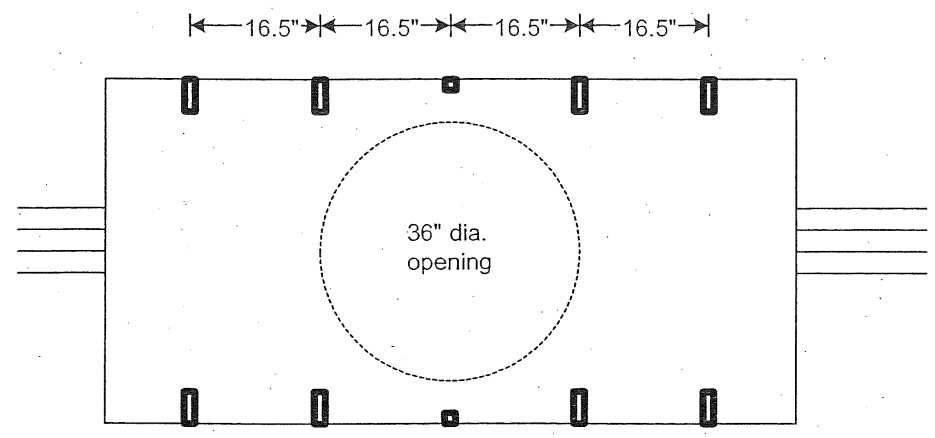
Catalog No. Standard	Catalog No. Security Bolted	A	B	C	E	F	Anchor Bolt Circle*	Grate Alt.
R-1750-A	R-1750-AB	26	1 3/8	24	43	10		R-2300
R-1750-B	R-1750-BB	29	1 3/8	27	46	10	43-1/2	R-2290
R-1750-B1	R-1750-B1B	29	1 3/8	27	46	5 5/8	43-1/2	R-2290-A
R-1750-B2	R-1750-B2B	29	1 3/8	27	46	3 1/2	43-1/2	
R-1750-C	R-1750-CB	32	1 3/8	30	49	10	43-1/2	
R-1750-C1	R-1750-C1B	32	1 3/8	30	49	5 5/8	43-1/2	
R-1750-C1S	R-1750-C1SB	32	1 3/8	30	46	5 5/8	43-1/2	R-2750
R-1750-CS	R-1750-CSB	32	1 3/8	30	46	10	43-1/2	R-2255

* Furnished standard with four 1" diameter holes in base flange, equally spaced.

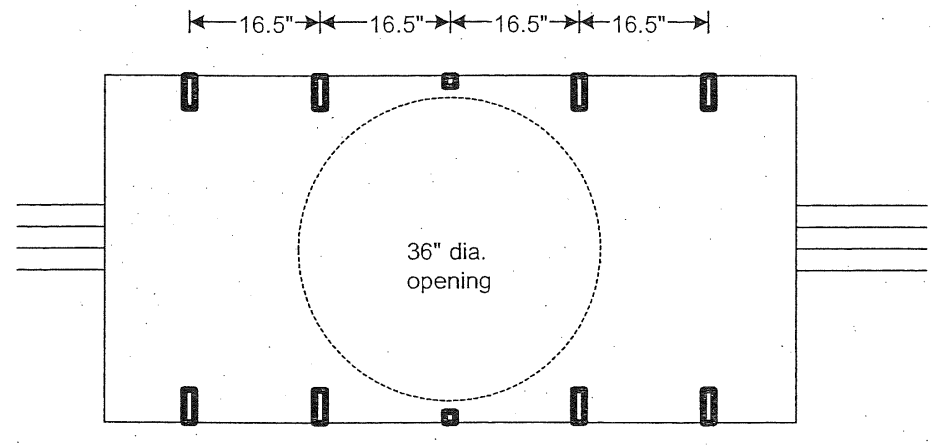
CLICK HERE to return to the Table of Contents



6'x12'x7'

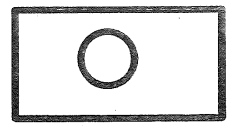


5'x10'x7'



4'x8'x7'

PLAN LEGEND



MH 1
W'xL'xH'

Manhole dimensions as given on plans are inside dimensions. Typical sizes are:
6'x12'x7'
5'x10'x7'
4'x8'x7'
(Size is dictated by cable sizes and amount of splicing expected at the location)

B cable rack support

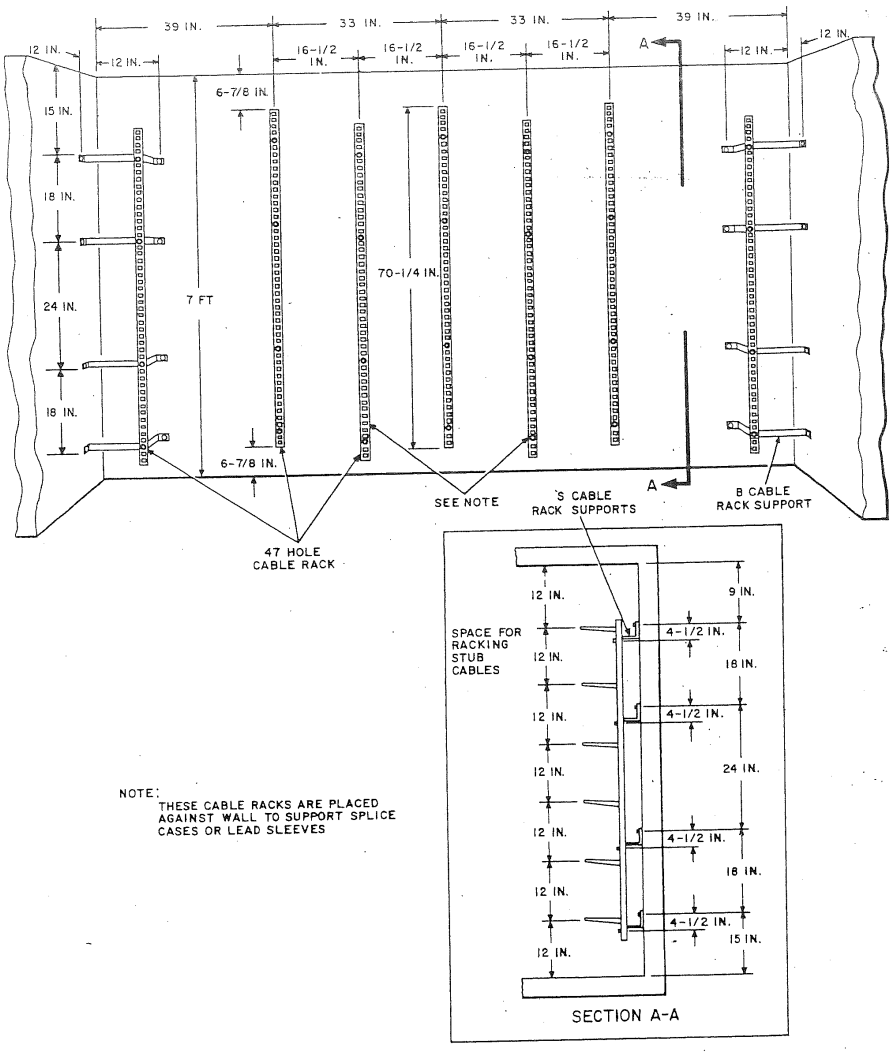
cable racks secured to S cable rack support

cable racks attached directly to wall

(See included practices for description of cable racking hardware.)

MANHOLE DETAILS

Proposal No. 608742-132267



NOTE:
THESE CABLE RACKS ARE PLACED AGAINST WALL TO SUPPORT SPLICE CASES OR LEAD SLEEVES

Fig. 9—Location of Cable Racks and Hooks in Typical Double Bay, Double Rack A-Type Manhole

Verizon Telecommunications Specifications

Section 1 .....Manholes
Section 2 .....Conduit
Section 3 .....Drawings

1. Manholes

1.1. Applications

All Verizon communication manhole locations.

1.2. Type

Standard two piece 38Y-1 (6'-0" x 12'-0" x 7'-0" inside dimensions) telephone company communications vault with 24-4" termaducts, 26-½" racking inserts, pulling eyes, sumps and bonding connections.

1.3. Installation

Manholes to be installed level and plumb with a 24" cover on a 12" bed of ¾" gravel. Joint to be sealed with a butyl rubber gasket or equivalent. Installation includes 24" masonry chimney capped with Verizon specific frame and cover on a grout seal. Galvanized steel loop to be placed in the chimney near top for ladder hooks. Galvanized racking and ladder may be left in manholes for telephone company to assemble.

1.4. Accessories

1.4.1. Racking

Verizon standard steel cable racking with support arms galvanized hot dipped to ASTM A153 or mechanical to B695-91.

1.4.2. Ladder

Verizon standard 8' hooked steel ladder galvanized hot dipped to ASTM A153 or mechanical to B695-91.

1.4.3. Frame & Cover

Verizon specific frame with 30" logo cover.

1.5. Providers

The following companies are familiar with Verizon requirements but suppliers are not limited to:

Manholes and Racking:

Chase Precast East Brookfield Rd. 70 N. Brookfield, MA 01535 508-967-8312	Rotundo Precast 41 Almeida Ave Rehoboth, MA 02769 508-336-7600	Utility Precast PO Box 157 153 Cranberry Hwy West Wareham, MA 02576 508-291-1314

Frames & Covers:

East Jordan Iron Works P.O. Box 439 East Jordan, MI 49727 800-874-4100	LeBaron Foundry P.O. Box 746 14 East Union St. Brockton, MA 02303 508-586-3130

03/04/22

Verizon Telecommunications Specifications

2. Conduit

2.1. Applications

All Verizon communication conduit.

2.2. Type

Industry standard type "C" 4 inch Heavy Wall PVC to conform to GTS 8342 or AT&T 8546 or PTS-77 or NEMA TC 10 requirements. Minimum wall thickness to be 0.149 inches. Use only preformed bends and couplings. No hot bending allowed.

2.3. Installation

2.3.1. Duct formation, including concrete encasement, to have 24" minimum cover.

2.3.2. Ducts to be placed on spacers to provide 1" separation between conduits and a 2" envelope around duct bank for concrete encasement. Spacers lock vertically and horizontally. Spacers shall not exceed 8 ft. intervals and shall be placed at each coupling. Intermediate spacers to be used as a cap on the top tier of the duct bank to prevent floating during the pour.

2.3.3. Concrete to be minimum 2000 psi. Vibrator to be used during placement to eliminate gaps between ducts.

2.3.4. Pole sweeps and ducts capped in dirt will not have encasement the last 4' to facilitate relocation and/or future extension. Ducts terminating at pole bases and in dirt for future to have 4" universal plugs.

2.3.5. All ducts terminated in vaults or at base of poles to be roped pneumatically or mechanically for identification and continuity verification.

2.3.6. Minimum 4' radius for all sweeps, including pole sweeps.

2.4. Accessories

2.4.1. Pull Rope

Pull rope to be mule tape, 1500 pound test or greater.

2.4.2. Spacers

Standard 4" spacers to provide at least 1" separation between ducts

2.4.3. Caps

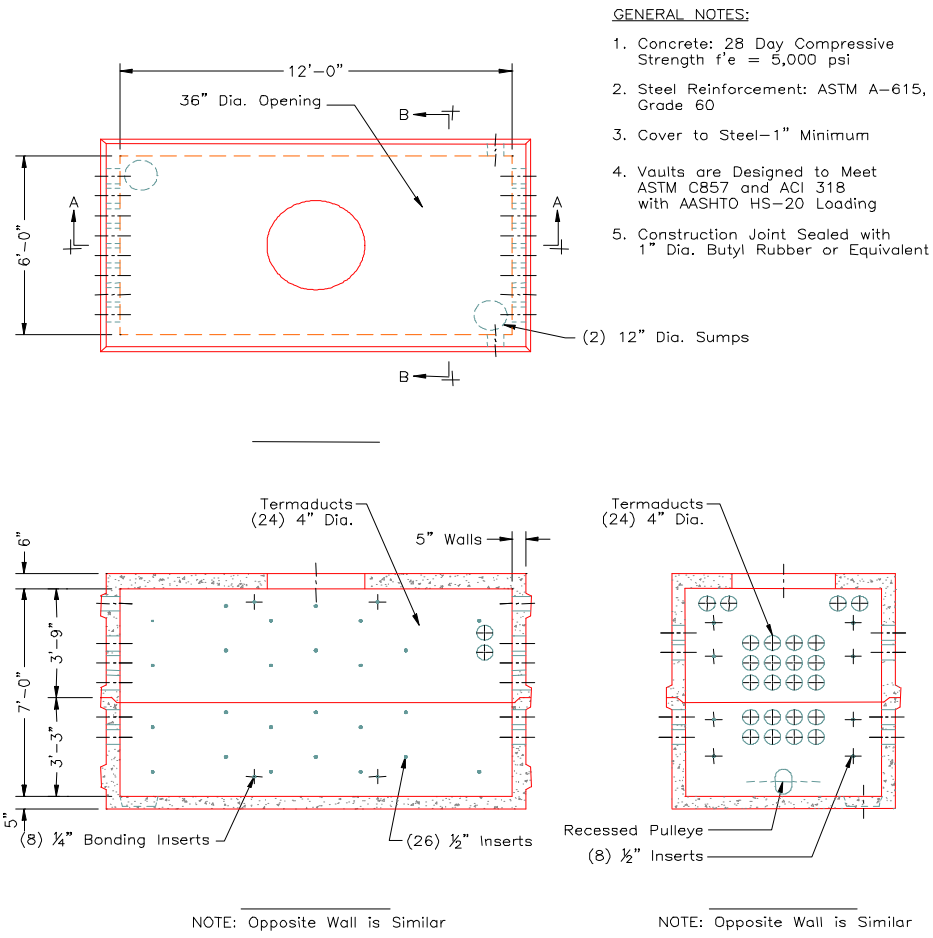
Standard Universal Plugs with rings to tie pull ropes and provide protection and support to unterminated ducts.

03/04/22

Verizon Telecommunications Specifications

3. Drawings/Attachments

3.1. 38Y-1 Manhole



Copyright 200

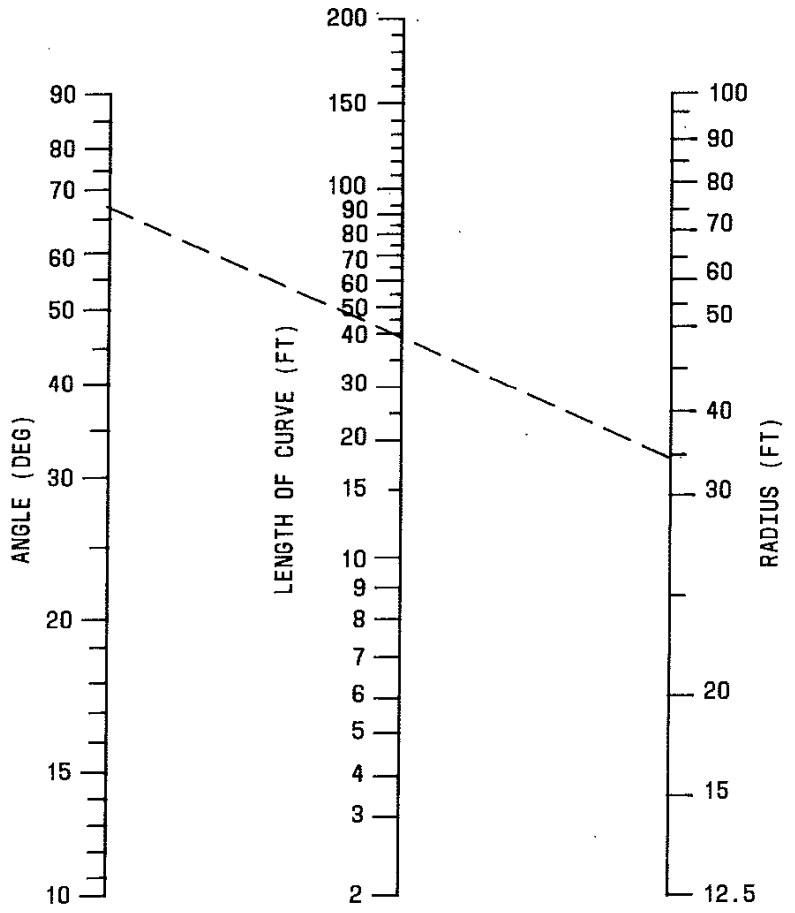
03/04/22

CONDUIT
Curve Design

CURVE DESIGN

Practice 919–240–100

The length of a curve can be found using the following nomogram. (Example: The length of a 64–degree, 35–foot radius curve is 40 feet.)



Subsidiary Conduit

Plastic Conduit. Curves are formed using rigid bends (see Pages 8–21).

Steel Pipe. Bends are formed on the job site using a portable pipe bender (see Practice 622–315–200).

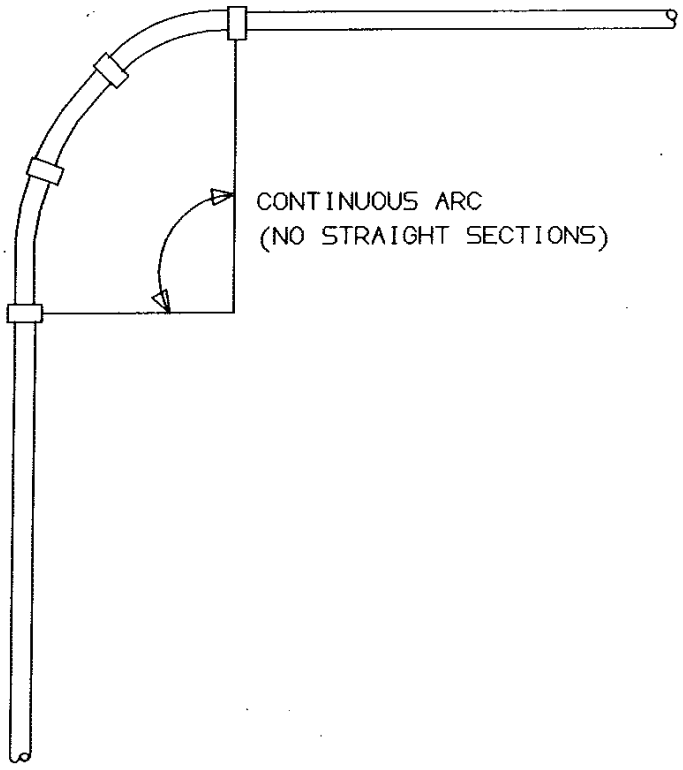
Single–Bore Conduit

Curve Radius 40 Feet or More

Plastic Conduit – Manually bend straight conduit. Conduit must be firmly anchored in trench.

Curve Radius Less Than 40 Feet

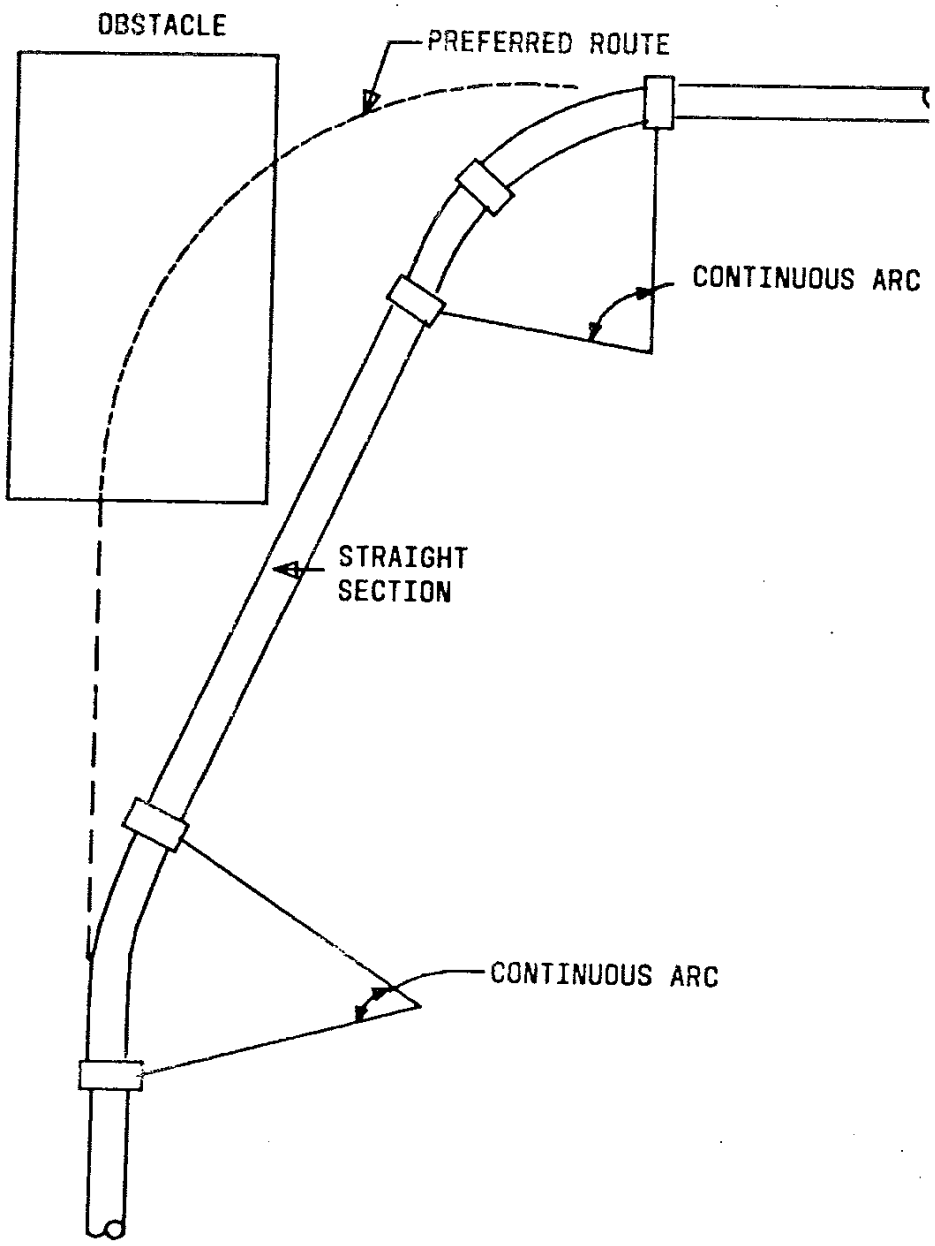
Construct curve in one continuous arc, if possible, using rigid bends without interspersed straight sections, as illustrated below.



For plastic conduit use 15–foot radius bends (7 or 30 degrees, as required. Rigid bends are described on Pages 8–20.

If an obstacle prevents construction of the curve in a single arc, use two arcs connected by a single straight section, as illustrated on Page 8–18.

CONDUIT
Curve Design



CONDUIT AND PIPE

Practice 919-240-400

Factors to Consider in Selecting Type of Conduit

- Material cost and local availability
- Ease of handling
- Ease of joining
- Concrete encasement and backfill requirements
- Soil conditions
- Special conditions (e.g., heat, gas, heavy loads, limited cover).

Advantages of Single-Bore Conduit:

- Lightweight: mechanical handling equipment not required
- Good joint integrity
- Strong, stable structure (if concrete-encased)
- Easily rearranged to avoid obstacles
- Can be pneumatically rodded.

Advantages of Multiple-Bore Conduit

- Long trench openings not required
- Select backfill not required
- Ready-mixed concrete not required.

CONDUIT
Conduit and Pipe

Single–Bore Conduit

Practices 622–020–100, 919–240–400

Straight lengths of single–bore conduit are available as follows:

Material	Length (Ft)	Weight (Lb/Ft		
		Type B	Type C	Type D
Plastic	20*	0.6–1.0	1.0–1.5	1.2–1.7

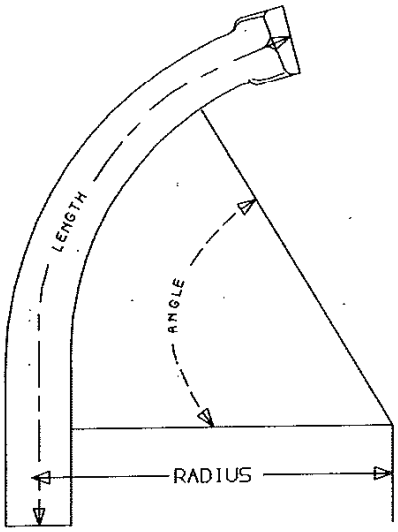
* Longer and shorter lengths available from manufacturer.

Type B (thin wall) requires concrete encasement.

Type C (thick wall) may be buried with selected backfill in straight runs.

Type D is ultraviolet (sunlight) and flame–resistant.

Rigid bends for single-bore conduit are illustrated and listed below.



PLASTIC

RIGID BENDS FOR 4-INCH SINGLE-BORE CONDUIT

Material	Angle (Degrees)	Radius (Feet)	Length (Feet-Inches)
B, C, or D Plastic	7	15	2-4
	30	15	8-4
	30	12	6-9
	45	9	7-7
	45	6	5-3
	45	3	2-10
	90	3	5-3
E Plastic*	90†	3	6-0
	64	3	3-10

* Replaces cast iron for subsidiary conduit.

† Also available in split form for repairs.

For adapters and couplings, see Practices 622-020-100 and 919-240-400.

CONDUIT
Conduit and Pipe

STEEL PIPE

Practice 919–240–400

Steel pipe is used where conduit must be pushed or jacked, where environment is too severe for other conduit, and for submarine crossings. Standard weight pipe is available in the following sizes:

Nominal Size	Plain End		Bell End	
	OD (In.)	ID (In.)	OD (In.)	ID (In.)
1	1.315	1.048	—	—
1-1/2	1.900	1.610	—	—
2	2.375	2.068	—	—
3	3.500	3.068	3.50	3.06
3-1/2	4.000	3.548	4.00	3.54
4	4.500	4.026	4.50	4.02

PLACEMENT

Duct Arrangements

Duct Arrangements are subject to trench width and/or depth constraints imposed by terrain, the presence of other structures, required workman space, etc. The arrangement of ducts in a conduit run should be compatible with the manhole cable racking arrangement. (Refer to "Manholes" later in this section.) Generally, 2–, 3–, or 4–wide arrangements are preferred for single– or double–wall racking. Where a large number of ducts or other circumstances require center racking as well as wall racking, wider duct arrangements may be appropriate.

Separation From Other Structures

Practices 622–100–010, 622–300–205, NESC Rule 320, 919–000–100

The following separations are required for safety of personnel and for protection of telephone equipment:

Structure	Minimum Separation
Power or other foreign conduit	3–inch concrete 4–inch masonry 12–inch earth
Pipes (gas, oil) water, etc.)	6 inches when crossing 12 inches when parallel
Power conduit terminated on poles	Separate poles, if possible. If same pole, preferably 180°, but, not less than 90° F.
Railroads (except street railways)	Crossing: 5 feet below top of rail.* Terminating on poles: 12 feet from nearest rail, except 7 feet as sidings
Street railways	3 feet below top of rail.*

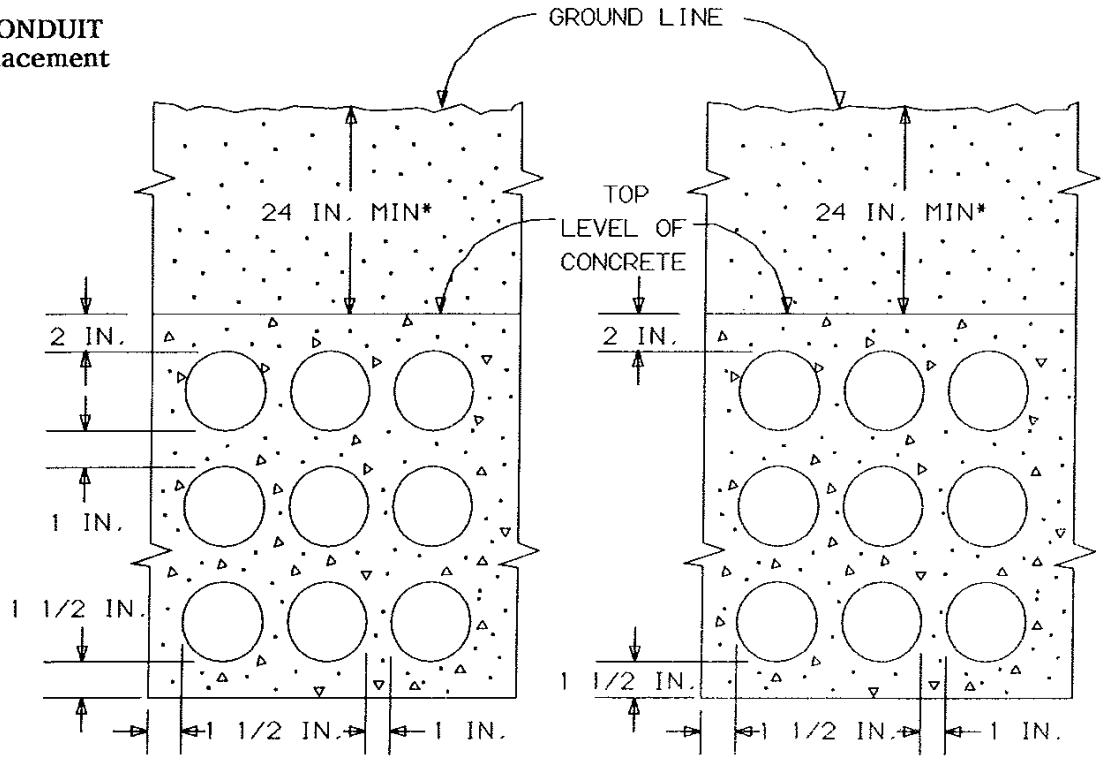
***Exception:** Where impractical, or for other reasons, these clearances may be reduced; however, the top of the conduit or conduit protection shall in no case extend above the bottom of the ballast section which is subject to working or cleaning. Local requirements will prevail.

Spacing and Backfill Requirements

622–020–020
914–240–100
Practice 919–240–400

The next three pages show spacing and backfill requirements for single–bore conduit. The volume of concrete or granular backfill will vary with the trench width and the degree of irregularity of the trench surfaces. Volumes given for each arrangement are for the minimum trench width consistent with the specified clearances. Volumes for sand or granular backfill include an allowance of about 1/12 for compaction.

CONDUIT
Placement



*18 IN. PERMITTED UNDER DRIVEWAYS, SIDEWALKS

CUBIC YARDS OF CONCRETE PER 100 FEET OF TRENCH

	B PLASTIC	
	3-WIDE	4-WIDE
2-HIGH	3.8	4.9
3-HIGH	5.2	6.6
4-HIGH	6.5	8.3

FOR LARGER FORMATIONS USE:

PLASTIC: .35WH + .35W + .28H

NOTE-OPTIONAL FOR STRAIGHT RUNS OF B PLASTIC.

SINGLE-BORE CONDUIT (ALL TYPES) ON CURVES

	B PLASTIC	
	3-WIDE	4-WIDE
2-HIGH	3.4	4.3
3-HIGH	4.2	5.4
4-HIGH	5.1	6.5

FOR LARGER FORMATIONS USE:

PLASTIC: 22WH + .48W + .23H

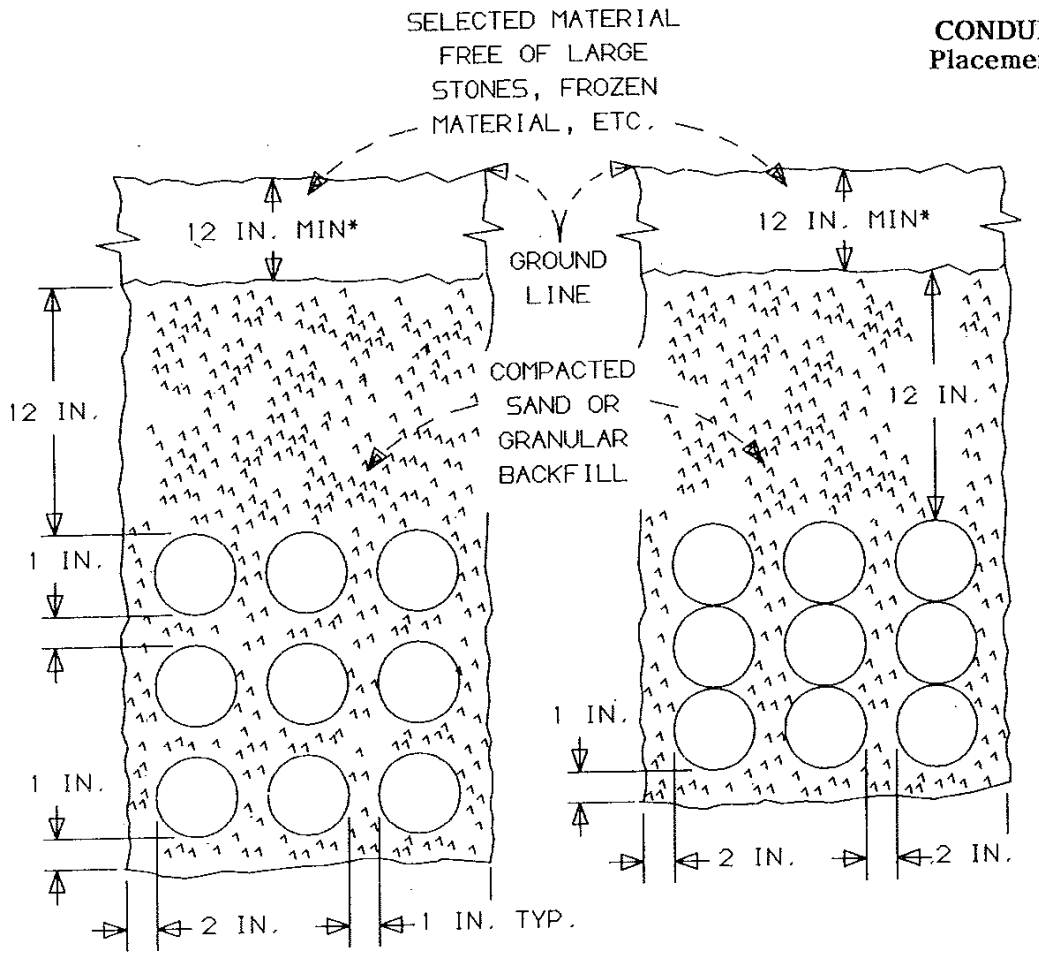
NOTE-LIMITED TO 3 TIERS PER POUR. REQUIRES LESS CONCRETE THAN METHOD USING VERT. SEPARATIONS

OPTIONAL ARRANGEMENT FOR B PLASTIC CONDUIT

(W = NO. OF DUCTS WIDE, H = NO. OF DUCTS HIGH)

8-24

CONDUIT
Placement



CUBIC YARDS OF SAND OR GRANULAR BACKFILL PER 100 FEET OF TRENCH

	C PLASTIC	
	3-WIDE	4-WIDE
2-HIGH	10	12
3-HIGH	11	14
4-HIGH	13	16

FOR LARGER FORMATIONS USE:

PLASTIC: .38WH + 1.8W + 4H + 1

C PLASTIC CONDUIT,
STRAIGHT RUNS, ANY
NUMBER OF TIERS

	C PLASTIC	
	3-WIDE	4-WIDE
2-HIGH	10	13
3-HIGH	12	15
4-HIGH	13	16

FOR LARGER FORMATIONS USE:

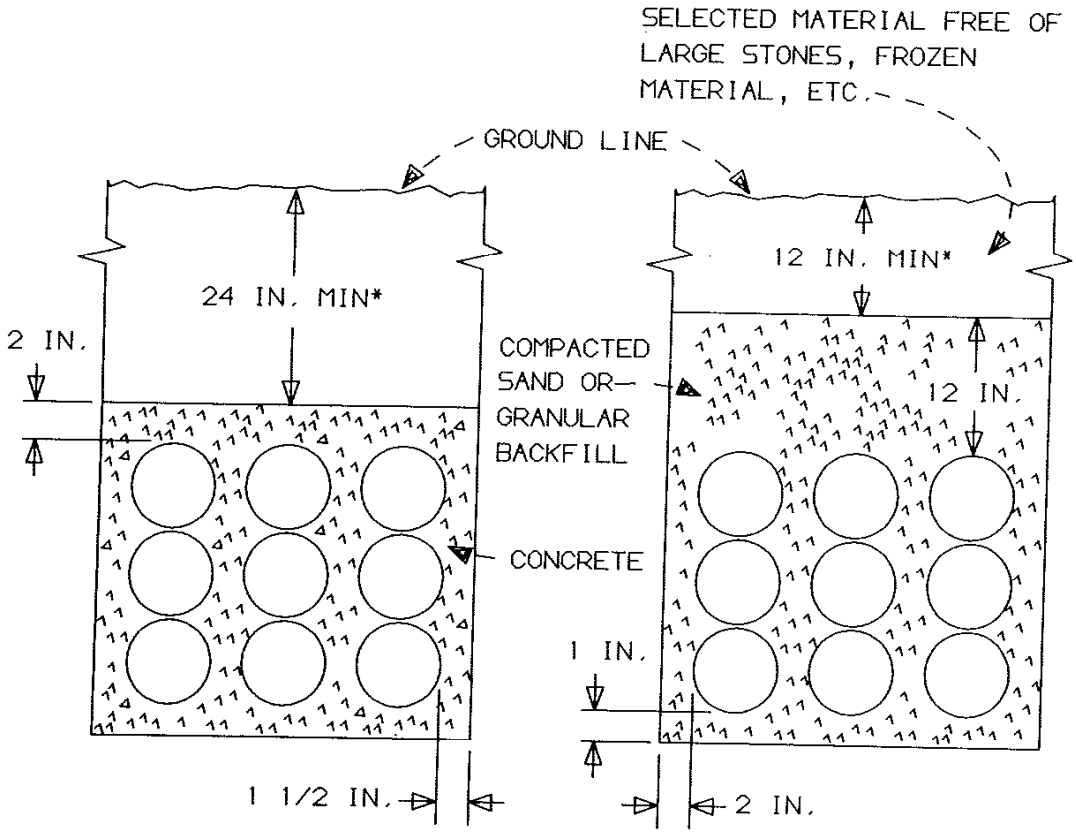
PLASTIC: .36WH + 2.3W + .2H + 7

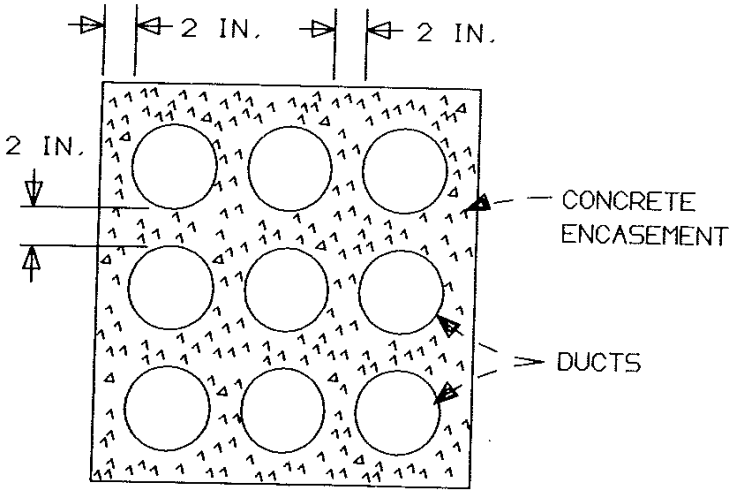
C PLASTIC CONDUIT,
STRAIGHT RUNS,
UP TO 4 TIERS

(W = NO. OF DUCTS WIDE, H = NO. OF DUCTS HIGH)

8–25

CONDUIT
Placement





SINGLE-BORE CONDUIT (ALL TYPES)
AT MANHOLE AND VAULT ENTRANCES

CONDUIT FORMATION

AT&T 622–020–020
914–240–100

CONDUIT FORMATIONS

No. Of DUCTS	Single Bore	Multiple Duct
4	2 Wide x 2 High	One, 4-duct
6	3 Wide x 2 High	One, 6-duct
8	4 Wide x 2 High	Two, 4-duct
9	3 Wide x 3 High	One, 9-duct
10	-	One, 6- duct and One, 4-duct
12	4 Wide x 2 High	Two, 6-duct or One, 12-duct (2)
15	-	One, 9-duct and One, 6-duct
16	4 Wide x 4 High	Four, 4-duct
18	-	Two, 9- duct
20	4 Wide x 5 High	Two, 6-duct and Two, 4-duct
24	4 Wide x 6 High	Four, 6-duct or Two, 12-duct (2)
28	4 Wide x 7 High	-
30	-	Five, 6-duct
32	4 Wide x 8 High	-
36	4 Wide x 9 High	Four, 9-duct (3 wide) and three, 12-duct (2)
40	4 Wide x 10 High	Four, 9-duct (3 wide) and One, 4-duct
Over 40 (1)	-	-

Note 1: Investigate center racking possibilities.
Note 2: 12-duct is available only in F and G concrete conduit.

CONDUIT
Placement

Subsidiary Conduit

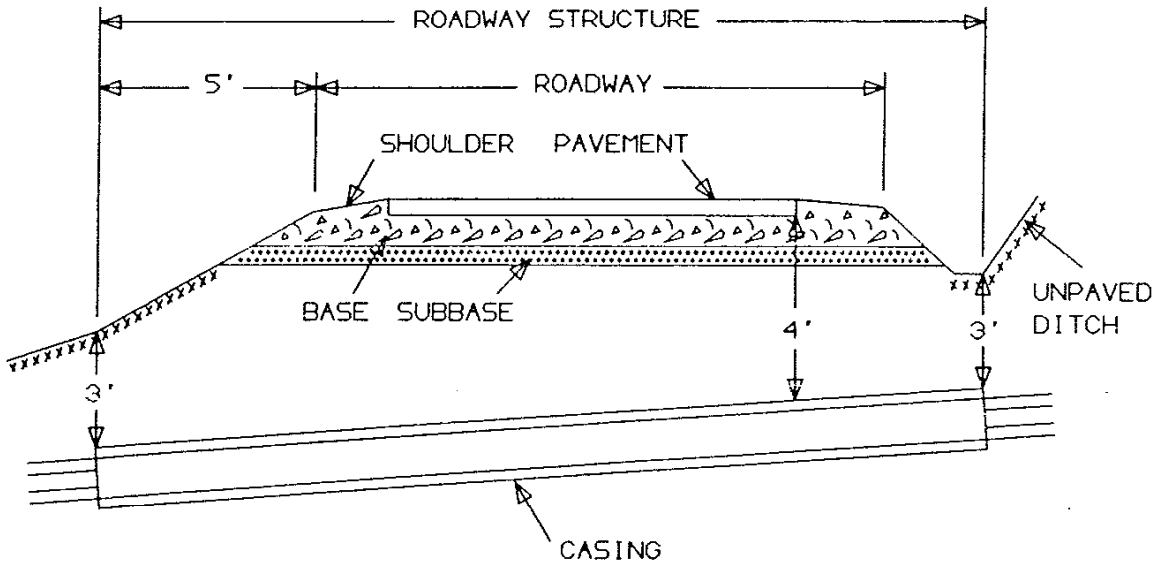
Practice 919–240–400

- Coordinate with builder regarding termination of conduit in a building.
- Use steel pipe or plastic conduit.
- Place in same trench with main conduit, if practicable, and on top of main formation.

Conduit Casings

Practices 919–000–100, 919–240–510

Steel casing pipe is recommended for housing underground conduit under railway and highway crossings. The casings are bored under the crossing to eliminate interference with traffic. Steel casings are also recommended as a supporting structure for conduit placed in unstable soil. Typical installations under a highway and railroad are shown below and on Page 8–29.

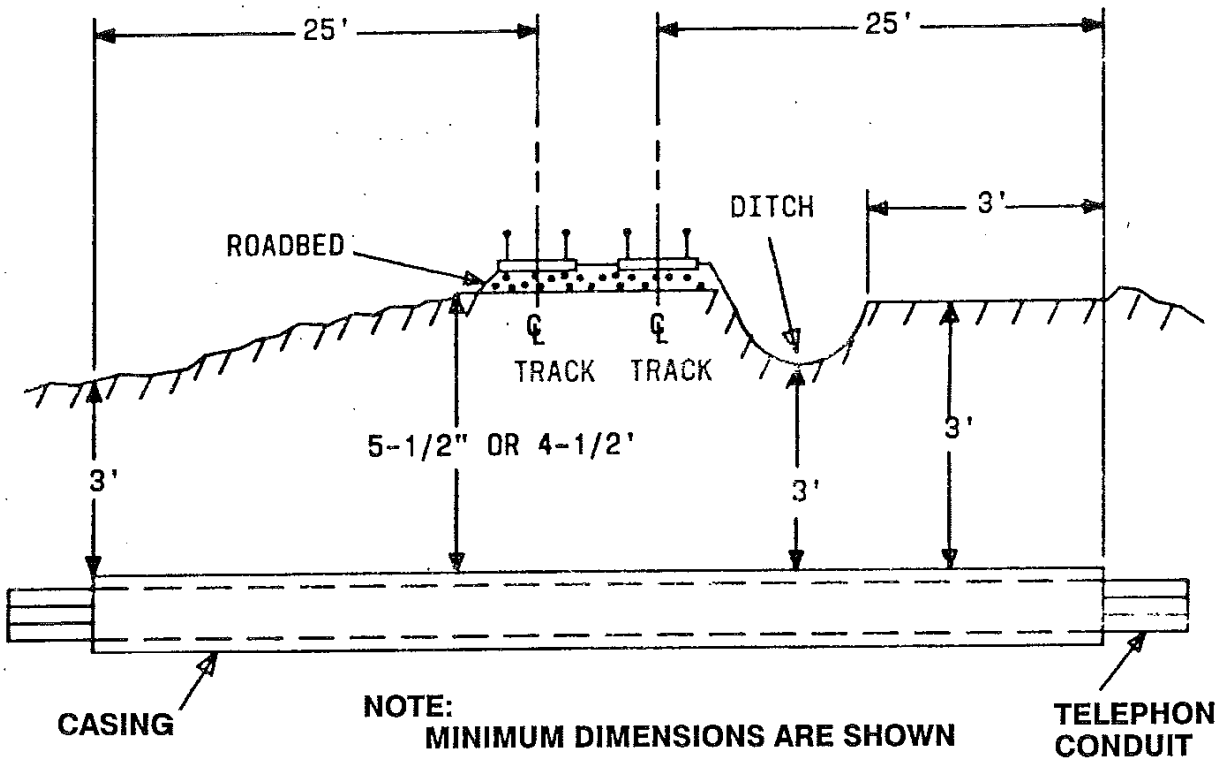


NOTE: MINIMUM DIMENSIONS ARE SHOWN

8–28

Conduit Casings Under Highways

CONDUIT
Placement
Casings



Conduit Casings Under Railroads

Note: Design runs to avoid conduit failure due to shearing at junction between casing and regular conduit run, which may result from a difference in settlement rates between casing and regular conduit. Local requirements will prevail.

CONDUIT
Placement
Casings

The table below lists the duct capacity of standard size casings.

STEEL CASING PIPE — DUCT CAPACITY

Standard Casing OD (Note 1)	Duct Capacity (Max)	
	Bundled Formation (Note 2)	Spaced Formation
12	3	3
16	4	4
18	7	4
20	7	7
24	10	10
30	19	19
36	—	24
42	—	37
48	—	44

Notes:

1. Casings with 22-, 26-, 28-, 34-, and 38-inch diameters are nonstandard sizes and should be avoided.
2. More than 19 ducts in the bundled formation are not recommended and may result in severe deflection of the bottom ducts when top ducts are filled.

The wall thickness of the casing pipe is dependent on several factors such as the live or dynamic load from vehicular traffic, the dead or earth load, and the diameter of the casing used (see table on Page 8–31). The dynamic load is dependent on the type and weight of the vehicle, the type of roadbed, and the depth of the casing. The earth load is dependent on the composition of the soil and the depth of the casing. Dynamic loads decrease and earth loads increase with casing depth.

STEEL CASING WALL THICKNESS	
Nominal Wall Thickness (Inches)	**Nominal Casing Diameter (Inches)**
0.188	under 14
0.219	14 to 16
0.250	18
0.281	20
0.312	22
0.344	24
0.375	26
0.406	28 to 30
0.438	32
0.469	34 to 36
0.500	38 to 48

Bridge Crossings

Practice 919–240–520

The diversity of bridge designs makes it impractical to prescribe a standard method of designing conduit on bridges. However, there are certain fundamentals which must be considered. These are covered in the above practice.

CONDUIT
Trench Work

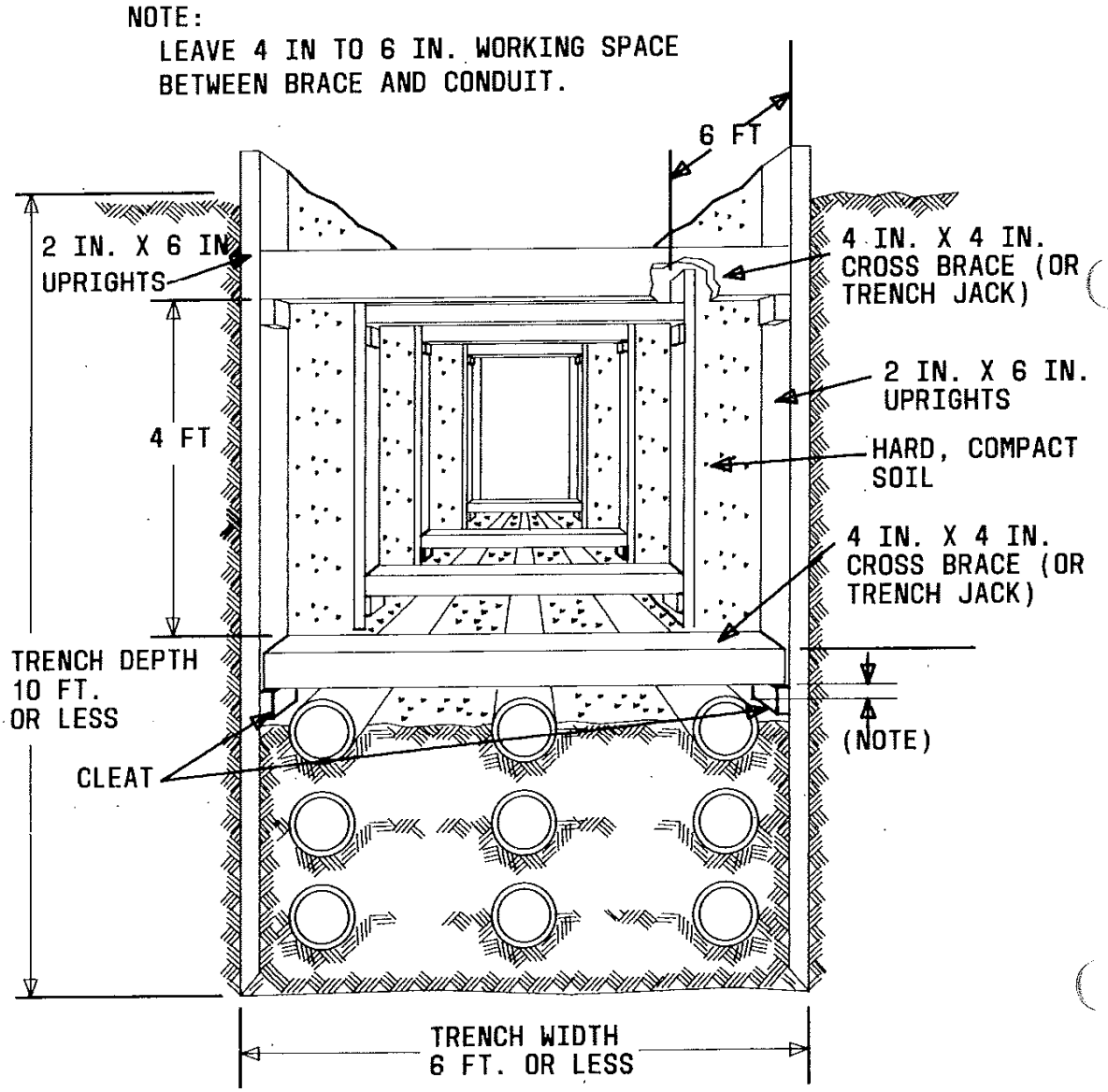
TRENCH WORK

Practice 622–020–020

The Occupational Safety and Health Act (OSHA) requires that all excavations deeper than 5 feet, wherein a craft person is required to enter and work shall have walls shored, sheeted, braced, or otherwise supported unless the excavation is in solid rock, hard shale, hard slag, or where the sidewalls are cut to a slope of 1 foot horizontally for each 2 feet or rise. Typical shoring arrangements are shown as follows.

Trenches less than 5 feet deep should be shored if they constitute a hazardous work location. Someone shall be stationed on the surface to keep the persons in the excavation in sight at all times.

Minimum shoring requirements are shown on the next page.



TRENCH SHORING — MINIMUM REQUIREMENTS
(Wood Member Dimensions in Inches)

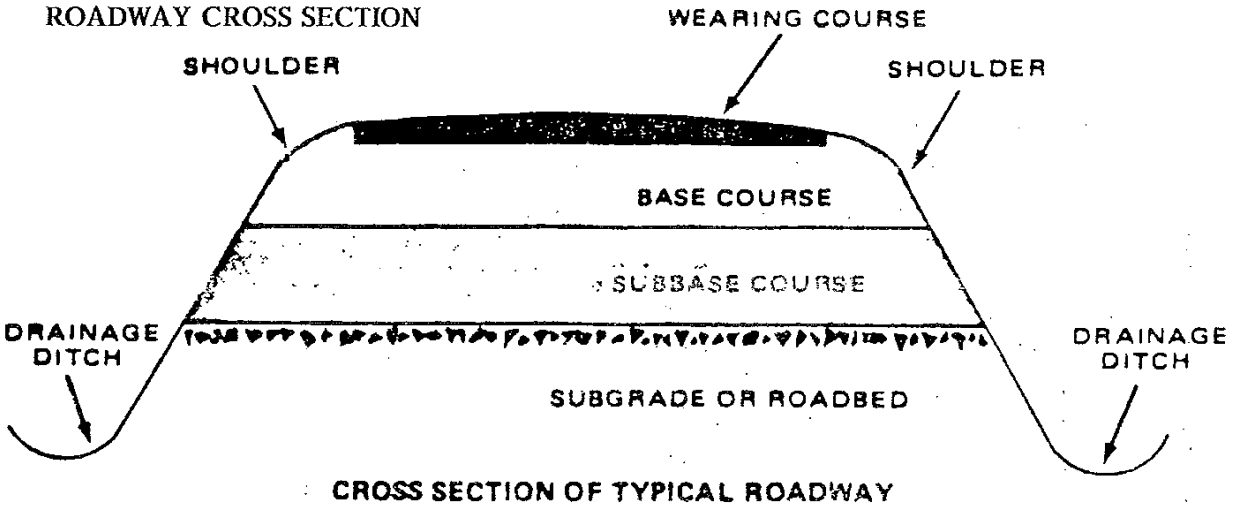
Trench Depth (Ft)	Soil (Note 1)	Uprights		Stringers (Note 2)	Cross Braces for Trench Width up to: (Note 3)			
		Size	Spacing (Ft)		6 Ft	9 Ft	12 Ft	15 Ft
5 to 10	A	3 × 4 or 2 × 6	6	None	4 × 4	4 × 6	6 × 6	6 × 8
	B		3	4 × 6				
	C		Tight	4 × 6	4 × 6	6 × 6	6 × 8	8 × 8
	D		Tight	6 × 8				
10 to 15	A	3 × 4 or 2 × 6 3 × 6	4	4 × 6	4 × 6	6 × 6	6 × 8	8 × 8
	B		2	4 × 6				
	C		Tight	4 × 6	6 × 6	6 × 8	8 × 8	8 × 10
	D		Tight	8 × 10				
15 to 20	All	3 × 6	Tight	4 × 12	6 × 8	8 × 8	8 × 10	10 × 10
>20	All	3 × 6	Tight	6 × 8	8 × 8	8 × 10	10 × 10	10 × 12

Notes:

1. Soil type or condition: A — Hard, compact
   B — Likely to crack
   C — Soft, sandy, or filled
   D — Hydrostatic pressure.
2. Stringer spacing = 4 ft.
3. Cross braces spaced 4 ft vertically, 6 ft horizontally. Trench jacks may be used in lieu of, or in combination with, cross braces.

CONDUIT
Roadway Cross Section

ROADWAY CROSS SECTION



CROSS SECTION OF TYPICAL ROADWAY

NOTE: ROADWAY MAY HAVE ANY COMBINATION OF THE ABOVE COURSES.

Wearing Course

The top layer of material wears off a roadway. It provides a waterproof surface to improve surface drainage and afford protection for the underlying layers against weathering and the abrasive action of traffic. Wearing courses can be classified into two categories:

A. Flexible Type: This type has little "beam" strength. It does not distribute load over the subgrade by its flexural resistance but depends upon the sheer strength of the base and surfacing. Flexible wearing courses may be further classified as follows:

- Intermediate Types: Those in which liquid bituminous materials are used as the binder.
- High Types: Which use asphalt cements and the heaviest grades of tar.

Flexural Type pavement mats are made up of a combination of the following types of coats:

- Prime Coat: A light application of liquid bituminous material used to bind together surface particles and to furnish a bond between the foundation surface and the applied bituminous mat.
- Tack Coat: A light application of liquid bituminous material used as the initial surface treatment to provide a thorough bond between two courses (i.e., the new bituminous mat and concrete pavements, old brick roads, previously treated bituminous surfaces, etc.).

Wearing Course –

- Bituminous Mat: Describes such application or construction which increases the thickness of the wearing course one inch or more.
- Seal Coat: An application of bituminous material followed by a cover of sand or stone chips applied to a new or old pavement which will improve visibility and skid resistance.

B. Rigid Type: This type of pavement includes plain and reinforced Portland cement concrete slabs. With relatively small depths, this type of pavement can transmit wheel loads upon the subgrade by virtue of its flexural strength and load transfer capacity in shear.

Rigid Type pavements are usually made from a cement paste called Portland Cement which combines with water in a chemical reaction called hydration. The resulting paste hardens over a considerable period of time. The adhesive qualities of the past form a strong bond with the aggregate particles to bind them firmly together forming the rock–like structure called concrete. This structure may or may not contain reinforcing such as rebars and/or wire mesh. The hydration of Portland cement can be accelerated (Rapid Curing) by the addition of about 2% calcium chloride by weight of cement. This acceleration is important where concrete is placed in cold weather or where high early strength is required. Agents are also available which will retard the hardening of concrete. This is important in hot weather when the curing is accelerated.

BASE COURSE

The strata of material directly beneath the wearing course. Its purpose is to provide a uniform and non–yielding support for the wearing course and to transfer and distribute traffic wheel loads evenly upon the subgrade. Thickness of this course is generally 5 to 8 inches and is generally made up of the following types of materials: gravel, crushed gravel, crushed rock.

SUB–BASE COURSE

The strata of material found directly beneath the base course and above the subgrade material. Its purpose is to bring the sub–grade material to fairly uniform strength characteristics so that the thickness of the more costly base course can be reduced. It is important that the sub–base have greater stability and bearing power than the sub–grade material that it is to protect.

SUB–GRADE

The bottom layer of material usually composed of existing surface top soil. This course provides for adequate foundation support of the roadway and loads.

CONDUIT
Roadway – Definitions

ROADWAY DEFINITIONS

Gravel

The coarse granular material, larger than sand, resulting from the natural erosion of rock.

Sand

The fine granular material (usually less than ¼" in diameter) resulting from the natural disintegration of rock, or from the crushing of friable sandstone rocks.

Silt

A soft impalpable sediment such as that commonly found in streams or lakes that not only has a fineness of texture but also is weak and unstable as a construction material.

Clay

A material which has a finer particle size than silt and is extremely cohesive and plastic. As indicated above in silts, clay is also weak and unstable as a construction material.

Mixed Soils

A soil composed of two or more of the above 4 classifications.

Washed Aggregate

Natural deposits of sand and gravel usually contain some clay or silt plus injurious amounts of organic coatings on the individual particles which will reduce their usefulness as a construction material. This extraneous material can usually be removed by a process of screening (passing through selves) and washing.

Slump Test

A test designed to measure the consistency of a concrete mix by placing a representative sample into a standardize cone in three equal layers. Each layer is rodded 25 times each. The surface of the top layer is struck off so that the cone is exactly filled. The mold is removed in a vertical direction and the slump (in inches) is measured.

Plant Mix

Asphalt pavement mixed at a mixing plant.

ROADWAY DEFINITIONS – (Cont'd)

Road Mix

Asphalt pavement which can be mixed and placed on the roadway.

Hot Mix, Hot Laid, Cold Mix, Cold Laid

Hot laid mixtures are both mixed and laid hot, whereas the cold laid mixtures may be mixed either hot or cold, but are placed at atmospheric temperatures.

MIX CHARTS

LAY DOWN THICKNESS	MIX NAME	USE	- CONTENTS % - LIQUID ASPHALT	SAND	- INCH STONE - 1/4	3/8	5/8	3/4	FILLER
4"-6"	PLANT MIX	BASE	2.8	5.8	5.8	7.8		77.8	
2"-6"	STABLIZED BASE	BASE	4.5	34.4	8.6	11.4		38.2	2.9
2"-6"	BINDER	INTERMEDIATE COURSE	4.5	34.4	8.6	13.4		38.2	0.9
2"-4"	MABC	TOP	5.2	36.1	8.5	33.2	14.2		2.8
1"-3"	FABC	TOP	5.7	42.4	17.0	32.1			2.8
1"	S.P.	FINE TOP	7.5	65.7	25.0				1.8
1/2"	SHEET	EXTRA FINE TOP	10.0	85.0					5.0
2"	WINTER MIX	TEMP. PVMT.	6.0	42.1	17.0	32.1			2.8

CONDUIT
Manholes

MANHOLES

Practices 622–500–011, 919–240–300

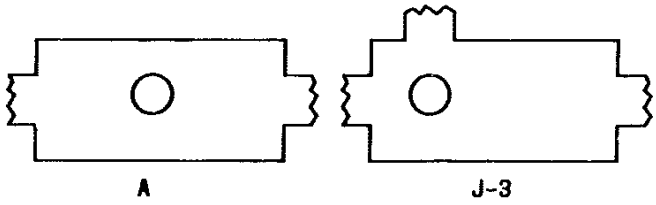
Planning and Design Considerations

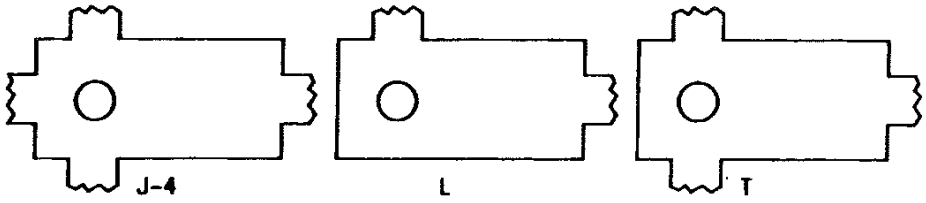
- Locate manhole to make optimum use of the connecting conduit structure for cable–placing operations.
- Use precast manholes wherever possible for economy, uniformity, quality control, and quick installation.
- Use cast–in–place construction when: (a) required manhole size exceeds range of precast manholes, (b) obstructions prevent use of precast manholes, (c) manhole is to be rebuilt, or (d) nonstandard designs are required.
- Size manhole for ultimate duct requirements.
- Plug all ducts to minimize entry of water into manholes.

Sizes and Types of Manholes

Basic Manholes

Basic manholes are designated A, J–3, J–4, L, and T, according to the directions in which ducts enter and leave the manhole, as illustrated below.





Sizes

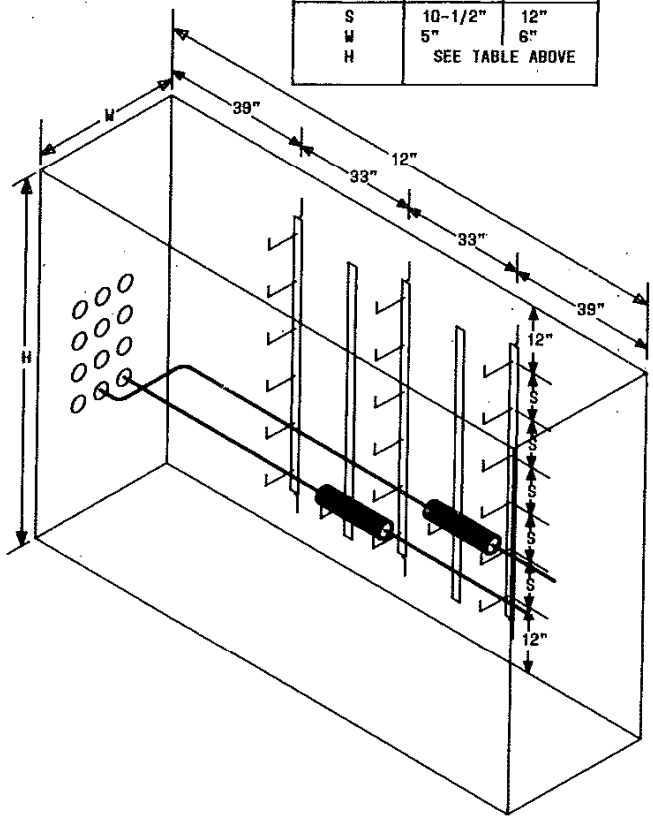
Recommended dimensions of basic manholes are shown below. These sizes allow racking space to accommodate one stub for every four main cables. The ultimate number of main cables must be distributed equally among all racking positions.

BASIC MANHOLE INSIDE DIMENSIONS

Type of Racking	Ultimate No. of Main Cables	Width (Ft)	Length (Ft)	Headroom (Ft)
Single	Any	5	12	7 plus one for every two cables in excess of 20
Double	Up to 20	6	12	7
	>20	6	12	7 plus one for every tier of ducts in excess of 20

CONDUIT
Manholes

DIMENSION	SINGLE-RACK	DOUBLE-RACK
S	10-1/2"	12"
W	5"	6"
H	SEE TABLE ABOVE	



Center Rack Manholes

When the planned cable capacity calls for a manhole of impractical or uneconomical depth, a wider and shallower cast-in-place manhole may be built and arranged for center racking as well as wall racking. A center rack manhole is essentially a double-width manhole with a center cable racking frame.

For the same depth and type of racking, a center rack manhole is twice as wide as a basic manhole and can accommodate twice as many main cables.

Precast Manhole

Practices 622–506–100, 919–24–300

Precast manholes are available with cast–in single or multiple plastic duct terminators to accept single–bore conduit. Thin concrete knockout sections may also be provided for terminating multiple–bore concrete conduit. The top section contains knockouts for subsidiary or lateral ducts.

Precast manholes for general use are listed below. Manholes for loading and carrier apparatus are listed below and on the next page.

PRECAST GENERAL USE MANHOLES

Basic Manhole Designation	Midsection Designation	Config-uration	Number of Sections	Inside Dimensions (Ft)			Capacity (Number of Main Cables)
				W	L	H	
38Y-4046-1 38Y-4046-3	— —	A J, L, T	2	6	12	7	20
38Y-4046-1 38Y-4046-3	38Y-4049-1 38Y-4049-3	A J, L, T	3*	6	12	10*	28
38Y-4046-1 38Y-4046-3	38Y-4050-1 38Y-4050-3	A J, L, T	3*	6	12	12*	36
38Y-4052	—	A	2	4	8	6	4†

*Including midsection.
†For splicing on light, secondary conduit runs or buried cable runs.

CONDUIT
Manholes

PRECAST CARRIER APPARATUS MANHOLES

Basic Manhole Designation	Midsection Designation	Configuration	Number of Sections	Inside Dimensions (Ft)			Carrier System	Capacity
				W	L	H		
38Y-4036-6	—	A	2	6	12	6-1/2	T2	2 dual-cable systems using 52-pair cables, or one dual-cable system using 104-pair cables
38Y-4036-7	—	Single-ended						
38Y-4046-1	—	A	2	6	12	7	T1, T1C	Dual 600-pair cables
38Y-4046-1	38Y-4049-1	A	3*	6	12	10*	T1, T1C	Dual 900-pair cables
38Y-4046-1	38Y-4050-1	A	3*	6	12	12*	T1, T1C	Dual 1200-pair cables
38Y-4046-4	—	A	2	6	12	7	T4M	One 22-tube coaxial cable
38Y-4046-4	38Y-4049-4	A	3*	6	12	10*	T4M	Two 22-tube coaxial cables
38Y-4052	—	A	2	4	8	6	T1, T1C	Four 475- or 479-type apparatus cases

*Including midsection.

PRECAST LOADING MANHOLES

Basic Manhole Designation	Midsection Designation	Configuration	Number of Sections	Inside Dimensions (Ft)			Capacity (Number of Coil Cases) (Note)
				W	L	H	
38Y-4046-1	—	A	2	6	12	7	4
38Y-4046-1	38Y-4050-1	A	3*	6	12	12*	10
38Y-4048	—	A	3	6	15	9	20
38Y-4048	38Y-4051	A	4*	6	15	12*	28

Note: Can vary depending on local practice
*Including midsection.

Seperation from other Structures:

Practice 622–100–100

Minimum reccommended speperation between telephone manholes and outside surfaces of foreign structures are as fellows: Electrical light, power or ther conduits, 3 inches. Pipes such as gas, water, oil mains; 6 inches when crossing and 12 inches when in parrallel.

FRAMES, COVERS, AND COLLARS

Practices 622–520–100, 919–240–300

For frames and covers, the 30–inch size is recommended for all applications and should be specified for use with precast manholes. Although 27–inch frames and covers are available, their use is not generally recommended, particularly where only one manhole opening is provided. It is easier to get into and out of the 30–inch size, especially with a blower or pump hose in the opening, and there is more room for placing apparatus into the manhole. **The 24–inch frame and cover should not be used in new construction.** Available frames and covers are listed below.

MANHOLE FRAMES AND COVERS

Type	Opening Dia. (In.)	Height of Frame (In.)	Remarks
A	27, 30	11	Has inner cover and sealing gasket; recommended for central office, carrier-equipped, loading, and critical junction manholes, or wherever a watertight or secured cover is required
SA	27, 30	5-5/8	Shallow version of A type
G	27, 30	10	Has 4 equally spaced 1-inch diameter holes in the frame flange to permit securing the frame to concrete collars and to 38Y manhole roofs. Used with both the G (nonlocking) and H (locking) covers.
SG	27, 30	5-5/8	Shallow version of G type. Same remarks as G type
R	27, 30	1-1/2	Used where not subject to vehicular traffic
D	30	1-1/2	Modified R with pentagonal head locking bolts
H	30	—	Covers only are equipped with two captive bolts with attached locking plates that engage the rim of either the G or the SG frame.

Caution: **For safety, use only one size frame on manholes with more than one opening.**

CONDUIT
Frames, Covers, and Collars
Duct Assignment and Cable Racking

A manhole collar provides a means for raising the manhole frame and cover to grade. Brick-and-mortar collars and concrete collars may be constructed to any height. Alternatively, the following precast concrete collars can be used, either alone or in combination, to attain the desired height for up to 10 feet of cover.

38Y PRECAST COLLARS		
TYPE	Height (in.)	Use
38Y-4039-1	5-1/2	Not a normal collar, but an apron designed to fit around the manhole cover at grade in unpaved areas to provide a solid, ground level work area.
38Y-4039-3 38Y-4039-9 38Y-4039-15	3 9 15	Used with any of the frames listed on table on page 8-40 except for D and R types. Can also be used under 38Y-4039-15R collar.
38Y-4039-15R	15	Includes a 30-inch R-type frame fabricated into collar. For use with R and D covers.

The above collars can be used with precast or cast-in-place manholes. At least one opening should be provided for manholes up to 12 feet in length, two openings beyond 12 feet in length, and three openings beyond 20 feet in length. The number of manhole openings required is doubled for center racked manholes.

Manhole Extension Rings

Practice 622-520-201

Pavement resurfacing operations sometimes necessitate the raising of manhole covers. This may be conveniently accomplished with manhole extension rings.

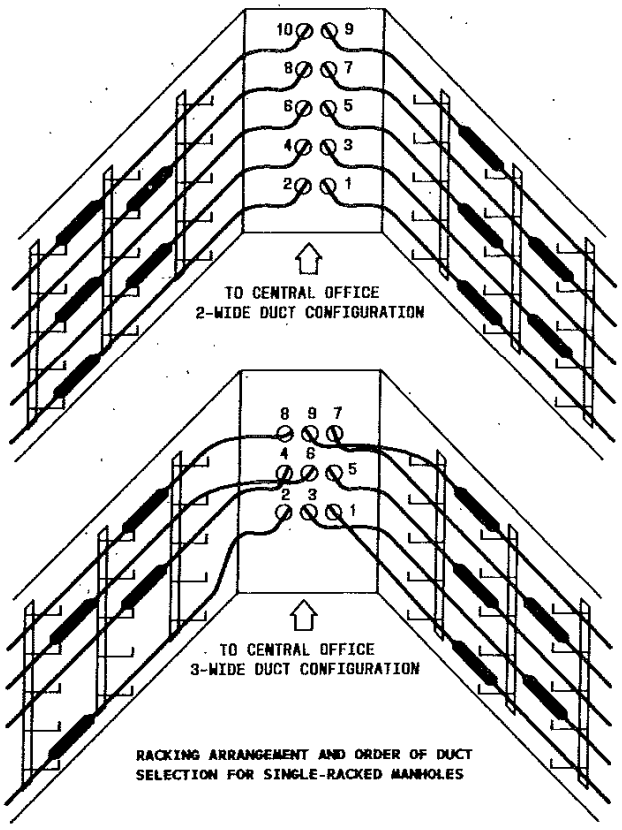
DUCT ASSIGNMENT AND CABLE RACKING

Practices 632-305-215, 919-240-300

Cable rack space should be used in the specified sequence to permit work on cables after placement and to preserve work space for splicing additional cables.

With double–racking arrangements, it is better to use all the outer (against the wall) rack spaces before using any inner (toward the center of the manhole) spaces. With either single or double racking, spaces should be used from the bottom up.

Ducts should be selected to avoid: (1) cable crossovers between the duct entrance and the cable rack, and (2) blockage of future access to vacant ducts. Racking arrangements and order of duct selection for line manholes are shown in the next two illustrations. For A–, L–, and T–type manholes, see referenced practices.

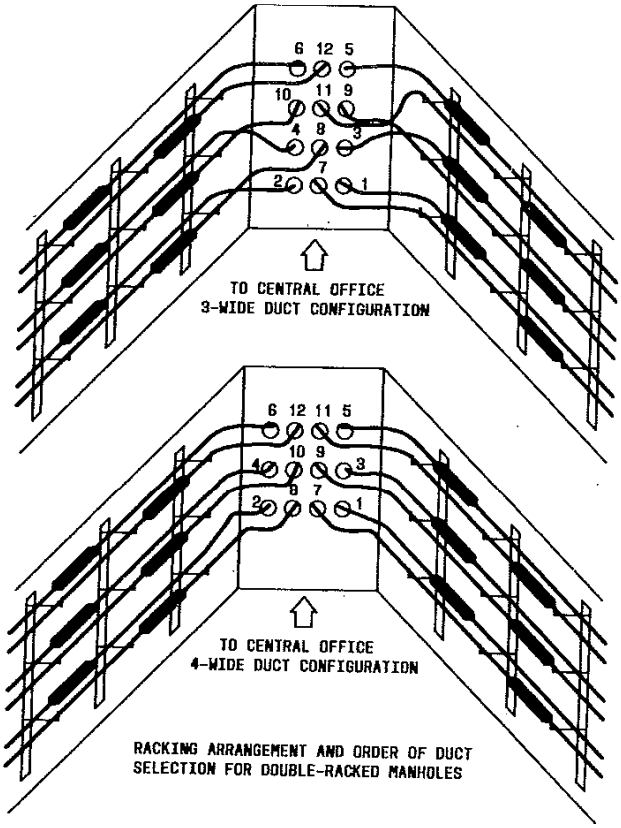


RACKING ARRANGEMENT AND ORDER OF DUCT SELECTION FOR SINGLE-RACKED MANHOLES

CONDUIT
Precast Manholes

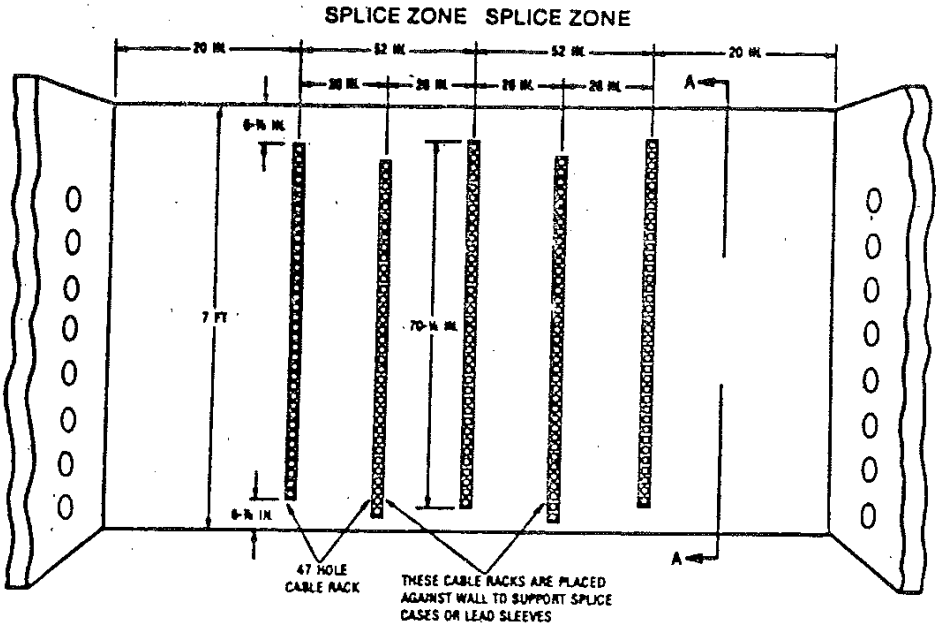
CABLE RACKS

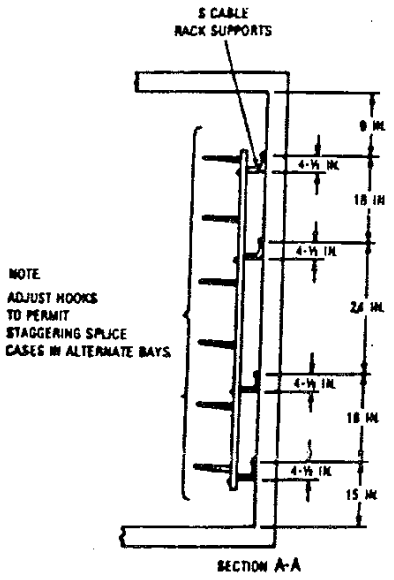
AT&T 622–520–100
919–240–300



RACKING ARRANGEMENT AND ORDER OF DUCT SELECTION FOR DOUBLE-RACKED MANHOLES

CABLE RACKS





NUMBER OF CABLE RACKS PER VERTICAL STRIP OF RACKS

HEAD ROOM	NUMBER OF RACKS			
	14 HOLE RACK	18 HOLE RACK	37 HOLE RACK	47 HOLE RACK
6 ft 6 in.				1
7 ft 0 in.				1
7 ft 6 in.		1	1	
8 ft 0 in.		1	1	
8 ft 6 in.		1		1
9 ft 0 in.		1		1
9 ft 6 in.	2		1	
10 ft 0 in.	2			1
10 ft 6 in.		2	1	
11 ft 0 in.		2		1

SIZE OF RACK	DISTANCE BETWEEN BOLT HOLES
8 Hook Holes	13-½ inches
14 Hook Holes	22 ½ inches
18 Hook Holes	28-½ inches
37 Hook Holes	18 and 24 inches
47 Hook Holes	18 and 24 inches

Cable Racks for

PLACEMENT

Duct Arrangements

Duct Arrangements are subject to trench width and/or depth constraints imposed by terrain, the presence of other structures, required workman space, etc. The arrangement of ducts in a conduit run should be compatible with the manhole cable racking arrangement. (Refer to "Manholes" later in this section.) Generally, 2–, 3–, or 4–wide arrangements are preferred for single– or double–wall racking. Where a large number of ducts or other circumstances require center racking as well as wall racking, wider duct arrangements may be appropriate.

Separation From Other Structures

Practices 622–100–010, 622–300–205, NESC Rule 320, 919–000–100

The following separations are required for safety of personnel and for protection of telephone equipment:

Structure	Minimum Separation
Power or other foreign conduit	3–inch concrete 4–inch masonry 12–inch earth
Pipes (gas, oil) water, etc.)	6 inches when crossing 12 inches when parallel
Power conduit terminated on poles	Separate poles, if possible. If same pole, preferably 180°, but, not less than 90° F.
Railroads (except street railways)	Crossing: 5 feet below top of rail.* Terminating on poles: 12 feet from nearest rail, except 7 feet as sidings
Street railways	3 feet below top of rail.*

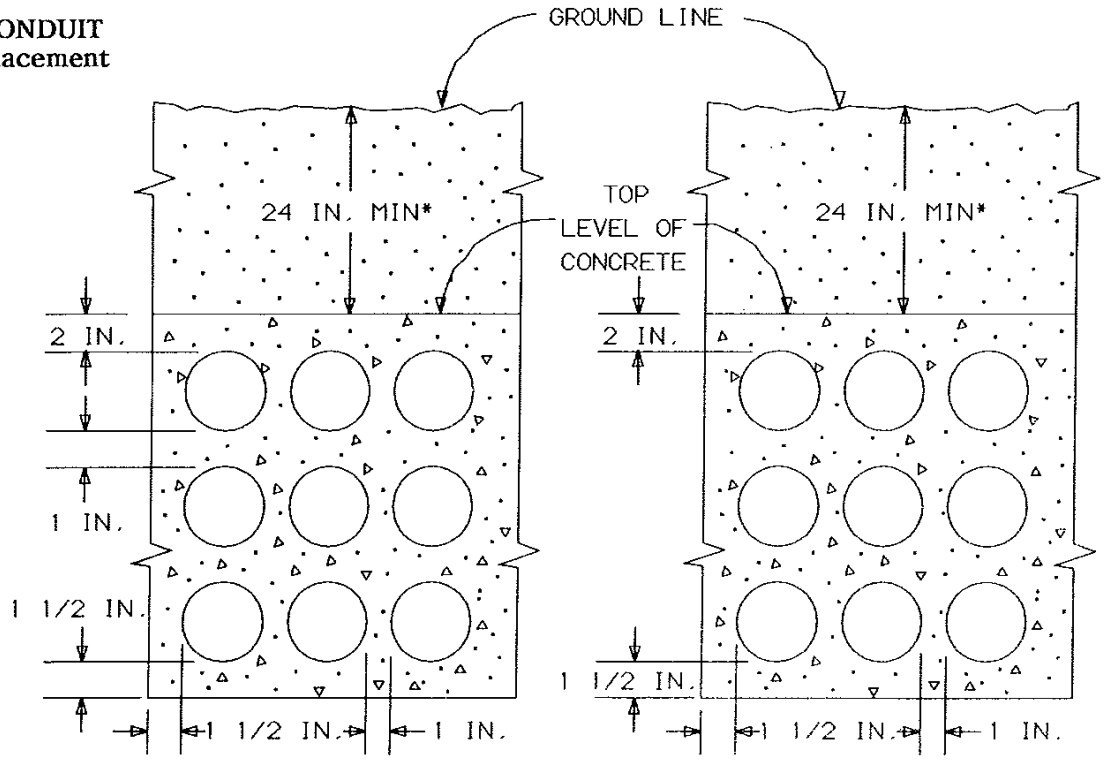
***Exception:** Where impractical, or for other reasons, these clearances may be reduced; however, the top of the conduit or conduit protection shall in no case extend above the bottom of the ballast section which is subject to working or cleaning. Local requirements will prevail.

Spacing and Backfill Requirements

622–020–020
914–240–100
Practice 919–240–400

The next three pages show spacing and backfill requirements for single–bore conduit. The volume of concrete or granular backfill will vary with the trench width and the degree of irregularity of the trench surfaces. Volumes given for each arrangement are for the minimum trench width consistent with the specified clearances. Volumes for sand or granular backfill include an allowance of about 1/12 for compaction.

CONDUIT
Placement



*18 IN. PERMITTED UNDER DRIVEWAYS, SIDEWALKS

CUBIC YARDS OF CONCRETE PER 100 FEET OF TRENCH

	B PLASTIC	
	3-WIDE	4-WIDE
2-HIGH	3.8	4.9
3-HIGH	5.2	6.6
4-HIGH	6.5	8.3

FOR LARGER FORMATIONS USE:

PLASTIC: .35WH + .35W + .28H

NOTE-OPTIONAL FOR STRAIGHT RUNS OF B PLASTIC.

SINGLE-BORE CONDUIT (ALL TYPES) ON CURVES

	B PLASTIC	
	3-WIDE	4-WIDE
2-HIGH	3.4	4.3
3-HIGH	4.2	5.4
4-HIGH	5.1	6.5

FOR LARGER FORMATIONS USE:

PLASTIC: 22WH + .48W + .23H

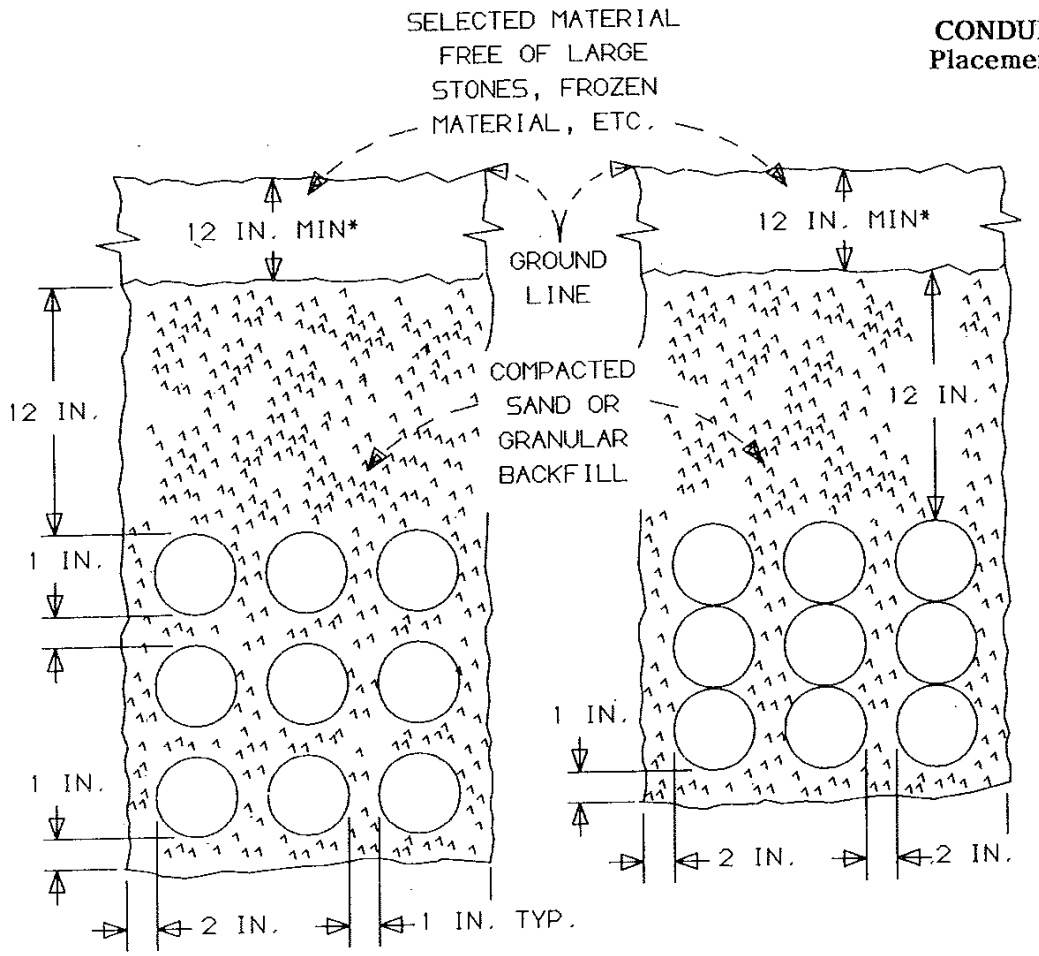
NOTE-LIMITED TO 3 TIERS PER POUR. REQUIRES LESS CONCRETE THAN METHOD USING VERT. SEPARATIONS

OPTIONAL ARRANGEMENT FOR B PLASTIC CONDUIT

(W = NO. OF DUCTS WIDE, H = NO. OF DUCTS HIGH)

8-24

CONDUIT
Placement



CUBIC YARDS OF SAND OR GRANULAR BACKFILL PER 100 FEET OF TRENCH

	C PLASTIC	
	3-WIDE	4-WIDE
2-HIGH	10	12
3-HIGH	11	14
4-HIGH	13	16

FOR LARGER FORMATIONS USE:

PLASTIC: .38WH + 1.8W + 4H + 1

C PLASTIC CONDUIT,
STRAIGHT RUNS, ANY
NUMBER OF TIERS

	C PLASTIC	
	3-WIDE	4-WIDE
2-HIGH	10	13
3-HIGH	12	15
4-HIGH	13	16

FOR LARGER FORMATIONS USE:

PLASTIC: .36WH + 2.3W + .2H + 7

C PLASTIC CONDUIT,
STRAIGHT RUNS,
UP TO 4 TIERS

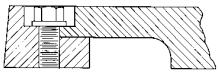
(W = NO. OF DUCTS WIDE, H = NO. OF DUCTS HIGH)

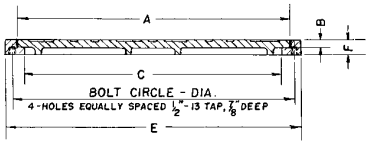
8-25

R-1749 Series
Telephone Design Large Manhole Frame, Solid Lid

Light Duty

Specify if security bolting required (2 per lid).





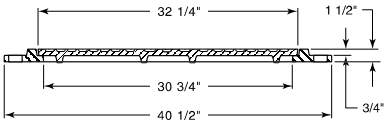
Dimensions in inches

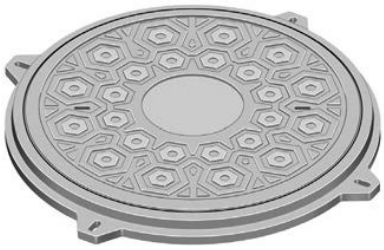
Catalog No.	A	B	C	E	F	Anchor Bolt Circle
R-1749-A	29 1/4	3/4	27 3/4	32	1 1/2	30-1/2
R-1749-B	32 1/4	3/4	30 3/4	35	1 1/2	33-1/2

R-1749-B1
Manhole Frame, Solid Lid

Light Duty

Furnished with four 3/4" x 1" anchor slots on 37" diameter bolt circle.





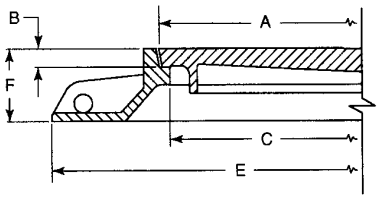
R-1750 Series
Telephone Design Large Manhole Frame, Solid Lid

Heavy Duty

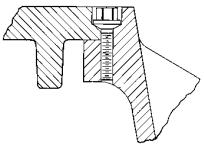
Furnished with machined horizontal and vertical bearing surfaces.

Covers can be bolted to frame with two pentagon head special monel security bolts upon request.

Wrenches available to fit special bolt at extra cost. Advise quantity required.



Illustrating R-1750-B

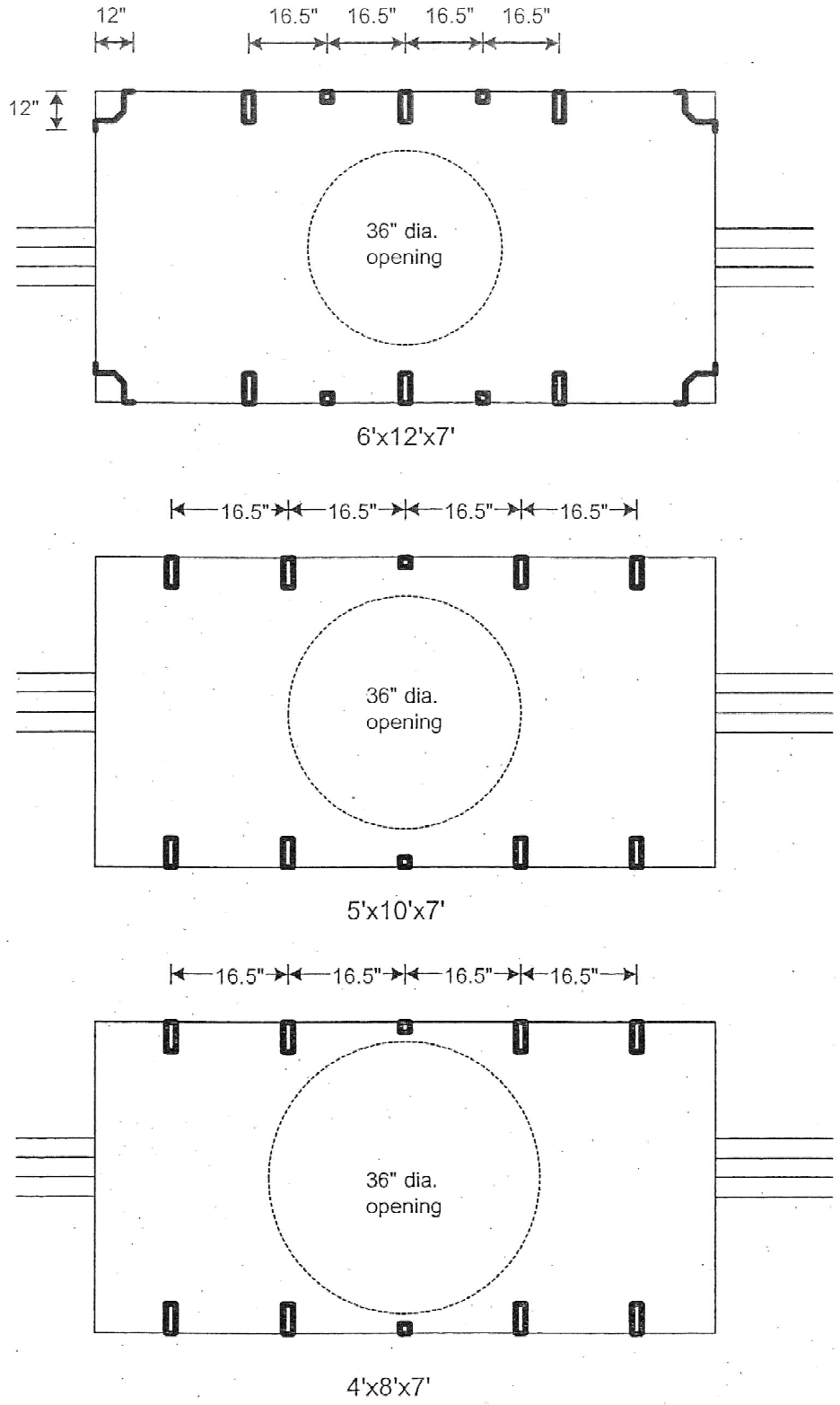


Dimensions in inches

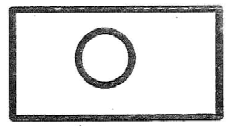
Catalog No. Standard	Catalog No. Security Bolted	A	B	C	E	F	Anchor Bolt Circle*	Grate Alt.
R-1750-A	R-1750-AB	26	1 3/8	24	43	10		R-2300
R-1750-B	R-1750-BB	29	1 3/8	27	46	10	43-1/2	R-2290
R-1750-B1	R-1750-B1B	29	1 3/8	27	46	5 5/8	43-1/2	R-2290-A
R-1750-B2	R-1750-B2B	29	1 3/8	27	46	3 1/2	43-1/2	
R-1750-C	R-1750-CB	32	1 3/8	30	49	10	43-1/2	
R-1750-C1	R-1750-C1B	32	1 3/8	30	49	5 5/8	43-1/2	
R-1750-C1S	R-1750-C1SB	32	1 3/8	30	46	5 5/8	43-1/2	R-2750
R-1750-CS	R-1750-CSB	32	1 3/8	30	46	10	43-1/2	R-2255

* Furnished standard with four 1" diameter holes in base flange, equally spaced.

CLICK HERE to return to the Table of Contents



PLAN LEGEND



MH 1
W'xL'xH'

Manhole dimensions as given on plans are inside dimensions. Typical sizes are:
6'x12'x7'
5'x10'x7'
4'x8'x7'
(Size is dictated by cable sizes and amount of splicing expected at the location)

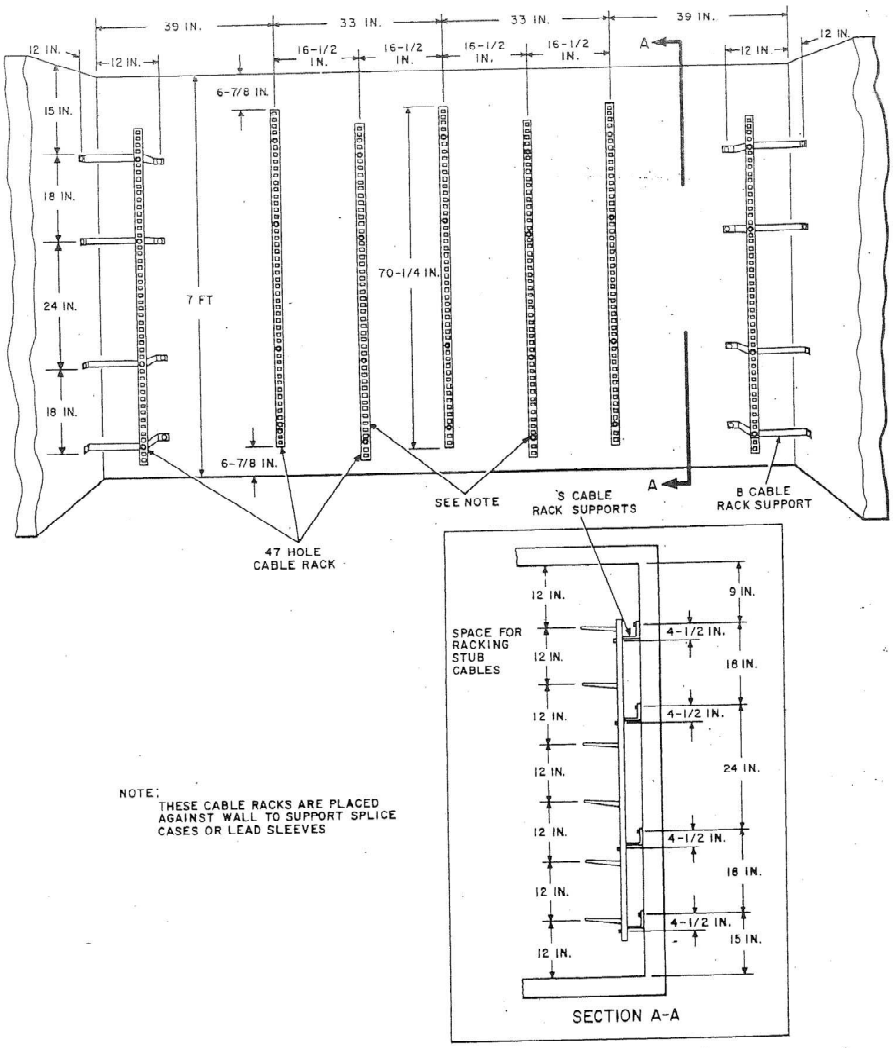
B cable rack support

cable racks secured to S cable rack support

cable racks attached directly to wall

(See included practices for description of cable racking hardware.)

MANHOLE DETAILS



NOTE:
THESE CABLE RACKS ARE PLACED AGAINST WALL TO SUPPORT SPLICE CASES OR LEAD SLEEVES

Fig. 9—Location of Cable Racks and Hooks in Typical Double Bay, Double Rack A-Type Manhole

DOCUMENT A00810

MassDOT Herbicide Use Report

Proposal No. 608742-132267

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 A00812

ATC TEST PLAN CHECKLIST

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Per MassDOT ATC and ATCC Specfications

Test Location:_____ **Date:_____** **Time: _____**

Cabinet Location: _____

Validate that the supplied ATC cabinet and controller meet the standards outline in the Plans and Special Provisions.

Test Procedure	Expected Result	Actual Result	Pass/ Fail	Comments
Pre-Test Physical Cabinet Inspection				
Unpack cabinet and check for shipping damage to the outside of cabinet; dents, paint chips, scratches, etc.	All equipment is undamaged.			
Verify that the cabinet dimensions match what is required per the project specfications.	The cabinet dimensions are correct.			
Verfiy that cabinet layout of devices conforms to the cabinet drawing as shown on the plans.	Layout of devices conforms to cabinet drawing.			
Verify that the input/output channel assignment is in compliance with the specifications.	Input/put channel assignment is in compliance with the specifications.			
Verify that the cabinet is supplied as a four-door or two-door M or two-door P front access only ground mounted configuration.	The cabinet is supplied in the state configuration.			
Verify that the cabinet is installed on a 6-inch aluminum riser-base.	A 6-inch riser-base is supplied and installed.			
Verify that two sets of cabinet keys and police door keys have been supplied.	The keys are supplied.			
Verify that each key will open each of the supplied locks.	The keys oopen each door.			
Open all cabinet doors. Verify proper door alignment and door handle latch operation.	All doors open and are properly alligned.			
Verify that the hinge pins are made of stainless steel.	Hinge pins are stainless steel.			
Verify that cabinet doors have captive door stops at both 90 and 180 degrees.	Door stops are provided at 90 and 180 degrees.			
Verify that the cabinet doors have a three point draw roller latch and rollers are made of nylon.	The doors have three point draw rollers.			

Test Procedure	Expected Result	Actual Result	Pass/ Fail	Comments
Verify that the cabinet locking system has a 3/4-inch diameter shank, stainless steel locking handle and provisions for padlocking the door in a closed postion.	Proper locking system supplied.			
Verify that a permanent label is installed on the upper portion of the inside front main door which contains the cabinet manufacturer, controller manufacturer, model/part number and year/month of assembly.	Label installed with appropriate data.			
Verify that all racks are mounted in the expected locations.	Equipment installed in the proper location.			
Verify that there is no shipping damage to the racks and any of the equipment.	No shipping damage.			
Verify that a spare equipment card cage is installed at the top of the second rack, as shown on the drawings.	Equipment installed in the proper location.			
Verify that all connectors are physically tight and in their proper locations.	All connectors are tight and in the propoer location.			
Verify that the cabinet contains the proper number of light panels; as shown on the contract plans.	Equipment installed in the proper location and operates properly.			
Verify that the cabinet is supplied with a pullout storage drawer with a non-conductive/non-skid top material.	Equipment installed in the proper location.			
Verify that the cabinet is supplied with a heavy duty plastic envelope.	Equipment installed in the proper location.			
Inspect the controller for damage.	Controller is undamaged.			
Record the controller model and serial numbers.	N/A			
Verify that the controller is a rack-mounted, solid-state, menu-driven, keyboard entry unit.	Equipment conforms to the requirements.			
Verify that the controller conforms to the ATC 5201 v06.25 ATC Standard.	Documentation from manufacturer confirming compliance			
Verify that the controller is supplied with at least three USB 2.0 ports.	Equipment conforms to the requirements.			
Verify that the controller is supplied with at least three 10/100 Base-T RJ-45 ports.	Equipment conforms to the requirements.			
Install controller into its proper mounting position.	N/A			

Test Procedure	Expected Result	Actual Result	Pass/ Fail	Comments
Verify that the controller is connected to the AI 085-02 FMU via an Ethernet cable.	Equipment is connected.			
Verify that an Auxiliary Display Unit (ADU) is installed in the cabinet.	Equipment installed in the proper location.			
Inspect all plug-in modules.	Equipment installed in the proper location.			
Record model and serial numbers for all plug-in modules.	N/A			
Verify that the proper number of each plug-in module is included as called for on the plans and in the specification.	Equipment installed in the proper location.			
A full complement of switch packs (load switches & flashers).	Equipment installed in the proper location.			
A full complement of SIUs.	Equipment installed in the proper location.			
Two (2) additional spare SIUs.	Equipment installed in the proper location.			
A full complement of flash transfer relays.	Equipment installed in the proper location.			
(1) Single Point Video Detector, Rack Mount	Equipment installed in the proper location.			
One (1) 4-channel emergency vehicle phase selector.	Equipment installed in the proper location.			
One (1) 2-channel DC isolator card.	Equipment installed in the proper location.			
Install the necessary switch packs required.	Equipment installed in the proper location.			
Install the necessary SIUs required.	Equipment installed in the proper location.			
Install the CMU with the programmed monitor key.	Equipment installed in the proper location.			
Verify that the CMU is connected to the AI 085-02 FMU via an Ethernet cable.	Equipment is connected.			
Verify that one (1) Datakey programmer and a copy of the associated software have been supplied.	Equipment is supplied.			

Test Procedure	Expected Result	Actual Result	Pass/ Fail	Comments
Verify that a hard copy of the Datakey programming is provided.	Hard copies are provided.			
Verify that a Cyber Intrusion Prevention Device (CIPD) is installed in the cabinet.	The AI 085-02 device serves as the CIPD for this cabinet.			
Verify that all circuit breakers operate properly.	Circuit breakers operate properly.			
Verfiy that the main cabinet circuit breaker is rated at 30 amps.	Equipment is installed.			
Verify that a rack-mounted cabinet power supply is installed.	Equipment is installed.			
Verify that a GFCI outlet is installed on the service panel.	Equipment is installed.			
Verify that a surge arrestor / line filter is installed on the service panel.	Equipment is installed.			
Verify that all electrical equipment over 50 volts is dead front with no open terminals, busbars, breakers, or exposed terminal strips.	Equipment is installed.			
Cabinet shall be in compliance with the latest NFPA 70E requirements.	Documentation from manufacturer confirming compliance			
Verify that the two exhast fans have safety screens installed.	Equipment is installed.			
Verify that removable air filters are supplied and installed on the ventilation intake openings.	Equipment is installed.			
Verify that the police door panel contains the following switches:	Equipment is installed.			
Signals ON/OFF	Equipment is installed.			
AUTO / FLASH	Equipment is installed.			
AUTO / Manual	Equipment is installed.			
Power On/Off	Equipment is installed.			
Manual advance pushbutton (with 6-foot coiled cord) with strain relief	Equipment is installed.			

Test Procedure	Expected Result	Actual Result	Pass/ Fail	Comments
Verify that the back of police panel contains the following switches:	Equipment is installed.			
Controller On/Off	Equipment is installed.			
Flash/Auto	Equipment is installed.			
Signals ON/OFF	Equipment is installed.			
Stop Time Normal/On	Equipment is installed.			
Verify that the cabinet contains a detector switch panel.	Equipment is installed.			
Verify that the cabinet is supplied with a GPS controller time-sync system and the antenna is mounted per the specifications.	The AI 085-02 device serves as the GPS time sync unit for this cabinet.			
Verify that the laminated door stickers have been properly installed and contains:	Equipment is installed.			
Vehicle detection information including detector channel assignment, phase assigned, approach and cabinet termination points	Data included.			
Per approach preemption information including channel, approach/direction and termination points	Data included.			
Field termination chart showing per approach/per phase numbering of all signal circuits	Data included.			
Verify that all in cabinet, High Speed SDLC cables connectors have factory installed protective covers	Protective covers installed			
Verify that all incoming electrical/telecommuncations lines enetering/exiting the cabinet have the proper level of surge suppersion devices installed.	Surge devices installed on all devices.			
Verify that a rack mounted power strip has been installed within the cabinet.	Power strip installed			
Verfiy that the controller is programmed to operate the signal operations as shown on the project design plan.	Data included.			

Test Procedure	Expected Result	Actual Result	Pass/ Fail	Comments
Functional Cabinet Test				
Place all circuit breakers and switches in the cabinet in the OFF position.	N/A			
Connect a cabinet power cord to the utility terminal block on the service assembly panel.	N/A			
Plug the power cord into an appropriate outlet.	N/A			
Turn on circuit breaker #1	Curcuits energize.			
Turn on circuit breaker #2	Curcuits energize.			
Verify operation of cabinet lights and switches.	Lights and switches operate properly.			
Verify operation of all fans and thermostats using a heat gun.	Equipment functions properly.			
Verify that the controller contains the ATC API operational software conforming to ATC 5401 Standard v02	Controller meets the requirement.			
Verify that the controller is configured to operate in an ATCC 5301 v02 platform cabinet.	Controller meets the requirement.			
Verify that the controller is supplied with the appropriate version of the Linux operating system, Board Support Package (BSP) and internal processing levels necessary to support connected vehicle (CV) as well as local and system operations.	Controller meets the requirement.			Verify license has been supplied to support this requirement
Verify that the controller is fully compliant with NTCIP 1201 and 1202 standards.	Controller meets the requirement.			
Verify that the controller meets the functional requirements of the NEMA TS-2, 2016 Standard, including all amendments.	Controller meets the requirement.			
Verify that the controller can be configured to provide a minimum six FYA/FRA flashing pairs.	Controller meets the requirement.			
Verify that the controller contains an internal real-time clock/calendar capable of daily, weekly and yearly events.	Controller meets the requirement.			
Verify that the controller provides the ability to modify the internal database configuration via the local front panel keyboard.	Controller meets the requirement.			

Test Procedure	Expected Result	Actual Result	Pass/ Fail	Comments
Verify that all user changeable user names and passwords have been altered to unique alpha numeric combinations provided by MassDOT.	Passwords have been changed.			
Verify that the controller provides the ability to remotely modify the internal database configuration via a computer connected with an Ethernet cable.	Controller meets the requirement.			
Verify the controller provides the ability to modify the internal database configuration remotely using the central management system application.	Controller meets the requirement.			
Verify the controller is supplied with the ability to collect, store and report various measures of effectiveness (MOE).	Controller meets the requirement.			
Verify the controller collects and records the Purdue high-resolution controller data.	Controller meets the requirement.			
Collect and processes all high resolution data as defined in the report. "Indiana Traffic signal HI resolution data enumerations" dated November 2012	Controller meets the requirement.			
Verify the controller is able to backup and restore programming data via USB memory memory stick.	Controller meets the requirement.			
Verify the controller is able to upgrade the local controller firmware via USB memory stick.	Controller meets the requirement.			
Verify that the signal phase timing and sequence is configured in accordance with the plans.	Programming matches the plans.			
Verify the programming of the cabinet monitor data key using the MonitorKey software and key reader.	Monitor key is programmed correctly.			
Connect the necessary signal display outputs to the test board.	N/A			
Verify that the flashing operation conforms the contract plans.	Flash operation conforms to plans.			
Verify automatic transfer from flashing operation conforms to the MUTCD.	Transfer from flash conforms to the MUTCD.			
Observe the sequence, timings and operations of the controller to verify it is in conformance with the plans.	Sequence, timings and operations conforms to the plans.			
Verify all equipment inputs, outputs, and terminals are identified by the phase designations shown on the plans.	Equipment inputs, outputs, and terminals are identified.			
Verify the operation and location of the following switches in the police door panel:	Switches function properly.			
Signals ON/OFF	On = Field signals are on Off = Field signals are dark			

Test Procedure	Expected Result	Actual Result	Pass/ Fail	Comments
AUTO / FLASH	Auto = Stop & Go operation Flash = Flashing operation			
AUTO / Manual	Auto = Stop & Go operation Manual = Manual Control Enabled			
Power On/Off	On = Cabinet power is on Off = Cabinet power is off			
Manual advance pushbutton. All phases shall be called regardless of vehicle detection and the controller shall be advanced upon pulse from the hand cord circuit, except yellow and red clearance intervals shall be timed for the duration programmed.	Pressing the Manual pushbutton advances the signal to the next phase.			
Verify the operation and location of the following switches on the back of police panel:	Switches function properly.			
Controller On/Off	On = Controller is powered Off = Controller is not powered			
Flash/Auto	Auto = Stop & Go operation Flash = Flashing operation			
Signals ON/OFF	On = Field signals are on Off = Field signals are dark			
Stoptime Normal/On	Normal = Stop & Go operation On = Stop time is active.			
Verify that all detector test switches are assigned to the proper channels.	Test switches call appropriate phases.			
Verify that the detector test switches operate as follows:	Test switches operate correctly.			
In the UP position, a constant call is placed to the assigned phase.	Test switches operate correctly.			
In the CENTER position, No call is placed on the assigned phase.	Test switches operate correctly.			
In the DOWN position, a momentary call is placed to the assigned phase.	Test switches operate correctly.			
Connect laptop to The SPVD Processor "Laptop" Port.	SPVD Processor can be viewed in The SPVD Client via a Laptop.			
Open The SPVD Client Software.	Configured as per the Engineer for IP address information			

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Proposal No. 608742-132267

Test Procedure	Expected Result	Actual Result	Pass/ Fail	Comments
The SPVD Processor Configuration Settings are Correct	For Bench testing, Verify IP Address, Firmware version and Proper Pasword Configuration.			
Default Controller IP Address _____ New IPAddress: _____	Device set to assigned IP address.			
Default CMU IP Address _____ New IPAddress: _____	Device set to assigned IP address.			
Default FMU IP Address _____ New IPAddress: _____	Device set to assigned IP address.			
Verify that all user changeable user name and passwords have been altered to unique alpha numeric combinations. As called for in the project specification.	All devices have been configured to meet the project security specifications.			
Verify that all remote communications by the CIPD/FMU is via encrypted VPN tunnels, as called for in the project specifications.	All devices have been configured to meet the project security specifications.			
Verify that the CIPD/FMU is configured to provide alarms for physical as well as network access to the ATC and the ATCC as per the project specifications.	All devices have been configured to meet the project security specifications.			
Install FMU into cabinet rack.	Installed as per the drawings.			
Connect FMU power and Input / output cables.	N/A			
Inspect the FMU and verify that it contains two or more outlets that can be controlled remotely.	FMU meets the specifications			
Inspect the FMU and verify this it has an internal battery to power the unit for a minimum of five hours in the event of a power failure.	FMU meets the specifications			
Inspect that the FMU is rack mounted with all connectors on the rear panel and all switches and LED's on the front panel.	FMU meets the specifications			
Inspect that the FMU contain four Ethernet ports on the rear panel.	FMU meets the specifications			
Apply Power to the FMU.	FMU powers up properly			
Verify the status of the Heart Beat LED.	FMU Heart Beat LED operates properly			
Verify the status of the Central LED.	FMU Central LED operates properly			
Record FMU Antenna Signal strength.	N/A			

Test Procedure	Expected Result	Actual Result	Pass/ Fail	Comments
Connect laptop to FMU.	N/A			
Open web browser and navigate to MCOMMS.	N/A			
Verify that the FMU is configured to provide remote ATC front panel access via the MCOMMS software as called for in the project specifications.	FMU is configured as per the specifications.			
Verify that the FMU is configured to allow remote video streaming of the local detection cameras via the MCOMMS software as called for in the specifications.	FMU is configured as per the specifications.			
Verify that the FMU is configured to broadcast CV data (SPAT, BSM, TIM and etc.) to the mobile device application as called for in the project specifications.	FMU is configured as per the specifications.			
Verify that the FMU is configured to record, monitor and display all the ATC/ATCC/CV parameters as called for in the project specifications.	FMU is configured as per the specifications.			
Connect the Ethernet cable from FMU to Controller.	Controller communicating with the FMU via Ethernet			
Connect the Ethernet cable from FMU to CMU.	CMU communicating with the FMU via Ethernet			
Connect the Ethernet cable from FMU to SPVD Processor "Network" Port.	SPVD Processor communicating with the FMU via Ethernet.			
Record Manufactures Identification Numbers:				
Model Number: _____	All supplied equipment information is recorded.			
Serial Number: _____	All supplied equipment information is recorded.			
Intersection ID Number: _____	All supplied equipment information is recorded.			
Record Cellular Antenna Manufacture's model Number: _____	All supplied equipment information is recorded.			
Verify that the CMU functions for any conflicting signal circuit outputs by using a jumper wire to introduce green, yellow and walk conflicts. A conflict chart shall be developed which defines the possible conflict combinations specific to the intersection. This conflict chart shall be used and filled in during the testing process.	Conflicts are correctly programmed.			

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Proposal No. 608742-132267

Test Procedure	Expected Result	Actual Result	Pass/ Fail	Comments

Contractor performing test Name & Signature: _____

Agency Representive Witness Name & Signature: _____

Project Manager Name & Signature: _____

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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: DENNIS-HARWICH Project File Number: 608742

Contract Number: 132267

Project Description: Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge

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 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: 05/30/2024 17:46:47 UTC
Project code: 2024-0094498
Project Name: 608742 - DENNIS- HARWICH- RECONSTRUCTION & RELATED WORK ON MAIN STREET (ROUTE 28)

Subject: Consistency letter for the '608742 - DENNIS- HARWICH- RECONSTRUCTION & RELATED WORK ON MAIN STREET (ROUTE 28)' project under the amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion (dated March 23, 2023) for Transportation Projects within the Range of the Indiana Bat and Northern Long-eared Bat (NLEB).

To whom it may concern:

The U.S. Fish and Wildlife Service (Service) has received your request dated May 30, 2024 to verify that the **608742 - DENNIS- HARWICH- RECONSTRUCTION & RELATED WORK ON MAIN STREET (ROUTE 28)** (Proposed Action) may rely on the amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion Opinion (dated March 23, 2023) 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 will have no effect on the endangered Indiana bat (*Myotis sodalis*) or the endangered northern long-eared bat (*Myotis septentrionalis*). If the Proposed Action is not modified, **no consultation is required for these two species.** 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.

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 bats and/or NLEBs use or occupancy, yet later detected 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 within 2 working days of the incident. In these instances, potential incidental

take of Indiana bats and/or NLEBs may be exempted provided that the take is reported to the Service.

If the Proposed Action 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 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 advise the lead Federal action agency accordingly.

The following species may occur in your project area and **are not** covered by this determination:

- Monarch Butterfly *Danaus plexippus* Candidate
- Sandplain Gerardia *Agalinis acuta* Endangered
- Tricolored Bat *Perimyotis subflavus* Proposed Endangered

PROJECT DESCRIPTION

The following project name and description was collected in IPaC as part of the endangered species review process.

NAME

608742 - DENNIS- HARWICH- RECONSTRUCTION & RELATED WORK ON MAIN STREET (ROUTE 28)

DESCRIPTION

Work on this project consists of roadway rehabilitation, box cut widening, mill and overlay, sidewalk construction and reconstruction, installation of new ADA compliant curb ramps, drainage upgrades, pavement markings and signs on Route 28 for a length of 0.7 miles. The roadway and sidewalk work will improve both bicycle and pedestrian accommodation for this length of roadway. This project is the second phase of improvements proposed for Route 28 in Dennis and Harwich. In addition, traffic signals at the Route 28/Upper County Road intersection will be reconstructed to current standards with associated geometric improvements.

Sandplain Gerardia: After consulting with the Massachusetts Natural Heritage and Endangered Species Program (NHESP), it was determined that there is no data to suggest the presence of habitat and/or individuals at this project location.

Monarch Butterfly: Candidate Species only, no conservation measures at this time.

Tricolor Bat: Proposed Endangered Species only, no conservation measures at this time.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.6691535,-70.11173957003889,14z

DETERMINATION KEY RESULT

Based on the information you provided, you have determined that the Proposed Action will have no effect on the endangered Indiana bat and/or the endangered northern long-eared bat. Therefore, no 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 for these two species.

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. [Semantic] Does your proposed action intersect an area where Indiana bats and northern long-eared bats are not likely to occur?

   Automatically answered
   Yes

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 30, 2023. 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 endangered **northern long-eared bat** (NLEB) (*Myotis septentrionalis*).

This decision key should only be used to verify project applicability with the Service's amended February 5, 2018, FHWA, FRA, FTA Programmatic Biological Opinion (dated March 23, 2023) 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

Agency: Massachusetts Department of Transportation
Name: Ian Battles
Address: 10 Park Plaza
City: Boston
State: MA
Zip: 02116
Email ian.h.battles@dot.state.ma.us
Phone: 8572623378

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Highway Administration

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DOCUMENT A00860

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP) &

TOWN OF HARWICH CONSERVATION COMMISSION NOTICE OF INTENT FILING

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NOTICE OF INTENT

Harwich- Roadway Improvements Route 28 From Upper County Road to Herring River (MassDOT Project # 608742)

Harwich, Massachusetts

PREPARED FOR

Town of Harwich
Division of Highways & Maintenance
273 Queen Anne Road, P.O. Box 1543
Harwich, MA 02645
508.430.7555

PREPARED BY

260 Arsenal Place #2
PO Box 9151
Watertown, MA 02472
617.924.1770

MARCH 2025

March 12, 2025

Ref: 15592.62

John Ketchum, Chair
Harwich Conservation Commission
732 Main Street
Harwich, Massachusetts 02645

Re: Harwich - Roadway Improvements Route 28 From Upper County Road to Herring River (MassDOT Project # 608742) – Notice of Intent

Dear Chairperson Ketchum and Commissioners:

On behalf of the Applicant, the Town of Harwich Division of Highways & Maintenance, Vanasse Hangen Brustlin, Inc. is submitting the enclosed Notice of Intent (NOI) for work to complete improvements to an approximately 0.7-mile portion of Route 28 (the Project) between Upper County Road to just west of Herring River bridge in Harwich, Massachusetts (The Project Limits). The Project extends into the town of Dennis, but no filing is required along this portion as there are no wetland impacts. The project is intended to rehabilitate the Route 28 corridor to improve pedestrian and bicycle byways and upgrade stormwater infrastructure. Work will consist of pavement reclamation and box widening to accommodate 5-foot shoulders and 11-foot lanes, installation of new ADA accessible sidewalks on both sides of the street along Route 28, bicycle accommodations on both sides of Route 28, traffic signal reconstruction, installation of pedestrian scale lighting, new pedestrian curb ramps and crosswalks, pedestrian crossing re-organization, realignment of the Route 28 and Upper County Road intersection, and Stormwater improvements throughout the corridor. A full scope of work is included in the attached NOI narrative. This NOI is being filed pursuant to the Massachusetts Wetlands Protection Act (WPA) and the Town of Harwich Wetland Protection Bylaw (the Bylaw).

Portions of land on or near the Project Site contain resource areas subject to the jurisdiction of the WPA, including the 200-foot Riverfront Area (RFA) associated with the Herring River, Land Subject to Coastal Storm Flowage (LSCSF), Bank, Bordering Vegetated Wetland (BVW), and Salt marsh. The WPA also establishes a 100-foot buffer zone to Bank, BVW, and Salt marsh. In addition, the Bylaw establishes a 50-foot No Disturb Zone (NDZ) from the limits of Bank, BVW, and Salt marsh. All resource areas are associated with the Herring River. Proposed work will result in both temporary and permanent impacts to the 200-foot RFA, LSCSF, and the 100-foot buffer zone to Bank, BVW, and Saltmarsh. Permanent alteration consists of portions of full depth pavement, construction of new sidewalk, and guardrail and utility pole installation. Temporary impacts will result from paving, sidewalk and guardrail installation, minor vegetation clearing and grubbing, the installation of tree protection measures and erosion controls, stormwater and lighting improvements, grading, and both plantings and loam and seed. The Project may be permitted as a Limited Project pursuant to 310 CMR 10.53(3)(f) for the, “maintenance and improvement of existing public roadways, but limit to widening less than a single lane, adding shoulders, correcting substandard intersections, and improving in adequate drainage systems.” As such, the project will adhere to the conditions for a limited project as stated under 310 CMR 10.53. Wetland resource areas will be protected from impacts during construction through the implementation of an erosion and sedimentation control program.

No checks have included with this submission, as the Applicant is exempt from filing fees under the WPA.

In compliance with the WPA and the Bylaw, notification to abutters within 1000 feet of the Project Site has been made by certified, return-receipt mail. A copy of the abutter notification form and a certified list of abutters are enclosed as part of the NOI. As required under the WPA, a copy of the NOI package has been filed with the Massachusetts Department of Environmental Protection Southeastern Regional Office.

We respectfully request that the Commission place this matter on the next available meeting agenda. If you have any questions concerning this submittal or need any additional information, please contact me at 617-607-2709 or bhilgendorff@vhb.com.

Sincerely,

VHB

Bridget Hilgendorff
Environmental Scientist

cc: DEP SERO

Table of Contents

Notice of Intent Forms

Notice of Intent Figures

Attachment A: Notice of Intent Narrative

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Attachment B: Abutter Information

Attachment C: Photographic Log

Attachment D: Wetland Memorandum

Attachment E: Stormwater Management Memorandum

Attachment F: Project Plans

Notice of Intent Forms

- WPA Form 3
- NOI Wetland Fee Transmittal Form
- Harwich Checklist

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 #:
eDEP Transaction #:1697720
City/Town:HARWICH

A.General Information

1. Project Location:

a. Street Address	ROUTE 28		
b. City/Town	HARWICH	c. Zip Code	02645
d. Latitude	41.66910N	e. Longitude	70.11128W
f. Map/Plat #	N/A	g.Parcel/Lot #	N/A

2. Applicant:

☐ Individual ☑ Organization

a. First Name	LINCOLN		b.Last Name	HOOPER	
c. Organization	TOWN OF HARWICH				
d. Mailing Address	273 QUEEN ANNE ROAD, P.O. BOX 1543				
e. City/Town	HARWICH	f. State	MA	g. Zip Code	02645
h. Phone Number	508-430-7555	i. Fax		j. Email	Lhooper@harwichdpw.com

3.Property Owner:

☐ more than one owner

a. First Name			b. Last Name		
c. Organization	MASSDOT DISTRICT 5				
d. Mailing Address	1000 COUNTY STREET				
e. City/Town	TAUNTON	f.State	MA	g. Zip Code	02780
h. Phone Number		i. Fax		j.Email	

4.Representative:

a. First Name	BRIDGET		b. Last Name	HILGENDORFF	
c. Organization	VHB				
d. Mailing Address	260 ARSENAL PLACE #2				
e. City/Town	WATERTOWN	f. State	MA	g. Zip Code	02472
h.Phone Number	617-607-2709	i.Fax		j.Email	bhilgendorff@vhb.com

5.Total WPA Fee Paid (Automatically inserted from NOI Wetland Fee Transmittal Form):

a.Total Fee Paid	0.00	b.State Fee Paid	0.00	c.City/Town Fee Paid	0.00

6.General Project Description:

ROUTE 28 ROADWAY IMPROVEMENTS IN HARWICH, MA

7a.Project Type:

1. ☐ Single Family Home	2. ☐ Residential Subdivision
3. ☐ Limited Project Driveway Crossing	4. ☐ Commercial/Industrial
5. ☐ Dock/Pier	6. ☐ Utilities
7. ☐ Coastal Engineering Structure	8. ☐ Agriculture (eg., cranberries, forestry)
9. ☑ Transportation	10. ☐ Other

7b.Is any portion of the proposed activity eligible to be treated as a limited project subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
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Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
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City/Town:HARWICH

1.	☑ Yes ☐ No	If yes, describe which limited project applies to this project:
2. Limited Project		310 CMR 10.53(3)(F)

8.Property recorded at the Registry of Deeds for:

a.County:	b.Certificate:	c.Book:	d.Page:
	N/A - ROADWAY	N/A - ROADWAY	N/A - ROADWAY

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

1.Buffer Zone & Resource Area Impacts (temporary & permanent):

☐ This is a Buffer Zone only project - 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)

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a.☐ Bank	1. linear feet	2. linear feet
b.☐ Bordering Vegetated Wetland	1. square feet	2. square feet
c.☐ Land under Waterbodies and Waterways	1. Square feet	2. square feet
	3. cubic yards dredged	
d.☐ Bordering Land Subject to Flooding	1. square feet	2. square feet
	3. cubic feet of flood storage lost	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 — Herring River
1. Name of Waterway (if any)

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: 33029 square feet

4. Proposed Alteration of the Riverfront Area:

25803	9604	16199
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

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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City/Town:HARWICH

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)

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 Beaches	Indicate size under Coastal Beaches and/or Coatstal Dunes, below	
d. ☐ Coastal Beaches	1. square feet	2. cubic yards beach nourishment
e. ☐ Coastal Dunes	1. square feet	2. cubic yards dune nourishment
f. ☐ Coastal Banks	1. linear feet	
g. ☐ Rocky Intertidal Shores	1. square feet	
h. ☐ Salt Marshes	1. square feet	2. sq ft restoration, rehab, crea.
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	95690 1. square feet	

4.Restoration/Enhancement

☐ Restoration/Replacement

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 entered the additional amount here.

a. square feet of BVW b. square feet of Salt Marsh

5.Projects Involves Stream Crossings

☐ Project Involves Streams Crossings

If the project involves Stream Crossings, please enter the number of new stream crossings/number of replacement stream crossings.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
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Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:
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City/Town:HARWICH

a. number of new stream crossings

b. number of replacement stream crossings

C. Other Applicable Standards and Requirements

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 of Endangered Species program (NHESP)?

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

b. Date of map:FROM MAP VIEWER

If yes, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18)....

c. Submit Supplemental Information for Endangered Species Review * (Check boxes as they apply)

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

3.☐ Project plans for entire project site, including wetland resource areas and areas outside of wetland 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

c.☐ MESA filing fee (fee information available at: http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/mass-endangered-species-act-mesa/mesa-fee-schedule.html)
Make check payable to "Natural Heritage & Endangered Species Fund" 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

d. 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, http://www.mass.gov/eea/agencies/dfg/dfw/laws-regulations/cmr/321-cmr-1000-massachusetts-endangered-species-act.html#10.14; 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 Number

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.

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 #:
eDEP Transaction #:1697720
City/Town:HARWICH

* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review...

2. For coastal projects only, is any portion of the proposed project located below the mean high waterline or in a fish run?
   a. ☐ Not applicable - project is in inland resource area only
   b. ☐ Yes ☑ No

   If yes, include proof of mailing or hand delivery of NOI to either:

South Shore - Cohasset to Rhode Island, and the Cape & Islands:	North Shore - Hull to New Hampshire:
Division of Marine Fisheries - Southeast Marine Fisheries Station Attn: Environmental Reviewer 836 S. Rodney French Blvd New Bedford, MA 02744	Division of Marine Fisheries - North Shore Office Attn: Environmental Reviewer 30 Emerson Avenue Gloucester, MA 01930

   If yes, it 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.

3. 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 DEP Website for ACEC locations). **Note:** electronic filers click on Website.

   b. ACEC Name

4. 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

5. 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

6. 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, Explain why the project is exempt:
      1. ☐ Single Family Home
      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

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 #:
eDEP Transaction #:1697720
City/Town:HARWICH

☐ housing project) with no discharge to Critical Areas.

D. Additional Information

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 by regular mail delivery.

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.
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.
☐

a. Plan Title:	b. Plan Prepared By:	c. Plan Signed/Stamped By:	c. Revised Final Date:	e. Scale:
MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION PLAN AND PROFILE OF MAIN STREET (ROUTE 28)	VHB	STEPHEN RHOADS	MARCH 11, 2025	1" = 20'

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.
☑

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 #:
eDEP Transaction #:1697720
City/Town:HARWICH

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:

2. Municipal Check Number

3. Check date

4. State Check Number

5. Check date

6. Payer name on check: First Name

7. Payer name on check: Last Name

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: 3-4-25

3. Signature of Property Owner(if different)

4. Date: 3/10/2025

5. Signature of Representative (if any)

6. Date: 3/4/2025

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 Section C, Items 1-3, 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
WPA Form 3 - Notice of Wetland FeeTransmittal Form
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
MassDEP File #:
eDEP Transaction #:1697720
City/Town:HARWICH

A. Applicant Information

1. Applicant:

a. First Name	LINCOLN	b.Last Name	HOOPER		
c. Organization	TOWN OF HARWICH				
d. Mailing Address	273 QUEEN ANNE ROAD, P.O. BOX 1543				
e. City/Town	HARWICH	f. State	MA	g. Zip Code	02645
h. Phone Number	5084307555	i. Fax		j. Email	Lhooper@harwichdpw.com

2.Property Owner:(if different)

a. First Name		b. Last Name			
c. Organization	MASSDOT DISTRICT 5				
d. Mailing Address	1000 COUNTY STREET				
e. City/Town	TAUNTON	f.State	MA	g. Zip Code	02780
h. Phone Number		i. Fax		j.Email	

3. Project Location:

a. Street Address	ROUTE 28	b. City/Town	HARWICH

Are you exempted from Fee? ☐ (YOU HAVE SELECTED 'YES')

Note: Fee will be exempted if you are one of the following:

- City/Town/County/District
- Municipal Housing Authority
- Indian Tribe Housing Authority
- MBTA

State agencies are only exempt if the fee is less than $100

B. Fees

Activity Type	Activity Number	Activity Fee	RF Multiplier	Sub Total

City/Town share of filling fee	State share of filing fee	Total Project Fee
$0.00	$0.00	$0.00

Notice of Intent

CHECKLIST

To be submitted to the Harwich Conservation Department:

-Two copies of the completed applications AND

-12 Copies of supporting materials (plans, narratives, photos etc.). Plans should be folded and plan requirements are contained in this packet.

A complete application includes the following:

- ☒ WPA Form 3-Notice of Intent and Appendix A-Wetland Fee Transmittal Form
- ☐ Two checks made out to the Town of Harwich. One for the Town application fee of $135.00 and a separate check for the Town share of the state filing fee (to be determined on the Wetland Fee Transmittal Form). - N/A -- Applicant is exempt from fees
- ☒ A copy of an 8 ½" X 11" section of the USGS Quadrangle Map with locus identified. This can be found at the Conservation Department if needed.
- ☒ A copy of an 8 ½" x 11" section of the Town Assessor's map showing the location of the property. This can be found at the Conservation Department if needed.
- ☒ A completed copy of the Affidavit of Service.
- ☒ A list of abutters. This is obtained from the Assessing Department office and the request for the list is contained in this filing packet.
- ☒ A completed copy of the Notification to Abutters form that you will be sending to abutters.
    - Abutter letters must be sent by certified mail at the time the Notice of Intent is filed and is done at the expense of the applicant. The applicant must provide the white slips (or copies) once they have been postmarked at the post office.
    - **Failure to produce proof of abutter notification will result in an automatic continuance of your hearing.**

To be submitted to the MA Department of Environmental Protection Regional Office:

-One copy of the completed application (as defined above).

-One copy of all supporting materials.

- Mail by certified mail with return receipt to:

DEP - SERO
20 Riverside Drive
Lakeville, MA 02347

- Or send via email to:

SERO_NOI.mass.gov

-Send the Appendix A-Wetland Fee Transmittal form, with a check for the State share of the filing fee (as determined on the form) by certified mail with return receipt. Mail to:

Department of Environmental Protection
Box 4062
Boston, MA 02211

Additional Information:

-Applicants should check with the Conservation Department to see if the proposed work is within estimated habitat as indicated on the most recent Estimated Habitat Map of State Listed Rare Wildlife by Natural Heritage and Endangered Species Program. If so, the applicant must send NHESP a copy of the Notice of Intent and Plan by certified mail with return receipt (and possible fee) to:

NHESP
Division of Fisheries and Wildlife
1 Rabbit Hill Road
Westborough, MA 01581

-Please check with the Conservation Department regarding any specific questions concerning projects which fall in Riverfront Area

Guidance from the Conservation Administrator or Assistant Conservation Administrator is available by appointment. Please attempt to gather all required materials and fill out all required forms before the appointment.

Amy Usowski, Conservation Administrator, ausowski@town.harwich.ma.us

Melyssa Millett, Asst. Conservation Administrator, mmillett@town.harwich.ma.us

(508)430-7538

Notice of Intent Figures

- Figure 1 – Site Location Map
- Figure 2 – Aerial Map
- Figure 3 – NHESP Map
- Figure 4 – FEMA FIRM Map

Figure 1: USGS Site Location
MassDOT Number 608742
Dennis and Harwich, Massachusetts

Path: \\azrgisds\gisshare\gis3\arcgissystem\arcgisinput\NOIFigures\NOIExportMap.GPServer\extracted\p30\noi_template\NOI_Template.aprx (gmsaGIS$, 2/8/2024)

Sources: VHB, MassGIS

Figure 2: Aerial Overview
MassDOT Number 608742
Dennis and Harwich, Massachusetts

Project Alignment

Sources: VHB, MassGIS

Path: \\azrgisds\gisshare\gis3\arcgissystem\arcgisinput\NOIFigures\NOIExportMap.GPServer\extracted\p30\noi_template\NOI_Template.aprx (gmsaGIS$, 2/8/2024)

Figure 3: Priority Habitat
MassDOT Number 608742
Dennis and Harwich, Massachusetts

Path: \\azrgisds\gisshare\gis3\arcgissystem\arcgisinput\NOIFigures\NOIExportMap.GPServer\extracted\p30\noi_template\NOI_Template.aprx (gmsaGIS$, 2/8/2024)

Sources: VHB, MassGIS

Figure 4: FEMA Floodplain
MassDOT Number 608742
Dennis and Harwich, Massachusetts

Sources: VHB, MassGIS

National Flood Hazard Layer FIRMette

FEMA

70°6'56"W 41°40'22"N

70°6'19"W 41°39'55"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 / 17.5 Cross Sections with 1% Annual Chance / 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

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 3/5/2024 at 10:51 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.

A00860 - 23

Proposal No. 608742-132267

Attachment A: Notice of Intent Narrative

- Introduction
- Site Description
- Work Description
- Mitigation Measures
- Regulatory Compliance
- Summary

Attachment A: Notice of Intent Narrative

This Notice of Intent (NOI) is filed pursuant to the Massachusetts Wetlands Protection Act (WPA) (MGL Chapter 131, Section 40) and its implementing regulations (310 CMR 10.00) and the Town of Harwich Wetland Protection Bylaw and Regulations.

Introduction

The Town of Harwich Division of Highways & Maintenance (the Applicant) proposes improvements to an approximately 0.7-mile portion of Route 28 (the Project) between Upper County Road to just west of Herring River bridge in Harwich, Massachusetts (The Project Limits). The Project extends into the town of Dennis, but no filing is required along this portion as there is no work in wetlands or the 100' Buffer Zone. The project is intended to rehabilitate the Route 28 corridor to improve pedestrian and bicycle byways and upgrade stormwater infrastructure (See Figure 1- USGS Map and Figure 2- Aerial Map). Work associated with the Project consists of pavement reclamation and box widening to accommodate 5-foot shoulders and 11-foot lanes, installation of new Americans with Disabilities Act (ADA) accessible sidewalks on both sides of the street along Route 28, bicycle accommodations on both sides of Route 28, traffic signal reconstruction, installation of pedestrian scale lighting, new pedestrian curb ramps and crosswalks, pedestrian crossing re-organization, realignment of the Route 28 and Upper County Road intersection, and Stormwater improvements throughout the corridor.

The Project requires work within the 200-foot Riverfront Area (RFA) associated with Herring River, Land Subject to Costal Storm Flowage (LSCSF), and the 100-foot buffer zone to Bank, Bordering Vegetated Wetland (BVW) and Saltmarsh. The Project will result in unavoidable temporary and permanent alterations within the 200-foot RFA, LSCSF, and the 100-foot buffer zone to Bank, BVW and Saltmarsh. The Project will not result in fill or dredge within waters of the United States and; therefore, does not require filing under Sections 401 or 404 of the Clean Water Act. Additionally, the Project does not fall within Chapter 91 Jurisdiction. Wetland resource areas will be protected from impacts during construction through the implementation of an erosion and sedimentation control program. This program includes provisions to minimize areas of disturbance through phasing and sequencing, limit erosion through stabilization, and prevent sediment from leaving sites of work by installing structural controls. The Project meets the definition under the WPA of a limited Project pursuant to 310 CMR 10.53(3)(f). Pavement reclamation activities associated with the Project are considered minor exempt activities within the 200-foot Riverfront Area associated with Herring River and the 100-foot buffer zone to Bank, BVW, and Saltmarsh per 310 CMR 10.02(b)(2)p. Runoff generated from the project will be collected and treated in accordance with design guidelines[1] developed by the Massachusetts Department of Environmental Protection (MassDEP) and standards contained in the WPA Regulations.

1 DEP, 2008. *Massachusetts Stormwater Handbook.*

Site Description

The existing roadway is zoned as commercial highway, and the surrounding consists primarily of medium and high density residential.

According to the latest data from MassGIS[2], no portions of the Project Limits are within NHESP Estimated and Priority Habitat or Certified/Potential Vernal Pools (Figure 3: NHESP Locus). Additionally, no portion of the Project Limits are located within a Zone II Wellhead Protection Area, an Area of Critical Environmental Concern (ACEC), or an Outstanding Resource Water[3]. According to the latest Flood Insurance Rate Maps (FIRM) for the area, portions of the Project Limits are within 100-year floodplain (Figure 4/a: FEMA FIRM)[4] regulated as LSCSF under the WPA.

Based on the Natural Resources Conservation Service (NRCS) soil survey,[5] dominant soils in the Project Limits are mapped as primarily Carver coarse sand and Deerfield loamy fine sand. Wetland resource areas on/near the site are described below.

Wetland Resource Areas

Wetlands adjacent to the Project Limits were reflagged on January 31, 2025 by environmental scientists with Vanasse Hangen Brustlin, Inc. (VHB) in accordance with methods developed by MassDEP[6] and the U.S. Army Corps of Engineers.[7] The area was previously delineated by VHB personnel on September 19, 2017. The following sections of this narrative describe the wetlands and identify resource areas that are regulated under the WPA Regulations (310 CMR 10.00). Documentation of conditions in and adjacent to wetlands are summarized in the photographic log provided in Attachment C of this NOI.

Wetlands adjacent to the Project Limits are described in more detail in the following sections of this attachment.

Herring River

The Herring River is a perennial tidal stream that ebbs north to south under Main Street bridge. The Bank of the river is generally well-defined and consists of a sharp break in slope and an associated change in vegetation. North of Main Street, the area above the Bank line consists mainly of the dirt parking lot of a restaurant. South of Main Street, the area above the Bank line consists of a strip of forested upland approximately 40 to 50 feet wide. The Bank of the river was determined following the delineation using the National Oceanic and Atmospheric Administration's (NOAA) Tide and Current data chart for Woods Hole, MA (Datum 8447930, NAVD88). In accordance with 310 CMR

2 NHESP, 2021. *Massachusetts Natural Heritage Atlas, 15th Edition.*

3 DEP, 1993. *Designated Outstanding Resource Waters of Massachusetts.*

4 Federal Emergency Management Agency, 2014. *Flood Insurance Rate Map, Town of Harwich, Massachusetts, Barnstable County*. Community Panel Number 25001C0616J.

5 USDA Natural Resources Conservation Service, Web Soil Survey- *Soil Survey of Barnstable County, Massachusetts.*

6 DEP, 1995. *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act.*

7 USACE, 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0.*

10.23, the Annual Mean High Water (MAHW) was used to determine the Bank, which is at an elevation of 0.57 feet.

The Bank of the Herring River is jurisdictional under the WPA and CWA. The Bank also governs a 200-foot Riverfront Area (RFA), a 100-foot buffer zone, and a locally regulated 50-foot No-Disturb Zone (NDZ).

Wetland 1

Wetland 1 was previously field delineated in 2017 and reevaluated during the 2025 site visit. North of Main Street, the landward extent of the BVW was delineated with flags WF1-200 to WF1-212. Wetland 1 consists mainly of the dirt parking lot of a nearby restaurant and a narrow strip of regularly maintained mix of grasses, including black grass (*Juncus gerardii*) and switchgrass (*Panicum virgatum*). South of Main Street, the BVW followed the same line as the previous delineation and was reflagged using flags WF1-111 to WF1-120. BVW south of Main Street follows a topographic break and change in emergent to upland vegetation. Wetland vegetation in the area is a mix of salt marsh and freshwater emergent species including maritime marsh-elder (*Iva frutescens*), seablite (*Sueda maritima*), saltmeadow cordgrass (*Spartina patens*), and spike grass (*Distichlis spicata*), and eastern cottonwood (*Populus deltoides*). Upland vegetation south of Main Street includes Norway maple (*Acer platanoides*), eastern cottonwood, Tartarian honeysuckle (*Lonicera tartarica*), poison ivy (*Toxicodendron radicans*), Japanese honeysuckle (*Lonicera japonica*), common wrinkle-leaved goldenrod (*Solidago rugosa*), and switch panicgrass. (Refer to Attachment D: Wetland Memorandum for further details.)

Wetland 1 is jurisdictional under the WPA and CWA. Wetland 1 also supports a 100-foot buffer zone and a locally-regulated 50-foot NDZ.

Riverfront Area

As described above, a 200-foot RFA extends from the limits of MAHW associated with Herring River. The RFA within the Project Limits consists primarily of portions of the paved Route 28 roadway and adjacent shoulders and guardrail. Portions of RFA beyond the roadway limits consist primarily of wooded areas with a mix of northern red oak (*Quercus rubrum*), eastern cottonwood, eastern red cedar (*Juniperus virginiana*), Oriental bittersweet (*Celastrus orbiculatus*), poison ivy, black cherry (*Prunus serotina*), Tartarian honeysuckle, and Norway maple. Additionally, a gravel parking area is located north of the roadway adjacent to the Herring River.

Land Subject to Coastal Storm Flowage (LSCSF)

Portions of the Project Limits lie within the 100-year floodplain regulated as LSCSF. The flood elevation within the Project Limits is 11 feet. LSCSF within the Project Limits consists primarily of the roadway associated with the Route 28 layout, adjacent shoulders and components.

Buffer Zone

The WPA regulations (310 CMR 10.02(2)(b)) establish a 100-foot buffer zone from the limits of Bank and Salt Marsh located in the vicinity of the Project Limits. The Buffer zone within the Project Limits

consists primarily of portions of the Route 28 pavement, gravel parking lot, small, forested areas, adjacent shoulders and components.

Locally Regulated Areas

The Bylaw establishes a 50-foot No Disturbance Zone (NDZ) from the limits of Bank and Salt Marsh located along the Project Limits. A portion of the 50-foot NDZ associated with the Herring River and Wetland 1 extend into the Project Limits and consist of the existing gravel parking area, stormwater outlet, roadway, and associated shoulders.

Work Description

The Project will implement improvements along the Route 28 corridor from Upper County Road to the Herring River Bridge. The proposed corridor improvements are shown in Attachment F: Project Plans and include the following:

- Route 28 will include pavement reclamation and box widening to accommodate 5- foot shoulders and 11-foot lanes.
- New sidewalks are proposed on both sides of the street along Route 28 providing improved accessibility.
- 5-foot shoulders are proposed on both sides of Route 28 for bicycle accommodations.
- The traffic signal at Upper County Road and Route 28 is proposed to be modified to include the Walgreens driveway approach to the intersection.
- New wheelchair ramps and crosswalks are proposed along the entire corridor.
- Install new pedestrian crossings at the intersection of Upper County Road and Route 28 across the western and northern legs of the intersection.
- Stormwater improvements

Work in wetland resource areas, the 100-foot buffer zone, and locally established 50-foot NDZ is described below. This work complies with all applicable performance standards to the maximum extent practicable, as demonstrated in the Regulatory Compliance section of this Narrative.

Table 2 Work in Wetland Resource Areas

Resource Area	Permanent Alteration	Temporary Alteration	Total Alteration	Type of Alteration
RFA 0-100 ft	82 SF	9,522 SF	9,604 SF	Sidewalk construction, full depth pavement, guardrail installation, loam and seed, erosion control installation, grading, Stormwater and lighting improvements and grubbing
RFA 100-200	1,142 SF	15,057 SF	16,199 SF	Sidewalk construction, full depth pavement, guardrail installation, loam and seed,

				erosion control installation, grading, Stormwater and lighting improvements and grubbing

Source: VHB, 2023.

Work in RFA

Portions of the project will require work within RFA associated with the Herring River which intersects the roadway. The RFA located within the Project Limits is located within the existing roadway layout including paved areas and adjacent shoulders. The total amount of degraded RFA along the roadway corridor within the Project Limits is approximately 19,180 square feet. Permanent alteration of RFA consists of portions of full depth pavement, construction of new sidewalk, and limited grubbing along the southern limit of the road. No tree clearing is proposed as part of the Project. Temporary alteration of RFA will occur as a result of full depth pavement, sidewalk and guardrail installation, minor vegetation clearing and grubbing, the installation of tree protection measures and erosion controls, and improvements to the existing belowground drainage pipe within the outer 100-feet of the RFA. The proposed pipe will tie into the existing drainage system and convey drainage flowing to the existing outfall. In total, the Project will require 25,803 square feet of work within RFA.

Work in LSCSF

As described in the existing conditions, portions of the project will require work within LSCSF. The LSCSF located within the Project Limits is primarily within developed areas within the Route 28 corridor including paved areas and associated shoulders. Work within LSCSF is associated with the Project Limits consists of sidewalk construction, full depth pavement reclamation, paving, guardrail and utility pole installation, plantings loam and seed, erosion control installation, grading, stormwater and lighting improvements, and grubbing. In total, the Project will require 95,690 square feet of work within LSCSF.

Work in Buffer Zone

Work within buffer zone to Bank associated with the Herring River and buffer zone to Wetland 1 consists of portions of sidewalk construction, full depth pavement reclamation, paving, guardrail installation, plantings, loam and seed, erosion control installation, grading, lighting improvements, and grubbing. The Project will result in approximately 10,308 square feet of work within the 100-foot buffer zone to Bank and Wetland 1.

Work in Locally Established Areas

The Bylaw regulations define a “no-disturb zone” (NDZ) as all of the area within 50 feet of any specific wetland resources protected under the Harwich Wetland Protection Bylaw and Regulations and the Massachusetts Wetlands Protection Act. Work within the 50-foot NDZ includes portions of sidewalk construction, full depth pavement, guardrail installation, loam and seed, erosion control installation, grading, lighting improvements, and grubbing. In total, the Project will require 4,231 square feet of work within the 50-foot NDZ.

Mitigation Measures

A suite of mitigation measures is proposed to prevent short- and long-term impacts to wetland resource areas. Mitigation measures proposed for this project include both structural and non-structural practices as described below.

Erosion and Sediment Control

An erosion and sedimentation control program will be implemented to minimize temporary impacts to wetland resource areas during the construction phase of the project. The program incorporates Best Management Practices (BMPs) specified in guidelines developed by MassDEP[8] and the U.S. Environmental Protection Agency (EPA)[9].

Proper implementation of the erosion and sedimentation control program will:

- minimize exposed soil areas through sequencing and temporary stabilization;
- place structures to manage stormwater runoff and erosion; and
- establish a permanent vegetative cover or other forms of stabilization as soon as practicable.

The following sections describe the controls that will be used and practices that will be followed during construction. These practices comply with criteria contained in the National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges from Large and Small Construction Activities issued by the EPA.

Non-structural Practices

Non-structural practices to be used during construction include temporary and permanent seeding and pavement sweeping. These practices will be initiated as soon as practicable in appropriate areas in the Project Limits.

Temporary and Permanent Seeding

If conditions allow, a temporary vegetative cover will be established on areas of exposed soils during construction. Upon completion of final grading, any areas not covered by pavement, other forms of stabilization, or other methods of landscaping will be seeded with a native seed mix. The mix will be applied at the rate suggested by its manufacturer.

Structural Practices

Structural erosion and sedimentation controls to be used on the site include barriers and catch basin inlet protection.

8 DEP, 1997. *Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas: A Guide for Planners, Designers, and Municipal Officials.*

9 EPA, 2007. *Interim Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites*. Office of Water. Report EPA 833-R-060-04.

Erosion Control Barriers

Prior to any ground disturbance, a compost filter tube, or another approved erosion control barrier, will be installed at the downgradient limit of work. As construction progresses, additional barriers will be installed around the base of stockpiles and other erosion-prone areas. The barriers will be entrenched into the substrate to prevent underflow. If sediment has accumulated to a depth that impairs proper functioning of the barrier, it will be removed by hand or by machinery operating upslope of the barriers. This material will be either reused at the Site or disposed of at a suitable offsite location. Any damaged sections of the barrier will be repaired or replaced immediately upon discovery.

Catch Basin Inlet Protection

The inlets of existing and proposed catch basins will be protected from sediment inflow during the work period by surrounding them with a barrier of staked straw bales or by installing silt sacks or other barrier methods determined by the contractor.

Stormwater Management

Runoff generated from impervious surfaces will be collected and managed in accordance with the MassDEP policy. Compliance with the 10 stormwater management standards cited in Section 310 CMR 10.05(6)(k) of the WPA Regulations is evaluated in the Stormwater Management Memorandum provided as Attachment E of this NOI.

Regulatory Compliance

As demonstrated below, work in wetland resource areas and/or the 100-foot buffer zone fully complies with applicable performance standards contained in the WPA regulations or may be permitted as a limited Project. The Applicant is requesting a variance from the 50-foot NDZ established by the Bylaw to allow for continuous sidewalk construction along the corridor.

Work in Resource Areas

As demonstrated below, work proposed in resource area complies with the requirements contained in the 310 CMR 10.04 and 10.58 or may be approved as a limited project per 310 CMR 10.53(3)(f), because it consists of: *"Maintenance and improvement of existing public roadways, but limited to widening less than a single lane, adding shoulders, correcting substandard intersections, and improving drainage systems."*

Land Subject to Coastal Storm Flowage (LSCSF) (310 CMR 10.04)

As identified in (310 CMR 10.04) of the WPA regulations, LSCSF is land subject to any inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record or storm of record, whichever is greater. Work will be required within the LSCSF flood zone (at elevation 11.0). Work in Land Subject to Coastal Storm Flowage is not currently governed by specific regulatory performance standards under the WPA. This work is unavoidable, as the existing roadway right-of-way and adjacent shoulders features are within LSCSF. Work within LSCSF will not result in any

impacts to flood elevation. There will be no change to the ability for this area to provide flood storage functions. No work is proposed within a Velocity (VE) Flood Zone.

200-Foot Riverfront Area (310 CMR 10.58)

Work associated with the Project will be conducted within the previously disturbed RFA associated with the Herring River. The majority of the RFA within the roadway is already degraded from its natural state and the Project will not result in any loss or reduction in the function of the RFA. The RFA within the Project Limits consists of the roadway itself as well as adjacent shoulders and is surrounded by wooded areas and gravel parking lot.

As identified in 310 CMR 10.58(2) of the WPA regulations, "A Riverfront Area is the area of land between a river's mean annual high-water line and a parallel line measured horizontally. The Riverfront area may include or overlap other resource areas or their buffer zones." Additionally, "the presence of natural vegetation within riverfront areas is critical to sustaining rivers as ecosystems."

The Project will not result in any direct impacts to Bank or Land Under Waterway (LUWW). Additionally, the Project is not located in any Estimated or Priority Habitat of Rare Wildlife or Species.

310 CMR 10.58(5): Redevelopment Within Previously Developed Riverfront Areas; Restoration and Mitigation.

Notwithstanding the provisions of 310 CMR 10.58(4)(c) and (d), the issuing authority may allow work to redevelop a previously developed riverfront area, provided the proposed work improves existing conditions. Redevelopment means replacement, rehabilitation or expansion of existing structures, improvement of existing roads, or reuse of degraded or previously developed areas.

Work to redevelop previously developed riverfront areas shall conform to the following criteria:

(a) At a minimum, proposed work shall result in an improvement over existing conditions of the capacity of the riverfront area to protect the interests identified in M.G.L. c. 131 § 40. When a lot is previously developed but no portion of the riverfront area is degraded, the requirements of 310 CMR 10.58(4) shall be met.

Disturbed areas along the roadway will be loamed and seeded to establish a cover of native vegetation along the roadway within the RFA, as well as the addition of native shrubby plantings. The limit of work in the RFA has been reduced to the maximum extent and does not allow for other opportunities for improvement of the RFA. The regulations at 310CMR 10.53(3)f allows work to be permitted under the Limited Project provisions at 310 CMR10.53(3)(f) if strict compliance with the RFA performance standards cannot be met.

(b) Stormwater management is provided according to standards established by the Department.

The Project is a redevelopment and has been designed to meet the Stormwater management standards to the maximum extent practicable as discussed in Attachment E.

(c) Within 200-foot riverfront areas, proposed work shall not be located closer to the river than existing conditions or 100 feet, whichever is less, or not closer than existing conditions within 25-foot riverfront areas, except in accordance with 310 CMR 10.58(5)(f) or (g).

The existing roadway crosses the Herring River, and the proposed Project Limits are improvements to the Route 28 corridor up to the Herring River bridge, therefore work within 100 feet of the waterway is unavoidable. However, the work within the corridor will take place in existing disturbed areas associated with the roadway and adjacent shoulders.

(d) Proposed work, including expansion of existing structures, shall be located outside the riverfront area or toward the riverfront area boundary and away from the river, except in accordance with 310 CMR 10.58(5)(f) or (g).

Because the Project consists of improvements to the existing roadway that approaches the Herring River bridge work within the RFA is unavoidable.

(e) The area of proposed work shall not exceed the amount of degraded area, provided that the proposed work may alter up to 10% if the degraded area is less than 10% of the riverfront area, except in accordance with 310 CMR 10.58(5)(f) or (g).

The Project will require work within approximately 25,803 square feet of the 33,029 square feet of RFA located in the Project Limits, of which approximately 19,180 square feet is previously degraded. The proposed degraded area will exceed 10% of the available Riverfront Area within the Project alignment. However, the majority of the existing Riverfront is partially degraded or disturbed from its natural state by existing paved roadway and adjacent shoulders and the work may be permitted as a limited Project per 310 CMR10.53(3)(f), where strict compliance with the regulations cannot be met.

(f) When an applicant proposes restoration on-site of degraded riverfront area, alteration may be allowed notwithstanding the criteria of 310 CMR 10.58(5)(c), (d), and (e) at a ratio in square feet of at least 1:1 of restored area to area of alteration not conforming to the criteria. Areas immediately along the river shall be selected for restoration. Alteration not conforming to the criteria shall begin at the riverfront area boundary. Restoration shall include:

1. removal of all debris, but retaining any trees or other mature vegetation;

2. grading to a topography which reduces runoff and increases infiltration;

3. coverage by topsoil at a depth consistent with natural conditions at the site; and

4. seeding and planting with an erosion control seed mixture, followed by plantings of herbaceous and woody species appropriate to the site;

(g) When an applicant proposes mitigation either on-site or in the riverfront area within the same general area of the river basin, alteration may be allowed notwithstanding the criteria of 310 CMR 10.58(5)(c), (d), or (e) at a ratio in square feet of at least 2:1 of mitigation area to area of alteration not conforming to the criteria or an equivalent level of environmental protection where square footage is not a relevant measure. Alteration not conforming to the criteria shall begin at the riverfront area boundary. Mitigation may include off-site restoration of riverfront areas, conservation restrictions under M.G.L. c. 184, §§ 31 to 33 to preserve undisturbed riverfront areas that could be otherwise altered under 310 CMR 10.00, the purchase of development rights within the riverfront area, the restoration of bordering vegetated wetland, projects to remedy an existing adverse impact on the interests identified in M.G.L. c. 131, § 40 for which the applicant is not legally responsible, or similar activities undertaken voluntarily by the applicant which will support a determination by the issuing authority of no

significant adverse impact. Preference shall be given to potential mitigation projects, if any, identified in a River Basin Plan approved by the Secretary of the Executive Office of Environmental Affairs.

Work associated with the Project will occur within the existing layout of Route 28, the existing paved surface, its associated shoulders and stormwater components. Areas disturbed as a result of the Project will be stabilized with new pavement or loam and seed upon completion of the work, with additional native shrub plantings as detailed on the plans. Due to right of way constraints from previous development along the corridor, no additional restoration is feasible. Therefore, the project is seeking authorization under the limited project provisions per 310 CMR10.53(3)(f).

Alternatives Analysis

As a limited project and in accordance with 310 CMR 10.53(3)f, the Applicant has reviewed potential alternatives to the proposed Project. The alternatives included:

- Alternative 1- The Proposed Project
- Alternative 2- The no-build alternative
- Alternative 3- Alternate Layout

The purpose of the Projects is to improve stormwater infrastructure and to provide pedestrian and bicycle byways along Route 28 in Harwich by rehabilitating the existing roadway.

The no-build alternative (Alternative 2) would not provide any improvements to stormwater infrastructure or pedestrian and bicycle accommodations in the Project limits and would therefore not fulfill the Project's purpose and need. As a result, Alternative 2 was not considered a viable alternative for the Project.

Using an alternate layout for constructing the Project (Alternative 3) would result in greater impact to resource areas including, potentially Salt Marsh, Bank, and LUWW associated with Herring River. This would also result in the need for right-of-way acquisition on private property and significant tree removal. Additionally, any improvements made on any other roadway would not improve pedestrian access along the Route 28 corridor. Therefore, Alternative 3 was also rejected as a viable alternative.

The Preferred Alternative (Alternative 1) has been designed to minimize impacts to resource areas while also improving stormwater infrastructure and pedestrian and bicycle accommodations along Route 28 in Harwich.

Work in Buffer Zone

As identified in 310 CMR 10.53(1) of the WPA regulations, "the issuing authority should consider the characteristics of the buffer zone, such as the presence of steep slopes, that may increase the potential for adverse impacts on resource areas. Conditions may include limitations on the scope and location of work in the buffer zone as necessary to avoid alteration of resource areas. The issuing authority may require erosion and sedimentation controls during construction, a clear limit of work, and the preservation of natural vegetation adjacent to the resource area and/or other measures commensurate with the scope and location of the work within the buffer zone to protect the interests of the Act."

The proposed project has been designed to minimize adverse impacts to the buffers zone and adjacent resource areas. As identified in the Mitigation Measures section of this attachment, an erosion and sedimentation control program will be implemented to prevent adverse impacts during construction. The majority of the buffer zone within the Project Limits is currently developed or degraded and consists of the Route 28 roadway layout.

Work in Locally Established Areas

As discussed above, the Project will require work within the 50-foot NDZ established by the Bylaw to facilitate roadway construction along the Route 28 corridor in Harwich. Section 310-4 of The Bylaw establishes a variance provision as follows:

D. Conservation variance provision. In rare and unusual circumstances the Commission, at its discretion, may grant a conservation variance from the requirements of the fifty-foot no-disturb zone. Such a conservation variance may be granted upon a clear and convincing showing of evidence by the applicant that the proposed work will not adversely affect the environmental values protected by this bylaw.

The Project consists of integral pedestrian and stormwater upgrades along the Route 28 corridor in Harwich. Because the existing roadway layout is currently within 50 feet of Herring River, work in the 50-foot NDZ is unavoidable. However, impacts to adjacent resource areas and the buffer zone will be minimized through implementation of an erosion and sedimentation control plan and portions of the 50-foot NDZ are already disturbed from their natural state. Because this Project is essential for improving pedestrian safety and accessibility and stormwater treatment the Applicant is requesting a conditional exception variance from the requirements of the 50-foot NDZ established by the Bylaw. Given the roadway improvements, including the stormwater management system upgrades, the project will not adversely affect the environmental values of the Town of Harwich Wetlands Protection Bylaw.

Summary

The Town of Harwich Division of Highways & Maintenance proposes improvements to an approximately 0.7-mile portion of Route 28 (the Project) from Upper County Road easterly to a point approximately 200-feet west of the Harwich-Dennis Town line, in Dennis extending easterly along Main Street to just west of Herring River bridge in Harwich, Massachusetts. The purpose of the Project is to improve stormwater infrastructure and pedestrian and bicycle byways within the Project Limits.

Because the existing roadway corridor extends to the western limit of the Herring River, unavoidable work associated with the improvements will be required within the 200-foot RFA and buffer zones to Bank and Salt marsh. The RFA and buffer zones along the corridor are disturbed from their natural state due to previous development of the roadway. No work is proposed within waterways or salt marsh as part of the Project. Work within LSCSF will not result in any impacts to flood elevation. The Project is filed as a limited Project under 310 CMR 10.53(3)(f), as a project consisting of maintenance and improvement of existing public roadways. An erosion and sedimentation control program is proposed along the Project Limits to protect and minimize the risk to secondary resource areas.

Disturbed areas along the roadway will be loamed and seeded to establish a cover of native vegetation along the roadway within the RFA, additional shrubby vegetation will be planted along the northern edge of the roadway, and tree protection fences will be installed to protect existing trees located within the RFA and buffer zones in proximity to the project.

The Applicant respectfully requests that the Harwich Conservation Commission find these measures adequately protective of the interests identified in the WPA and issue an Order of Conditions approving the work described in this NOI and shown on the accompanying plans. The Applicant is also requesting a variance from the requirements of the 50-foot NDZ established by the Bylaw.

Attachment B: Abutter Information

- Notice to Abutters
- Affidavit of Service
- List of Abutters

NOTIFICATION TO ABUTTERS

Under the Town of Harwich Wetlands Protection Bylaw

In accordance with the first paragraph of section 5 of the Town of Harwich Wetlands Protection Bylaw you are hereby notified of the following:

A. The name of the applicant is the Town of Harwich and the address is 273 Queen Anne Road, P.O. Box 1543, Harwich, MA 02645

B. The applicant has filed a **Notice of Intent** with the Harwich Conservation Commission and is seeking permission to perform work in an area subject to protection under the Wetland Protection Act (MGL Chapter 131, Section 40).

The activity is Roadway Improvements to an approximately 0.7-mile portion of Route 28 between Upper County Road to just west of Herring River Bridge.

C. The date of the hearing is April 2, 2025 at 6:30 p.m.

D. Copies of the Notice of Intent and the plan may be examined at the Harwich Town Hall during business hours. For more information call 508-430-7538.

You may also contact the firm or representative that provide you with this notice.

Firm name Bridget Hilgendorff (VHB) phone # 617-607-2709

Notice of the public hearing, including date, time and place will be published at least five days in advance in the Cape Cod Chronicle.

Notice of the public hearing, including date, time and place will be posted at Harwich Town Hall at least 48 hours in advance.

You may also contact the nearest Department of Environmental Protection Regional Office for more information about this application or the Wetlands Protection Act.

Southeast Regional Office: 508-946-2800

AFFIDAVIT OF SERVICE

Under the Town of Harwich Wetlands Protection Bylaw and the Massachussetts Wetland Protection Act

(To be submitted to the Conservation Department when filing a Notice of Intent

I, Bridget Hilgendorff hereby certify
Name of Person Making the Affidavit

that on March 17, 2025 under Harwich Wetland Protection Regulations, Section 5 (5.1) and the second paragraph of M.G.L. c.131 Section 40, and the DEP Guide to Abutter Notification dated April 8, 1994, in connection with the following matter:

A Notice of Intent was filed under the Massachusetts Wetland Protection Act and the Town of Harwich Wetlands Protection Bylaw for/by:

Town of Harwich
Name of Applicant

With the Town of Harwich Conservation Commission on March 12, 2025 for the property
Date

Located at: Route 28 between Upper County Road to just west of Herring River Bridge
Address of Land Where Work is Being Proposed

The form of the notification and a list of the abutters to whom it was given and their addresses are attached to this Affidavit of Service.

Bridget Hilgendorff
Name

3/11/2025
Date

TOWN OF HARWICH
ASSESSORS OFFICE
732 MAIN STREET
HARWICH, MASSACHUSETTS 02645

Town of Harwich
FEB 26 2025
Assessors Office

OFFICE OF
BOARD OF ASSESSORS
Tel: 508-430-7503
Fax: 508-430-7086

ABUTTERS REQUEST FORM

Board Requesting Action: Conservation Commission

Date Submitted: 2/20/2025

Applicant's Name: Town of Harwich

Assessors Map(s) & Parcel(s): N/A Route 28 Corridor (See attached aerial)

Property Location: 73 Main Street (Route 28) to 129 Main Street (Route 28)

Owner(s): Multiple

Contact Person: Bridget Hilgendorff

E-mail Address: bhilgendorff@vhb.com

Telephone #: 617-607-2709

I hereby certify that the names and addresses on the attached or preceding sheet (s) are of the owners as they appear in the assessing departments most recent computerized tax list

Type of Petition: Linear-shaped project over 1,000 feet in length - Abutters within 1,000 feet from work within resource areas should be notified

Assessors Approval By: Paul Steiner 2/26/25

INVOICE

Town project is exempt from abutter fees

This cover sheet is also your invoice.

	Amount	Date Paid	Ck #
Up to 25 Abutters	**$50.00**	—	—
Additional Abutters _____ @ $2.00 ea	_____	_____	_____
TOTAL	_____		

Make checks payable to: Town of Harwich

\\TOWNHALL3\Assessor\ABUTTERS\Abutters Request.doc

10-D4-2-0-R

52 ROUTE 28 LLC
56 COOK CIRCLE
HYANNIS, MA 02601

11-B4-1-101-R

HJERPE WAYNE G
PO BOX 251
S DENNIS, MA 02660

11-B4-1-102-R

HJERPE WAYNE G
PO BOX 251
SOUTH DENNIS, MA 02660

11-B4-1-103-R

HJERPE WAYNE G TR
WHPC REALTY TRUST
PO BOX 251
S DENNIS, MA 02660

11-B4-1-104-R

HJERPE WAYNE G
PO BOX 251
S DENNIS, MA 02660

11-B4-1-105-R

HJERPE WAYNE G TR
WHPC REALTY TRUST
PO BOX 251
S DENNIS, MA 02660

11-B4-1-106-R

HJERPE WAYNE G TR
WHPC REALTY TRUST
PO BOX 251
S DENNIS, MA 02660

11-B4-1-107-R

HJERPE WAYNE G TR
WHPC REALTY TRUST
PO BOX 251
S DENNIS, MA 02660

11-B4-1-108-R

HJERPE WAYNE G TR
WHPC REALTY TRUST
PO BOX 251
S DENNIS, MA 02660

11-B4-1-109-R

HJERPE WAYNE G TR
WHPC REALTY TRUST
PO BOX 251
S DENNIS, MA 02660

11-B4-1-110-R

HJERPE WAYNE G TR
WHPC REALTY TRUST
PO BOX 251
S DENNIS, MA 02660

11-B4-1-111-R

HJERPE WAYNE G TR
WHPC REALTY TRUST
PO BOX 251
S DENNIS, MA 02660

11-B4-1-200-R

HJERPE WAYNE G
PO BOX 251
S DENNIS, MA 02660

11-B4-1-201-R

HJERPE WAYNE G
PO BOX 251
S DENNIS, MA 02660

11-B4-1-202-R

HJERPE WAYNE G
PO BOX 251
S DENNIS, MA 02660

11-B4-1-203-R

HJERPE WAYNE G
PO BOX 251
S DENNIS, MA 02660

11-B4-1-204-R

SLOWATYCKI PAUL R
PO BOX 24
W HARWICH, MA 02671

11-B4-1-205-R

SLOWATYCKI PAUL R
PO BOX 24
W HARWICH, MA 02671

11-B4-1-206-R

SLOWATYCKI PAUL R
PO BOX 24
WEST HARWICH, MA 02671

11-B4-1-207-R

SLOWATYCKI PAUL R
PO BOX 24
WEST HARWICH, MA 02671

11-B4-1-208-R

SLOWATYCKI PAUL R
PO BOX 24
WEST HARWICH, MA 02671

11-B4-1-300-R

SLOWATYCKI PAUL R
PO BOX 24
W HARWICH, MA 02671

11-B4-1-301-R

SLOWATYCKI PAUL R
PO BOX 24
W HARWICH, MA 02671

11-B4-1-302-R

SLOWATYCKI PAUL R
PO BOX 24
W HARWICH, MA 02671

11-B4-1-303-R

SLOWATYCKI PAUL R
PO BOX 24
W HARWICH, MA 02671

11-B4-1-304-R

PAINE CHRISTOPHER &
PAINE LAUREL J
22 DRIFTWOOD LN
S YARMOUTH, MA 02664

11-B4-1-305-R

PAINE CHRISTOPHER &
PAINE LAUREL J
22 DRIFTWOOD LN
S YARMOUTH, MA 02664

11-B4-1-306-R

HJERPE WAYNE G
PO BOX 251
S DENNIS, MA 02660

11-B4-1-307-R

HJERPE WAYNE G
PO BOX 251
S DENNIS, MA 02660

11-P1-0-R

MCCHANG LLC
24 RUSSETT HILL RD
SHERBORN, MA 01770

11-P2-A-0-R

DCG INVESTORS 2017 LLC
121 ROUTE 28
W HARWICH, MA 02671

10-C3-A-0-R

ANGELINA ENTERPRISES LLC
5 WADSWORTH LN
YARMOUTH PORT, MA 02675

10-C4-0-R

DMTL LLC
984 WEST YARMOUTH RD
YARMOUTH PORT, MA 02675

10-C6-0-R

HARWICH PROPERTIES LLC
159 OLD MAIN ST
S YARMOUTH, MA 02664

10-C7-1-0-R

OVERSTREET JO-ANN TR
26 MAIN STREET REALTY TRUST
7 CENTRAL ST
S EASTON, MA 02375

10-C8-0-R

WOOD CARL F &
WOOD LOIS V
PO BOX 63
W HARWICH, MA 02671

10-D4-1-0-R

48 ROUTE 28 LLC
56 COOK CIRCLE
HYANNIS, MA 02601

10-F5-0-R

REGO JOSHUA D
66 ROUTE 28
W HARWICH, MA 02671

10-N2-0-E

CHASE LIBRARY ASSOCIATION
REVERSION CLAUSE IN DEED
PO BOX 457
W HARWICH, MA 02671

10-G2-0-R

FIRST BAPTIST CHURCH
PO BOX 566
W HARWICH, MA 02671

10-K5-0-R

84 MAIN STREET W HARWICH LLC
84 BEECHTREE DR
BREWSTER, MA 02631

10-K6-1-0-R

VELEZ JASON S &
GOYZUETA ERIKA
121 S BROADWAY
IRVINGTON, NY 10533

10-L4-0-R

BAKER HELEN
PO BOX 367
W HARWICH, MA 02671

10-L5-0-R

THOMPSON RICHARD J TR
RICHARD J THOMPSON LIVING TRUS
400 HOBRON LN UNIT 3001
HONOLULU, HI 96815

10-N1-A-0-R

LINEAR RETAIL WH #2 LLC
77 SOUTH BEDFORD ST, SUITE 401
BURLINGTON, MA 01803

10-N3-0-R

RICHTON INVESTMENT LLC
311 CROOKS AVE
PATERSON, NJ 07503

10-N5-0-R

VD LIU LLC
78 INDIAN MEMORIAL DR
S YARMOUTH, MA 02664

10-S1-0-R

HEART MELISSA H
27 ROUTE 28
W HARWICH, MA 02671

10-S2-0-R

SHOEMAKER NANCY
21 MEADOW LN
W BARNSTABLE, MA 02668

10-S3-0-R

BERRY JAMES D
PO BOX 307
W HARWICH, MA 02671

10-W1-0-R

73 MAIN STREET LLC
53 PERCH POND RD
CHATHAM, MA 02633

10-W3-0-R

CHAMBERLAIN VIRGINIA
87 ROUTE 28
W HARWICH, MA 02671

10-W6-1-0-R

DIAMOND JESSICA S TRS ET AL
DIAMOND EMILY A TRS
PO BOX 326
HARWICH, MA 02645

10-W9-0-R

HOYLAND ALEXANDRA
C/O RAYMOND HOYLAND
109 ROUTE 28
W HARWICH, MA 02671

10-W7-2-2-R

CALLAHAN PATRICIA
285 PAYSON RD
BELMONT, MA 02478

10-W7-2-1-R

CALLAHAN PATRICIA
285 PAYSON RD
BELMONT, MA 02478

10-F6-1-R

KELLEY MATTHEW P
PO BOX 665
W HARWICH, MA 02671

10-F6-2-R

KELLEY MATTHEW P
PO BOX 665
W HARWICH, MA 02671

10-F6-3-R

KEVORKIAN KENNETH P TRS ET AL
MILLER OLIVIA H TRS
109 SCHOOL ST
MARSTONS MILLS, MA 02648

10-F6-4-R

BCCA LLC
46 BEACH PLUM CIR
HARWICH, MA 02645

10-F6-5-R

LOEDEL BONNIE L TR
72 MAIN ST SUITE 5 NOMINEE TR
72 ROUTE 28
SUITE 5
W HARWICH, MA 02671

10-F6-6-R

COPELAND JEAN CAROLINA TRS ET
SKINNER BRIAN JOSEPH TRS
14 STAGE COACH DR
S CHATHAM, MA 02659

10-F6-7-R

WEST HARWICH OFFICE CONDOMINIU
27 SPRAY AVE
MARBLEHEAD, MA 01945

10-F6-8-R

HARWICH OFFICE CONDOMINIUM LLC
27 SPRAY AVE
MARBLEHEAD, MA 01945

10-F6-9-R

STINSON SUSAN C TR ET AL
SUSAN C STINSON LIVING TRUST
4 MASHPA RD
HARWICH, MA 02645

10-F6-10-R

FORD MICHAEL D
237 SOUTH ST
HARWICH, MA 02645

10-W2-1-0-R

TSOUKALAS JAMES
77 ROUTE 28
W HARWICH, MA 02671

10-U1-1A-R

KHORIKIAN GEORGE
69 ROUTE 28 UNIT A
W HARWICH, MA 02671

10-U1-1B-R

KHORIKIAN GEORGE
69-B MAIN ST
W HARWICH, MA 02671

10-U1-1C-R

KHORIKIAN GEORGE
69-B MAIN ST
W HARWICH, MA 02671

10-U1-1D-R

KHORIKIAN GEORGE
69 ROUTE 28
W HARWICH, MA 02671

10-U1-1E-R

KHORIKIAN GEORGE
69 ROUTE 28
W HARWICH, MA 02671

10-U1-2F-R

KHORIKIAN GEORGE
69 ROUTE 28
W HARWICH, MA 02671

10-W7-2-0-E

HERRING RIVER CONDOMINIUM ASSO
C/O DAVID A QUIGLEY MANAGER
27 DUNES RD
HARWICH PORT, MA 02646

10-U1-0-E

QUARTERS CONDOMINIUM TRUST
C/O JAMES J SHANLEY TRUSTEE
PO BOX 698
WEST YARMOUTH, MA 02673

10-D2-1-0-R

NARBONNE LEON D TR
RESORT LIVING REALTY TRUST
416 MAIN ST
W DENNIS, MA 02670

10-D2-2-0-R

NARBONNE LEON D TR
RESORT LIVING REALTY TRUST
416 MAIN ST
W DENNIS, MA 02670

11-B4-1-0-E

WEST HARWICH PROFESSIONAL
CENTER CONDOMINIUM ASSOCIATION
C/O MANNING CHRISTOPHER J
P O BOX 335
DENNIS PORT, MA 02639

10-F6-0-E

WEST HARWICH OFFICE PARK
CONDOMINIUM ASSOCIATION
C/O JIM STINSON
PO BOX 665
W HARWICH, MA 02671

10-D1-1-0-E

BARNABY INN CONDOMINIUM TRUST
LAURIEANN GALER TR
PO BOX 625
W HARWICH, MA 02671

10-D1-1-1-R

WANG LAN &
ZHAO HUILIN
168 BEDFORD RD
LINCOLN, MA 01773

10-D1-1-2-R

ORMOND WILLIAM D &
ORMOND LAURIEANN
PO BOX 115
DENNIS PORT, MA 02639

10-D1-1-3-R

ORMOND WILLIAM D &
ORMOND LAURIEANN
PO BOX 115
DENNIS PORT, MA 02639

10-W5-7-0-R

J&S CAPE HOUSES LLC
19 VINEYARD LN
HARWICH, MA 02645

10-W5-8-0-R

THACHER TAMMY TR
TNT 93 REALTY TRUST
PO BOX 917
E DENNIS, MA 02641

10-W5-9-0-E

HARWICH ECUMENICAL COUNCIL
FOR THE HOMELESS INC
PO BOX 638
W HARWICH, MA 02671

10-U1-A-0-R

GOODE JAMES R TRS ET AL
GOODE KAREN E TRS
41 PRINCE WAY
PO BOX 670
E DENNIS, MA 02641

10-C5-0-R

ALL CAPE PROPERTY LLC
17 HIGH SCHOOL RD UNIT B
HYANNIS, MA 02601

10-F7-2-0-R

BOURGEOIS RONALD D JR
2 LYNXHOLM CT 2ND FLOOR
HYANNIS, MA 02601

10-L8-0-R

FLATLEY STEPHEN L &
FLATLEY NIRA L
238 ELIZABETH DR
LUDLOW, MA 01056

10-N4-0-R

DONAHUE JANET L
17 ROUTE 28
W HARWICH, MA 02671

10-S4-0-R

NOTARANGELO DAVID C
75 PURITAN DR
QUINCY, MA 02169

10-S5-0-R

CHASE JENNIFER L
198 BELMONT RD
W HARWICH, MA 02671

10-W7-1-0-R

NICOLAS CHELSEA A ET AL
STROHMAIER JASON M
115 ROUTE 28
W HARWICH, MA 02671

10-L6-0-R

GREGG JOHN F TR
MAPLE ROCK TRUST
PO BOX 398
S HARWICH, MA 02661

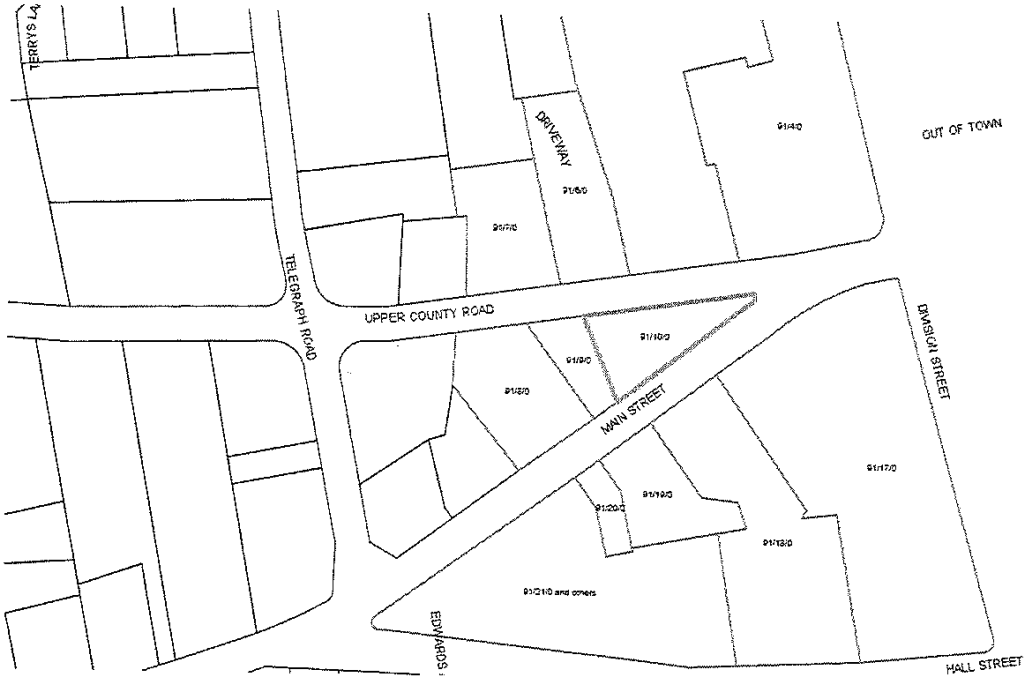
11-B5-0-R

JACKSON DAVID W TR
IRISH PUB TRUST
87 BROADWAY
MALDEN, MA 02148

ABUTTERS' NAMES AND ADDRESSES CERTIFIED ACCORDING TO THE ASSESSING DEPARTMENTS MOST RECENT COMPUTERIZED TAX LIST (40A Sec. 11)

TOWN OF DENNIS, MA
BOARD OF ASSESSORS
685 Route 134, South Dennis, MA 02660

Town of DENNIS Custom Abutters List



Key	Parcel ID	Owner	Location	Mailing Street	Mailing City	ST	ZipCd/Country
33964	91-21-663-R	GERRY & LYNN LLC	673-U-663 MAIN STREET DP	812 BRINY AVENUE UNIT 12-A	POMPANO	FL	33062
33965	91-21-665-R	GERRY & LYNN LLC	673-U-665 MAIN STREET DP	812 BRINY AVENUE UNIT 12A	POMPANO	FL	33062
33966	91-21-667-R	GERRY & LYNN LLC	673-U-667 MAIN STREET DP	812 BRINY AVENUE UNIT 12A	POMPANO	FL	33062
33967	91-21-669-R	GERRY & LYNN LLC	673-U-669 MAIN STREET DP	812 BRINY AVENUE UNIT 12A	POMPANO	FL	33062
33968	91-21-671-R	GERRY & LYNN LLC	673-U-671 MAIN STREET DP	812 BRINY AVENUE UNIT 12A	POMPANO	FL	33062
33969	91-21-673-R	RED NUN DENNISPORT REALTY LLC	673-U-673 MAIN STREET DP	270 WILLISTON ROAD	SAGAMORE BEACH	MA	02562
33970	91-21-675-R	GERRY & LYNN LLC	673-U-675 MAIN STREET DP	812 BRINY AVENUE UNIT 12A	POMPANO	FL	33062
33971	91-21-677-R	GERRY & LYNN LLC	673-U-677 MAIN STREET DP	812 BRINY AVENUE UNIT 12A	POMPANO	FL	33062
33972	91-21-679-R	GERRY & LYNN LLC	673-U-679 MAIN STREET DP	812 BRINY AVENUE UNIT 12A	POMPANO	FL	33062
33973	91-21-681-R	GERRY & LYNN LLC	673-U-681 MAIN STREET DP	812 BRINY AVENUE UNIT 12A	POMPANO	FL	33062
33974	91-21-683-R	GERRY & LYNN LLC	673-U-683 MAIN STREET DP	812 BRINY AVENUE UNIT 12A	POMPANO	FL	33062
33975	91-21-18-R	GERRY & LYNN LLC	18-U-18 HALL STREET DP	812 BRINY AVENUE UNIT 12-A	POMPANO	FL	33062
6850	91-3-0-R	O S J OF DENNISPORT LLC	260 UPPER COUNTY ROAD DP	375 COMMERCE PARK ROAD	NORTH KINGSTOWN	RI	02862
6851	91-4-0-R	O S J OF DENNISPORT LLC	714 MAIN STREET DP	375 COMMERCE PARK ROAD	NORTH KINGSTOWN	RI	02862
6853	91-6-0-R	WILKINS STEPHEN D ET UX WILKINS SANDRA J	254 UPPER COUNTY ROAD DP	250 UPPER COUNTY ROAD	DENNISPORT	MA	02639
6854	91-7-0-R	WILKINS STEPHEN D ET UX WILKINS SANDRA J	250 UPPER COUNTY ROAD DP	250 UPPER COUNTY ROAD	DENNISPORT	MA	02639
6855	91-8-0-R	ZIRUK DARBY TRUSTEE REJ REALTY TRUST	668 MAIN STREET DP	158 MAIN STREET	SANDWICH	MA	02563
6856	91-9-0-R	KOD HOLDINGS LLC	682 MAIN STREET DP	682 MAIN STREET	DENNISPORT	MA	02638

Key	Parcel ID	Owner	Location	Mailing Street	Mailing City	ST	ZipCd/Country
6857	91-10-0-R	684-694 MAIN STREET LLC	684 MAIN STREET DP	19 CRANBERRY LANE	SOUTH YARMOUTH	MA	02664
6862	91-17-0-R	BROKEN ARROW LLC	697 MAIN STREET DP	C/O WALGREEN CO P O BOX 1159	DEERFIELD	IL	60015
6863	91-18-0-E	TOWN OF DENNIS PARKING AREA	24 HALL STREET DP	685 ROUTE 134	SOUTH DENNIS	MA	02660
6864	91-19-0-R	MCKENNA CARTER LLC	691 MAIN STREET DP	350 ARGUELLO BOULEVARD	SAN FRANCISCO	CA	94118
6865	91-20-0-E	TOWN OF DENNIS POCKET PARK	683 ROUTE 28 DP	685 ROUTE 134	SOUTH DENNIS	MA	02660
6866	91-21-0-E	DIGIOVANNI GERALD J	673 MAIN STREET DP	47 EDGEWATER ROAD	HULL	MA	02045

91-21-663-R

GERRY & LYNN LLC
812 BRINY AVENUE
UNIT 12-A
POMPANO, FL 33062

91-21-665-R

GERRY & LYNN LLC
812 BRINY AVENUE
UNIT 12A
POMPANO, FL 33062

91-21-667-R

GERRY & LYNN LLC
812 BRINY AVENUE
UNIT 12A
POMPANO, FL 33062

91-21-669-R

GERRY & LYNN LLC
812 BRINY AVENUE
UNIT 12A
POMPANO, FL 33062

91-21-671-R

GERRY & LYNN LLC
812 BRINY AVENUE
UNIT 12A
POMPANO, FL 33062

91-21-673-R

RED NUN DENNISPORT REALTY LLC
270 WILLISTON ROAD
SAGAMORE BEACH, MA 02562

91-21-675-R

GERRY & LYNN LLC
812 BRINY AVENUE
UNIT 12A
POMPANO, FL 33062

91-21-677-R

GERRY & LYNN LLC
812 BRINY AVENUE
UNIT 12A
POMPANO, FL 33062

91-21-679-R

GERRY & LYNN LLC
812 BRINY AVENUE
UNIT 12A
POMPANO, FL 33062

91-21-681-R

GERRY & LYNN LLC
812 BRINY AVENUE
UNIT 12A
POMPANO, FL 33062

91-21-683-R

GERRY & LYNN LLC
812 BRINY AVENUE
UNIT 12A
POMPANO, FL 33062

91-21-18-R

GERRY & LYNN LLC
812 BRINY AVENUE
UNIT 12-A
POMPANO, FL 33062

91-3-0-R

O S J OF DENNISPORT LLC
375 COMMERCE PARK ROAD
NORTH KINGSTOWN, RI 02862

91-4-0-R

O S J OF DENNISPORT LLC
375 COMMERCE PARK ROAD
NORTH KINGSTOWN, RI 02862

91-6-0-R

WILKINS STEPHEN D ET UX
WILKINS SANDRA J
250 UPPER COUNTY ROAD
DENNISPORT, MA 02639

91-7-0-R

WILKINS STEPHEN D ET UX
WILKINS SANDRA J
250 UPPER COUNTY ROAD
DENNISPORT, MA 02639

91-8-0-R

ZIRUK DARBY TRUSTEE
REJ REALTY TRUST
158 MAIN STREET
SANDWICH, MA 02563

91-9-0-R

KOD HOLDINGS LLC
682 MAIN STREET
DENNISPORT, MA 02638

91-10-0-R

684-694 MAIN STREET LLC
19 CRANBERRY LANE
SOUTH YARMOUTH, MA 02664

91-17-0-R

BROKEN ARROW LLC
C/O WALGREEN CO
P O BOX 1159
DEERFIELD, IL 60015

91-18-0-E

TOWN OF DENNIS
PARKING AREA
685 ROUTE 134
SOUTH DENNIS, MA 02660

91-19-0-R

MCKENNA CARTER LLC
350 ARGUELLO BOULEVARD
SAN FRANCISCO, CA 94118

91-20-0-E

TOWN OF DENNIS
POCKET PARK
685 ROUTE 134
SOUTH DENNIS, MA 02660

91-21-0-E

DIGIOVANNI GERALD J
47 EDGEWATER ROAD
HULL, MA 02045

Attachment C: Photographic Log

© VHB

Photography Log

PROJECT NUMBER

15592.62

CLIENT

Town of Harwich-Division of Highways & Maintenance

273 Queen Anne Road, P.O. Box 1543

Harwich, MA 02645

LOCATION

Route 28

Harwich, MA

Harwich- Roadway Improvements Route 28 From Upper County Road to Herring River (MassDOT Project # 608742)

Photo 1: View facing south at Wetland 1 salt marsh and adjacent upland area

Photo 2: View facing east at Wetland 1, salt marsh and the Herring River.

Photo 3: View facing north at the Herring River and the gravel parking area.

Attachment D: Wetland Memorandum

To:	File	**Date:**	January 31, 2025
Prepared By:	Casey Bardier	**Project No.:**	13137.01
From:	Casey Bardier	**Project Name:**	Harwich Rte. 28 Expansion

On January 31, 2025, VHB personnel (Lars Carlson, Ph.D., PWS and Casey Bardier) reflagged wetland resource areas in the vicinity of Route 28 (Main Street) where it crosses the Herring River in Harwich, Massachusetts (the Site). The area was previously delineated by VHB personnel (Christoper Wagner and Lars Carlson) on September 19, 2017. Resource areas were delineated with respect to the federal Clean Water Act (CWA), the Massachusetts Wetlands Protection Act (WPA), and the Town of Harwich Wetlands Protection Bylaw and Regulations (Bylaw). This memorandum describes the wetland resources located on the property, and the regulatory status of each of the wetland areas.

Wetland Descriptions

Table 1 lists the wetland resource areas delineated on the date listed above.

Table 1 Delineated Resource Areas

Flag Numbers	Resource Type	Description
WF1-111 to WF1-120	BVW	Landward extent of the bordering vegetated wetland/salt marsh adjacent to the Herring River and south of Main Street.
WF1-200 to WF1-212	BVW	Landward extent of the bordering vegetated wetland/salt marsh adjacent to the Herring River and north of Main Street.
N/A	Bank	Mean High Tide of the Herring River per Tides & Currents data from NOAA

Source: VHB & NOAA, 2025.

Herring River

The Herring River is a perennial tidal stream that ebbs north to south under Main Street bridge. The Bank of the river is generally well-defined and consists of a sharp break in slope and an associated change in vegetation. The Bank of the river was determined in the office following the delineation using the National Oceanic and Atmospheric Administration's (NOAA) Tide and Current data chart for Woods Hole, MA (Datum 8447930, NAVD88). The Mean High Water was used to determine the Bank, which is at an elevation of 0.57 feet.

The Bank of the Herring River is jurisdictional under the WPA and CWA. The Bank also supports a 200-foot Riverfront Area (RFA), a 100-foot buffer zone, and a locally regulated 50-foot No-Disturb Zone (NDZ).

Wetland 1

Wetland 1 was previously flagged in 2017 and reevaluated during the 2025 site visit. North of Main Street, the landward extent of the BVW was delineated with flags WF1-200 to WF1-212. Due to lack of woody

vegetation, flags were not hung in the field. Wetland 1 consists mainly of the dirt parking lot of a nearby restaurant and a narrow strip of regularly maintained mix of grasses, including black grass (*Juncus gerardii*) and switchgrass (*Panicum virgatum*). South of Main Street, the BVW followed the same line as the previous delineation and was reflagged using flags WF1-111 to WF1-120. BVW south of Main Street follows a topographic break and change in emergent to upland vegetation. Wetland vegetation in the area is a mix of salt marsh and freshwater emergent species including maritime marsh-elder (*Iva frutescens*), seablite (*Sueda maritima*), saltmeadow cordgrass (*Spartina patens*), and spike grass (*Distichlis spicata*), and eastern cottonwood (*Populus deltoides*). Upland vegetation south of Main Street includes Norway maple (*Acer platanoides*), eastern cottonwood, Tartarian honeysuckle (*Lonicera tartarica*), poison ivy (*Toxicodendron radicans*), Japanese honeysuckle (*Lonicera japonica*), common wrinkle-leaved goldenrod (*Solidago rugosa*), and switch panicgrass.

Wetland 1 is jurisdictional under the WPA and CWA. Wetland 1 also supports a 100-foot buffer zone and a locally-regulated 50-foot NDZ.

WETLAND DELINEATION DATA FORM - Northcentral and Northeast Region

Upgradient

Project/Site **Dennis/Harwich Route 28** City/County: **Harwich/Barnstable County** Sampling Date: **1/31/2025**

Applicant/Owner **Town of Harwich** State: **MA** Sampling Point: **WF1 - Up**

Investigator(s): **VHB** Section, Township, Range: **N/A**

Landform (hillslope, terrace, etc. **terrace** Local relief (concave, convex, none) **convex** Slope (%) **0-1**

Subregion (LRR or MLRA): **LRR S, MLRA 149B** Lat: **41.668604** Long: **-70.110112** Datum: **NAD83**

Soil Map Unit Name: **252A - Carver coarse sand, 0 to 3 percent slopes** NWI classification: **None**

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.)
Upland area adjacent to WF1 and south of Route 28 in Harwich.

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)

Seconary 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 *Upgradient*

Sampling Point: **WF1 - Up**

	Common Name	Scientific Name	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30' radius)					
1.	Norway Maple	*Acer platanoides*	25	yes	UPL
2.	Eastern cottonwood	*Populus deltoides*	75	yes	FAC
3.					
4.					
5.					
6.					
7.					
			100	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)					
1.	Norway maple	*Acer platanoides*	20	yes	UPL
2.	Tatarian honeysuckle	*Lonicera tatarica*	15	yes	FACU
3.					
4.					
5.					
6.					
7.					
			35	= Total Cover	
Herb Stratum (Plot size: 5' radius)					
1.	Wrinkle-leaved golder	*Solidago rugosa*	20	yes	FAC
2.	Switchgrass	*Panicum virgatum*	30	yes	FAC
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
			50	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)					
1.	Poison ivy	*Toxicodendron radica*	5	yes	FAC*
2.	Japanese honeysuckl	*Lonicera japonica*	10	yes	FACU
3.					
4.					
			15	= 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: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	130	x 3 =	390
FACU species	25	x 4 =	100
UPL species	45	x 5 =	225
Column Totals:	200 (A)		715 (B)

Prevalence Index = B/A = 3.58

Hydrophytic Vegetation Indicators:

___ Rapid Test for Hydrophytic Vegetation

___ Dominance Test is >50%

___ Prevalence Index is ≤ 3.0[1]

___ 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 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 *Upgradient*

Sampling Point: **WF1 - 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
0-1	10YR 4/1	100					Sandy lo	
1-12	10YR 3/2	100					Sandy L	

[1]Type: C=Concentration, D=Depletion, RM=Redox 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) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ 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)

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**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 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 (TF2)
- ___ 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:

WETLAND DELINEATION DATA FORM - Northcentral and Northeast Region

Downgradient

Project/Site **Dennis/Harwich Route 28** City/County: **Harwich/Barnstable County** Sampling Date: **1/31/2025**

Applicant/Owner **Town of Harwich** State: **MA** Sampling Point: **WF1 - Wet**

Investigator(s): **VHB** Section, Township, Range: **N/A**

Landform (hillslope, terrace, etc. **Floodplain** Local relief (concave, convex, none) **Concave** Slope (%) **0**

Subregion (LRR or MLRA): **LRR S, MLRA 149B** Lat: **41.668543** Long: **-70.110123** Datum: **NAD83**

Soil Map Unit Name: **252A - Carver coarse sand, 0 to 3 percent slopes** NWI classification: **PEM**

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 ____

Remarks: (Explain alternative procedures here or in a separate report.)
Wetland WF1 is located west of the Herring River and south of Route 28 in Harwich.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

____ Surface Water (A1)	**X** Water-Stained Leaves (B9)	____ Surface Soil Cracks (B6)
____ High Water Table (A2)	____ Aquatic Fauna (B13)	____ Drainage Patterns (B10)
X Saturation (A3)	____ Marl Deposits (B15)	____ Moss Trim Lines (B16)
____ Water Marks (B1)	____ Hydrogen Sulfide Odor (C1)	____ Dry-Season Water Table (C2)
____ Sediment Deposits (B2)	____ Oxidized Rhizospheres on Living Roots (C3)	____ Crayfish Burrows (C8)
____ Drift Deposits (B3)	____ Presence of Reduced Iron (C4)	____ Saturation Visible on Aerial Imagery (C9)
____ Algal Mat or Crust (B4)	____ Recent Iron Reduction in Tilled Soils (C6)	____ Stunted or Stressed Plants (D1)
____ Iron Deposits (B5)	____ Thin Muck Surface (C7)	____ Geomorphic Position (D2)
____ Inundation Visible on Aerial Imagery (B7)	____ Other (Explain in Remarks)	____ Shallow Aquitard (D3)
____ Sparsely Vegetated Concave Surface (B8)		____ Microtopographic Relief (D4)
		____ FAC-Neutral Test (D5)

Seconary Indicators (minimum of two required)

Field Observations:

Surface Water Present? Yes ____ No **X** Depth (inches): ____

Water Table Present? Yes ____ No **X** Depth (inches): ____

Saturation Present? Yes **X** No ____ Depth (inches): 0

(includes capillary fringe)

Wetland Hydrology Present? **Yes X** **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION *Downgradient*

Sampling Point: **WF1 - Wet**

	Common Name	Scientific Name	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum	(Plot size: 30' radius)				
1.	Eastern cottonwood	*Populus deltoides*	10	yes	FAC
2.					
3.					
4.					
5.					
6.					
7.					
			10	= Total Cover	
Sapling/Shrub Stratum	(Plot size: 15' radius)				
1.	Maritime marsh-elder	*Iva frutescens*	30	yes	FACW
2.					
3.					
4.					
5.					
6.					
7.					
			30	= Total Cover	
Herb Stratum	(Plot size: 5' radius)				
1.	Herbaceous sea-blite	*Sueda maritima*	5	no	OBL
2.	Saltmeadow cordgrass	*Spartina patens*	75	yes	FACW
3.	Saltgrass	*Distichlis spicata*	25	yes	FACW
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
			105	= Total Cover	
Woody Vine Stratum	(Plot size: 30' radius)				
1.	None				
2.					
3.					
4.					
			0	= 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: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	130	x 2 =	260
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	145 (A)		295 (B)

Prevalence Index = B/A = 2.03

Hydrophytic Vegetation Indicators:

- ___ Rapid Test for Hydrophytic Vegetation
- X Dominance Test is >50%
- X Prevalence Index is ≤ 3.0[1]
- ___ 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 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 *Downgradient*

Sampling Point: **WF1 - 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
0-9	10YR 3/1	100					Sandy	
9-12	10YR 3/3	80	10YR 3/1	20	C	M	Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Redox 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) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ 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)

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**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ 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 (TF2)
- ___ 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:

Attachment E: Stormwater Management Memorandum

Ref: 15307.00
February 19, 2025
Page 1

Memorandum

To: Town of Harwich
Conservation Commission

Date: February 19, 2025

Project #: 608742.00 Route 28 (Main Street) Improvements, Harwich, MA

From: Eric Monkiewicz, PE

Re: Stormwater Management Memorandum

This Stormwater Management Memorandum has been prepared to show compliance with the Massachusetts Stormwater Management Standards to the maximum extent practicable, in accordance with the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00).

Project Description

The Applicant, Town of Harwich Division of Highways and Maintenance, is proposing to reconstruct 3,727 linear feet of roadway and sidewalk of Route 28 (Main Street) between Upper County Road intersection and the Herring River crossing in Harwich, Massachusetts (the Project), refer to Figure 1.

Portions of the Project Area are within the 200-Riverfront Area and 100-foot buffer zone to salt marsh and the Bank of the Herring River and Land Subject to Coastal Storm Flowage (LSCSF), which are subject to the jurisdiction of the Massachusetts Wetland Protections Act.

The Project Area is adjacent to an Interim wellhead protection area which is considered a critical area per 310 CMR 10.04. The Project does not propose to discharge stormwater within the Interim wellhead protection area, refer to Figure 3, for proximity.

Under the Stormwater Management Standards, the Project is considered a limited project because it involves maintenance and improvement of an existing roadway, including widening less than a single lane, and correcting substandard intersections and drainage. The Project has been designed to meet the Stormwater Management Standards to the maximum extent practicable, and to improve upon existing conditions.

Site Description

Watershed

The Project Area lies within the Herring River Estuarine System watershed which is covered by a Final TMDL for Total Nitrogen (CN 395.1) and within the greater Cape Cod Watershed which is covered by a Final TMDL for Pathogens (CN252.0). The Final TMDL implementation plan for stormwater management recommends starting with non-structural best management practices (BMPs) and supplementing with structural BMPs as necessary to address water quality requirements.

Memorandum

Land Use

Land uses adjacent to the Project Area are primarily residential and commercial[1]. There are no known land uses with higher potential pollutant loads (LUHPPLs) in or with drainage areas directly tributary to the Project Area.

Utilities

Subsurface utilities include water, gas, telecommunications, and drainage. Above-ground utilities include utility poles and overhead wires.

Topography

The Project Area has a general high point east of the intersection of with Wychmere Harbor Drive and slopes down to the Project limit ends. Slopes along the Project corridor generally range between 0.5% and 2.2%.

Soils

The Natural Resources Conservation Service (NRCS) soil survey[2] has mapped the surface soils within the Project as primarily Carver coarse sand (HSG A) and Deerfield loamy fine sand (HSG A) for the extent of the project. A map of existing NRCS Soil Survey in the Project Area is available in Attachment B.

Floodplain

The eastern portion of the Project Area is located inside of Zone AE, which is identified a special flood hazard area (SFHA) with a known base flood elevation (BFE) of El. 11. The western portion of the Project Area is located in a Zone X, which is identified as an area of minimal flood hazard. Both flood hazards shown are shown on the Flood Insurance Rate Map (FIRM) panel 25001C 0611 J with effective date July 16, 2014 and included in Figures 4A and 4B.

Existing Drainage Infrastructure

Route 28 is crowned with curbing and stormwater is collected via catch basins. The stormwater collected in the closed drainage system which begins at the high point east of the Silver Street intersection and discharges west to a 24-inch RCP pipe in Upper County Road that ultimately discharges to the drainage system maintained by the Town of Dennis. The other closed drainage system which begins at the high point east of the Silver Street intersection discharges to an 18-inch RCP pipe that discharges to the Herring River.

Proposed Drainage Conditions

Land Cover

The Project proposes to increase impervious cover by approximately 0.6 acres. Proposed impervious cover will be comprised roadway widening and sidewalks.

Structural BMPs

No new structural BMPs are proposed. The existing drainage infrastructure is to be maintained.

[1] MassGIS Land Cover Land Use 2016. https://maps.massgis.digital.mass.gov/MassMapper/MassMapper.html Accessed February 2024.
[2] Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey.

Memorandum

Erosion and Sediment Control

An erosion and sedimentation control program will be implemented to minimize temporary impacts to wetland resource areas prior to and during the construction phase of the Project. The program will incorporate BMPs specified in guidelines developed by the DEP[3] and the U.S. Environmental Protection Agency (EPA)[4].

Non-structural practices to be used during construction include permanent seeding and pavement sweeping. These practices will be initiated as soon as practicable during construction. Structural erosion and sedimentation controls include erosion control barriers and catch basin inlet protection.

Closed-Drainage System

Route 28 is crowned with curbing and stormwater is collected via catch basins. The stormwater collected in the closed drainage system which begins at the high point east of the Silver Street intersection and discharges west to a 24-inch RCP pipe in Upper County Road that ultimately discharges to the drainage system maintained by the Town of Dennis. The other closed drainage system which begins at the high point east of the Silver Street intersection discharges to an 18-inch RCP pipe that discharges to the Herring River.

The proposed drainage system is designed to meet gutter spread, hydraulic grade line, and velocity requirements to the maximum extent practicable.

Massachusetts Department of Environmental Protection (MassDEP) – Stormwater Management Standards

Under the Stormwater Management Standards, the Project is considered a limited project because it involves maintenance and improvement of an existing roadway, including widening less than a single lane, and correcting substandard intersections and drainage. The Project has been designed to meet the Stormwater Management Standards to the maximum extent practicable, and to improve upon existing conditions.

Standard 1: No New Untreated Discharges or Erosion to Wetlands

The Project has been designed to comply with Standard 1.

Due to limited space within the right-of-way in the project corridor, BMPs capable of attenuating peak rates are not able to be incorporated into the design.

[3] DEP, 1997. *Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas: A Guide for Planners, Designers, and Municipal Officials.*
[4] EPA, 2007. *Interim Developing Your Stormwater Pollution Prevention Plan: A Guide for Construction Sites*. Office of Water. Report EPA 833-R-060-04.

Memorandum

Standard 2: Peak Rate Attenuation

As a limited project, the Project has been designed to comply with Standard 2 to the maximum extent practicable.

A portion of the project is also within Land Subject to Coastal Storm Flowage and a waiver is requested for this standard.

The Project proposes to increase impervious cover by approximately 0.6 acres. This increase in impervious area is to accommodate a new sidewalk to provide pedestrian safety improvements.

Due to limited space within the right-of-way in the project corridor, BMPs capable of attenuating peak rates are not able to be incorporated into the design.

Standard 3: Stormwater Recharge

As a limited project, the Project complies with Standard 3 to the maximum extent practicable.

Due to limited space within the right-of-way in the project corridor, additional BMPs are not able to be incorporated into the design.

Standard 4: Water Quality

As a limited project, the Project complies with Standard 4 to the maximum extent practicable.

Due to limited space within the right-of-way in the project corridor, proposing additional treatment is not practicable.

The Long-Term Pollution Prevention Plan is included in Appendix C.

Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs)

There are no known land uses with higher potential pollutant loads (LUHPPLs) in or with drainage areas directly tributary to the Project Area. As a result, the Project complies fully with Standard 5.

Standard 6: Critical Areas

The project is located near an interim wellhead protection areas, as indicated in Figure 3. The Project has been designed to comply with Standard 6 to the maximum extent practicable.

Memorandum

Due to limited space within the right-of-way in the project corridor, proposing additional treatment is not practicable.

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the Maximum Extent Practicable

The Project is considered a limited project and has been designed to comply with the Stormwater Management Standards to the maximum extent practicable. The project fully complies with Standards 1, 5, 8, 9, and 10.
Due to site constraints, the Project complies with Standards 2 through 6 to the maximum extent practicable.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Controls

The Project will disturb greater than 1 acre of land and is therefore required to obtain coverage under the Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Construction General Permit. As required under this permit, a Stormwater Pollution Prevention Plan (SWPPP) will be developed and submitted by the contractor before land disturbance begins.

Recommended construction period pollution prevention and erosion and sedimentation controls will be finalized in the SWPPP.

Standard 9: Operation and Maintenance Plan

In compliance with Standard 9, a Post-Construction Stormwater Operation and Maintenance (O&M) Plan has been developed for the Project. The O&M Plan is included in Attachment C as part of the Long-Term Pollution Prevention Plan.

Standard 10: Prohibition of Illicit Discharges

The Project Area does not have any known illicit connections. Any illicit connections to sanitary sewer or storm drainage structures found in the project limit of work will be removed or incorporated into the project. The Long-Term Pollution Prevention Plan, provided in Appendix C, includes measures to prevent illicit discharges.

Memorandum

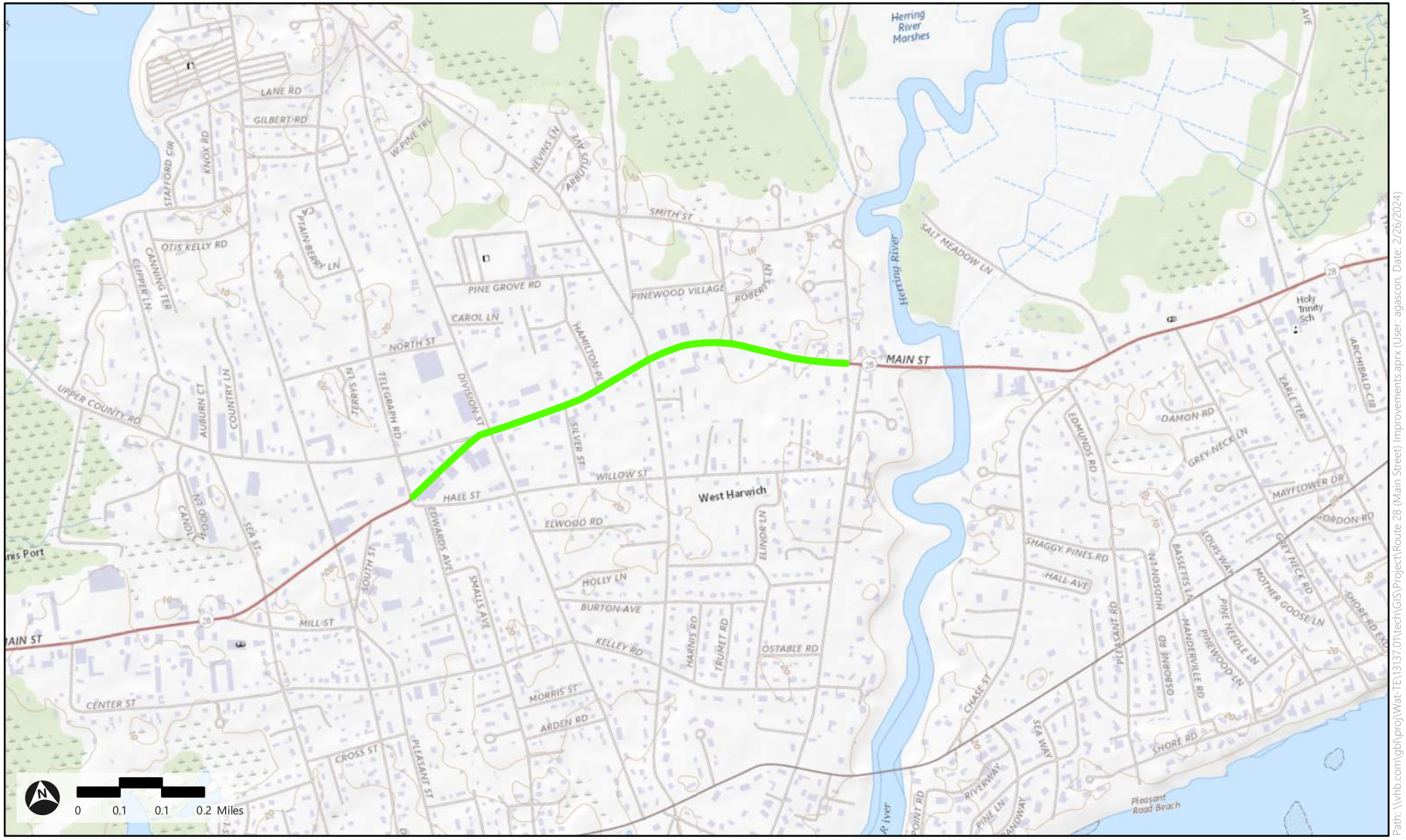
Figures: Figure 1 – USGS Locus Map
Figure 2 – Aerial Locus Map
Figure 3 – Wellhead Protection Area Map
Figure 4A – FEMA FIRM
Figure 4B – FEMA FIRM

Attachments: Attachment A – Stormwater Checklist
Attachment B – Soils Data
Attachment C – Operation and Maintenance Plan and Long-Term Pollution Prevention Plan

Figure 1: USGS Locus Map

Route 28 (Main Street)| Harwich, MA

February 26, 2024



Legend

Project Location

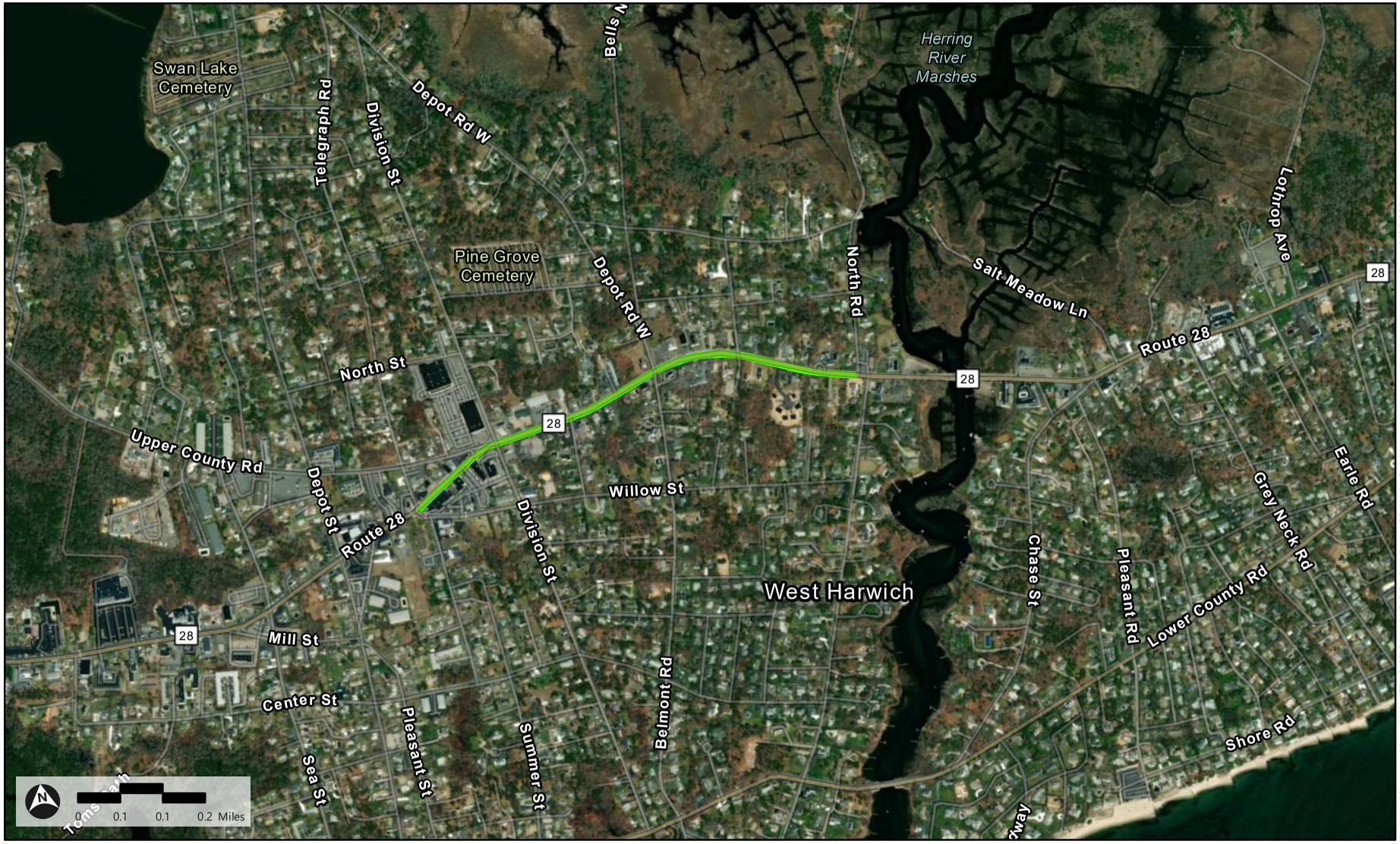
Basemap source: Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS, USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed April, 2023.

Path: \\vhb.com\gbl\proj\Wat-TE\13137.01\tech\GIS\Project\Route 28 (Main Street) Improvements.aprx (User: agascon, Date: 2/26/2024)

Figure 2: Aerial Locus Map

Route 28 (Main Street)| Harwich, MA

February 26, 2024



Legend

Project Location

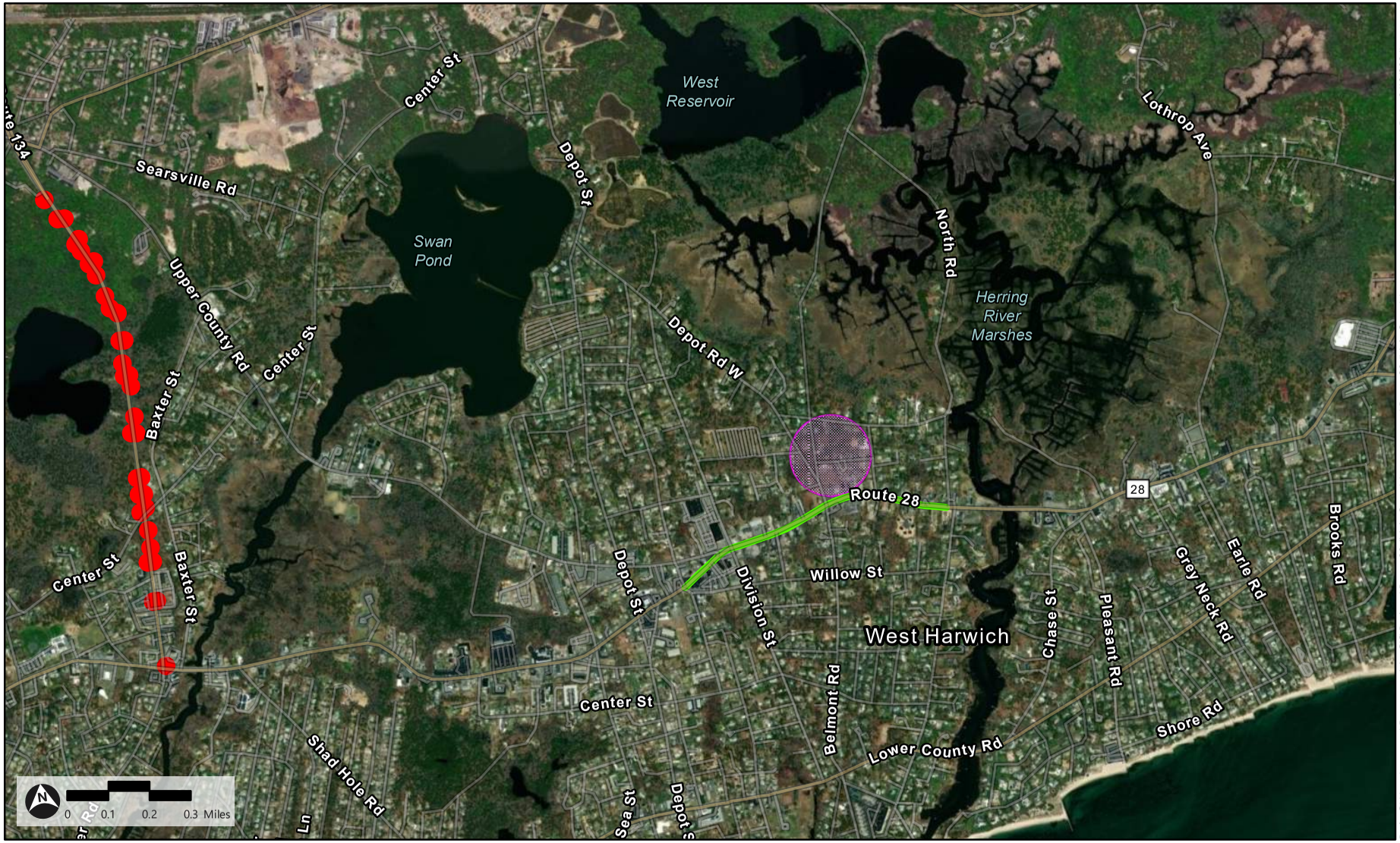
Basemap source: Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS, Esri Community Maps Contributors, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, Maxar

Path: \\vhb.com\gbl\proj\Wat-TE\13137.01\tech\GIS\Project\Route 28 (Main Street) Improvements.aprx (User: agascon, Date: 2/26/2024)

Figure 3: Wellhead Protection Area Map

Route 28 (Main Street) Improvements| Harwich, MA

February 16, 2024



Legend

- Stormwater Control Measure
- Project Location
- Interim Wellhead Protection Areas (IWPA)

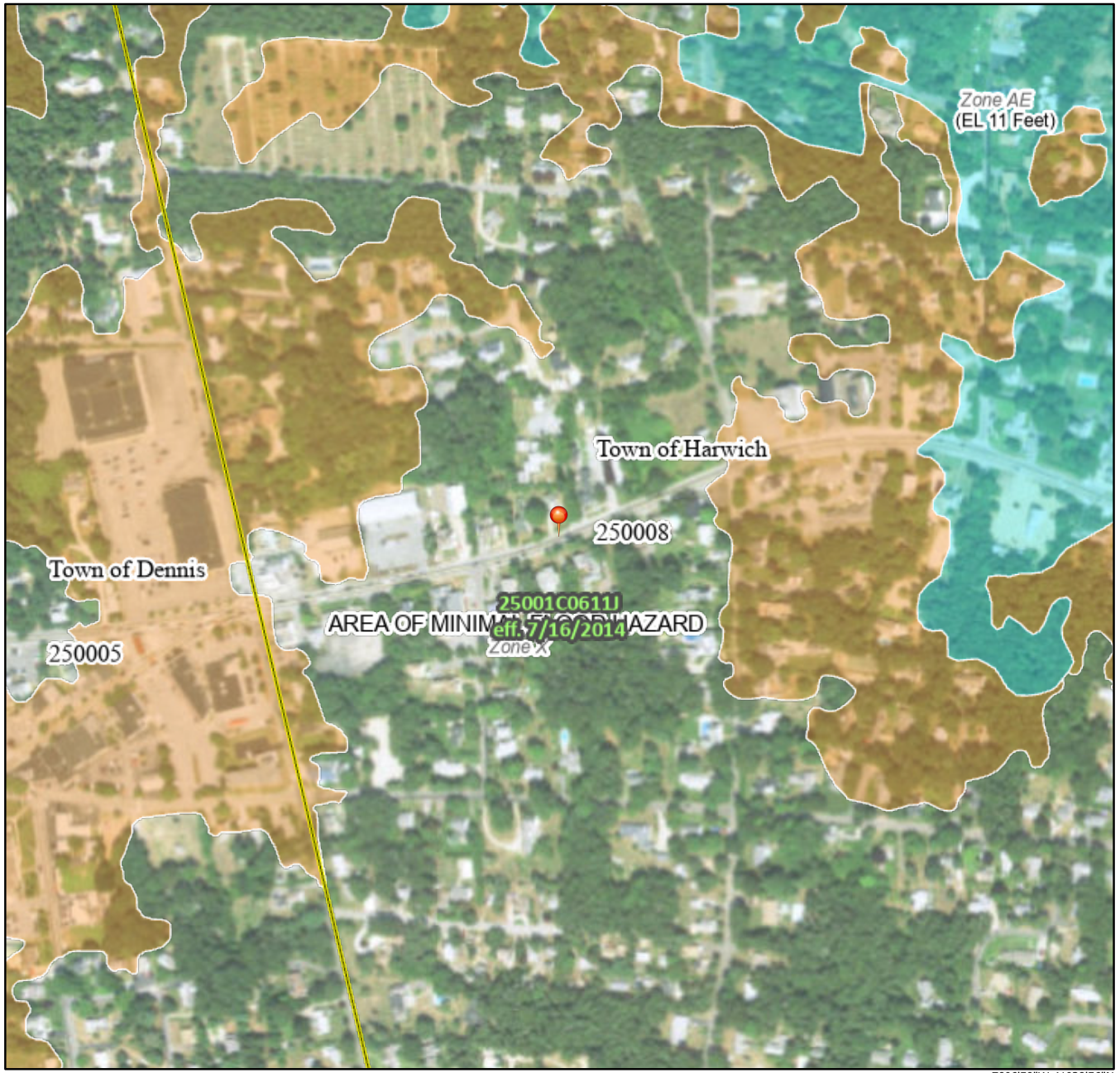
Basemap source: Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS, MassDEP, MassGIS, Maxar, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS

Path: C:\Users\agascon\Documents\ArcGIS\Projects\Route 28 (Main Street) Improvements\Route 28 (Main Street) Improvements.aprx (User: agascon, Date: 2/16/2024)

National Flood Hazard Layer FIRMette

FEMA

70°7'27"W 41°40'23"N



70°6'50"W 41°39'56"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
- 513 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

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

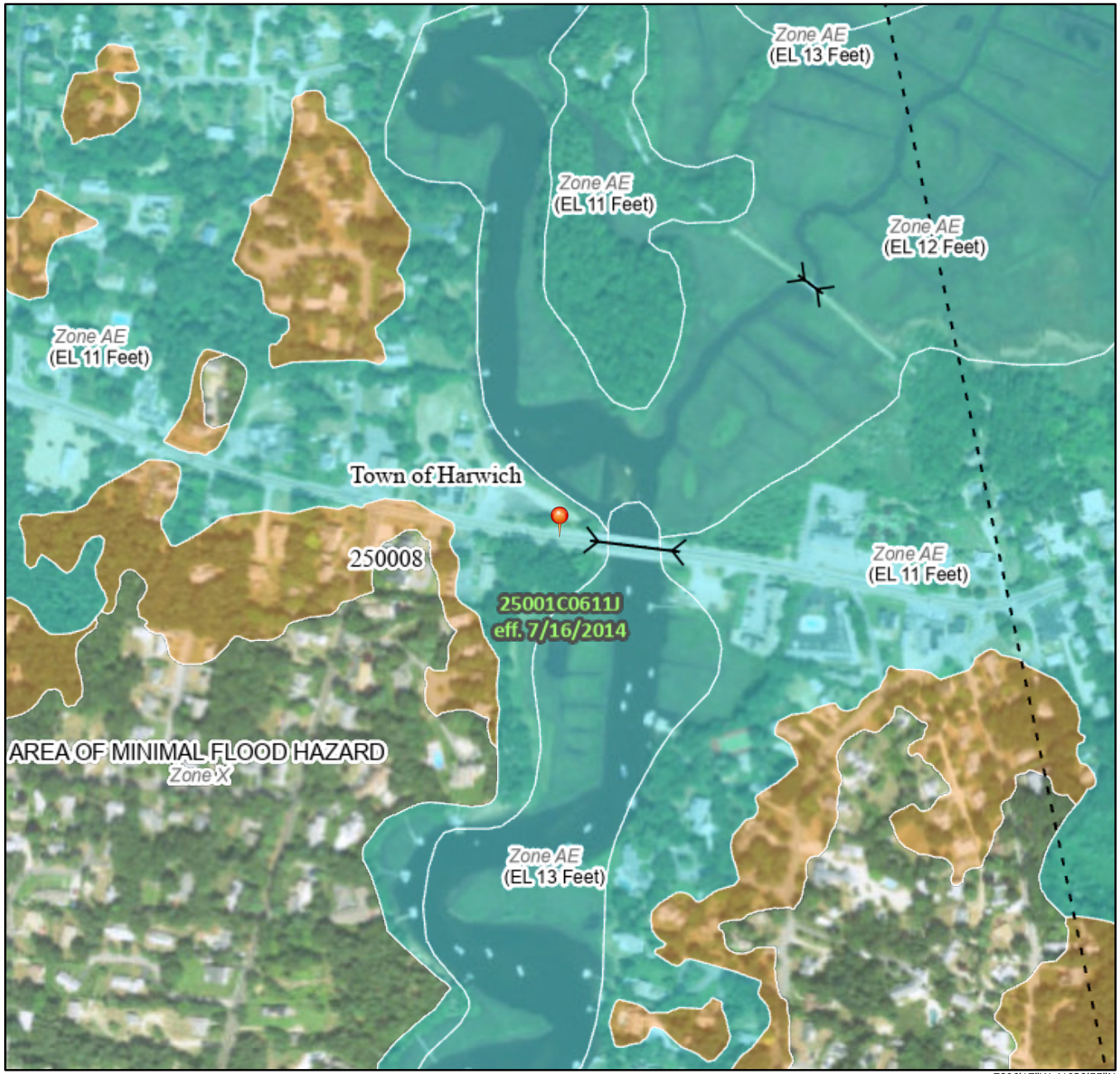
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/11/2023 at 3:00 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by 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.

National Flood Hazard Layer FIRMette

FEMA

70°6'55"W 41°40'22"N



70°6'17"W 41°39'55"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*
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- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- 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 7/11/2023 at 2:58 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.

Memorandum

Attachment A

Stormwater Checklist

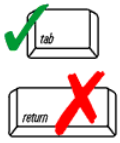
101 Walnut Street
Watertown, MA 02472-4026
P 617.924.1770

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

[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.

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.

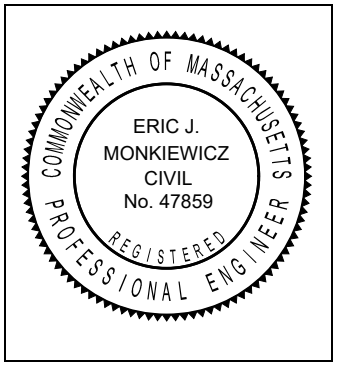
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the 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 Memorandum ~~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 Memorandum ~~Report~~ accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



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

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.

Checklist (continued)

Standard 2: Peak Rate Attenuation – Maximum Extent Practicable

☒ 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 - Maximum Extent Practicable

☒ 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.

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 – Maximum Extent Practicable

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 Memorandum 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.

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) – (N.A.)

☐ 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 – (N.A)

☐ 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 Memorandum & NOI.

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.

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;~~ *included within the Long-Term Pollution Prevention Plan*.

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

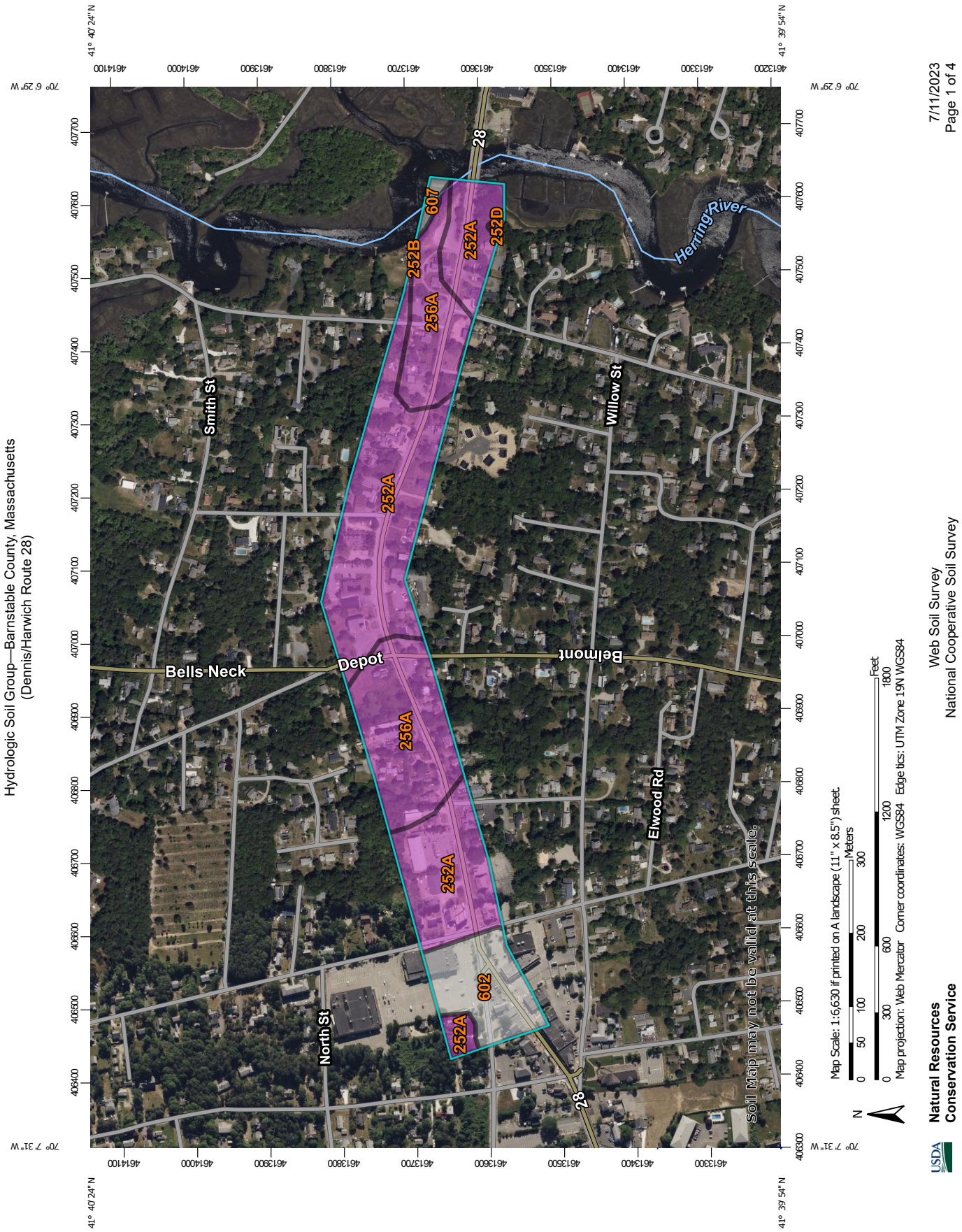
Memorandum

Attachment B

Soils Data

■

101 Walnut Street
Watertown, MA 02472-4026
P 617.924.1770


Hydrologic Soil Group—Barnstable County, Massachusetts
(Dennis/Harwich Route 28)
Soil Map may not be valid at this scale.
Herring River
Bells Neck
Depot
Belmont
Willow St
Smith St
North St
Elwood Rd
28
607
252B
252A
252D
256A
602
Map Scale: 1:6,630 if printed on A landscape (11" x 8.5") sheet.
Meters
Feet
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84
Web Soil Survey
National Cooperative Soil Survey
Natural Resources
Conservation Service
7/11/2023
Page 1 of 4

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 1:25,000.

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: Barnstable County, Massachusetts
Survey Area Data: Version 19, Sep 9, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 10, 2022—Jun 30, 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.

A00860 - 85

Proposal No. 608742-132267

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
252A	Carver coarse sand, 0 to 3 percent slopes	A	19.1	55.3%
252B	Carver coarse sand, 3 to 8 percent slopes	A	0.0	0.0%
252D	Carver coarse sand, 15 to 35 percent slopes	A	0.1	0.3%
256A	Deerfield loamy fine sand, 0 to 3 percent slopes	A	10.9	31.5%
602	Urban land		4.1	11.9%
607	Water, saline		0.4	1.0%
Totals for Area of Interest			**34.5**	**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

Memorandum

Attachment C

Operation and Maintenance/Long-Term Pollution Prevention Plan

■

101 Walnut Street
Watertown, MA 02472-4026
P 617.924.1770

Dennis-Harwich – Reconstruction & Related Work on Maine Street (Route 28)

Stormwater Management System Operation and Maintenance Plan and Long-Term Pollution Prevention Plan

PREPARED FOR

massDOT

10 Park Plaza
Boston, MA 02116

PREPARED BY

vhb

101 Walnut Street
PO Box 9151
Watertown, MA 02471

February 2024

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 1
1.3 Erosion and Sediment Control Measures during Maintenance Activities 2
1.4 O&M Budget 3

2 **Long-Term Pollution Prevention Plan 4**

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2.1.1 Litter Pick-up 4
2.1.2 Inspection and Maintenance of Stormwater Assets 4
2.1.3 Maintenance of Landscaped Areas 4
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2.1.7 Spill Prevention and Response 6

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 to minimize contaminant loading for the reconstruction related work on Main Street (Route 28) in Harwich. 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.

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.

1.2 Inspection and Maintenance Measures and Record-Keeping

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	› Sediment accumulation › Trash/Debris accumulation › Signs of contamination › Frame and grate condition › Overall structure condition
Storm Discharge Points	› Outlets	› 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 Harwich 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 are being followed.

Maintenance actions will not occur at any set frequency, but rather will be based on condition and impact to functionality.

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.

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 performs maintenance for stormwater management systems as part of their routine operation and maintenance budget for roadways and bridges. 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 reconstruction related work on Main Street (Route 28) in Harwich. 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 will conduct litter pick-up from the stormwater management facilities in conjunction with routine road maintenance activities.

2.1.2 Inspection and Maintenance of Stormwater Assets

MassDOT 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.

2.1.3 Maintenance of Landscaped Areas

Routine mowing will be conducted according to standard MassDOT practices. SCM basin bottoms and embankments designed to impound water should be mowed as required to prevent establishment of woody vegetation.

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.

2.1.4 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.

2.1.5 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.

2.1.6 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 reconstruction related work on Manin Street (Route 28) in Harwich. Should an interconnection to the stormwater management system be identified, the MassDOT PM will coordinate with the District Permits Engineer 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 Illicit Discharge Detection and Elimination (IDDE) program and/or through other agencies.

2.1.7 Spill Prevention and Response

Response procedures will be implemented for any significant release of hazardous materials such as fuels, oils, or chemical materials that have the potential of discharging to Herring River.

Reportable quantities will immediately be reported to the applicable Federal, State, and local agencies as required by law. Reportable quantities of chemical, fuels, or oils are established under the Clean Water Act and enforced through MassDEP. The MassDEP Emergency Response Program shall be immediately notified in accordance with required procedures for the report of a release (telephone 888-304-1133).

MassDOT works with first responders and/or public water supply owners to determine the best approach to protect water supplies, and provides training and materials to carry out action plans. In the case of a spill, applicable containment and clean-up procedures will be performed immediately. These procedures are implemented in accordance with the Unified Response Manual at the local level by first responders, which includes the Harwich's local public safety departments (e.g., fire, police, public works, board of health). MassDOT will be on-site to aid with traffic control and to provide clean-up supplies, as necessary. Spill material collected during the response will be promptly removed and disposed of in accordance with Federal, State, and local requirements. If necessary, a licensed emergency response contractor will assist in cleanup of releases depending on the amount of the release and the ability of the responsible party to perform the required response.

Attachment F: Project Plans

› Bound Separately

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION

PLAN AND PROFILE OF

MAIN STREET (ROUTE 28)

IN THE CITY/TOWN OF

DENNIS & HARWICH

BARNSTABLE COUNTY

FEDERAL AID PROJECT NO.

NOTICE OF INTENT

DENNIS/HARWICH
MAIN STREET (ROUTE 28)

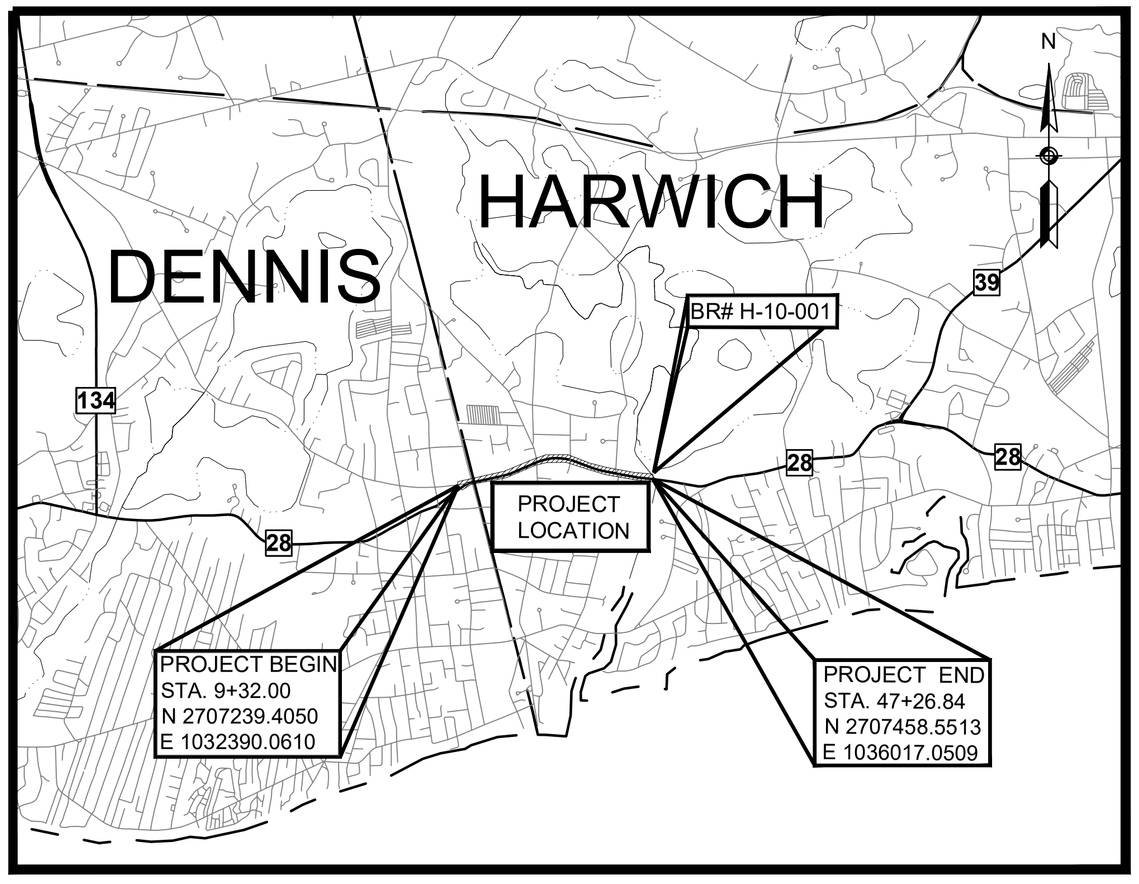
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	1	15
PROJECT FILE NO.	608742		

TITLE & INDEX

THESE PLANS ARE SUPPLEMENTED BY THE OCTOBER 2017 CONSTRUCTION STANDARD DETAILS, THE 2015 OVERHEAD SIGNAL STRUCTURE AND FOUNDATION STANDARD DRAWINGS, MASSDOT TRAFFIC MANAGEMENT PLANS AND DETAIL DRAWINGS, 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.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE & INDEX
2-3	LEGEND & ABBREVIATIONS
4	KEY PLAN & BORING LOCATIONS
5-9	CONSTRUCTION PLANS
10-13	UTILITY PLANS
14	LANDSCAPE PLANS
15	CONSTRUCTION DETAILS



0 2000 4000 6000 8000

SCALE: 1" = 2000'

LENGTH OF PROJECT = 3726.84 FEET = 0.706 MILES

NOI SUBMITTAL
ISSUED FOR PERMITTING
NOT FOR CONSTRUCTION

DESIGN DESIGNATION (MAIN STREET)

DESIGN SPEED	30 MPH (PROJECT BEGIN TO DIVISION ST)
DESIGN SPEED	40 MPH (DIVISION ST TO END OF PROJECT)
ADT (2019)	12,132
ADT (2039)	15,101
K	7%
D	52.7%
T (PEAK HOUR)	5.9%
T (AVERAGE DAY)	5.6%
DHV	1,121
DDHV	591
FUNCTIONAL CLASSIFICATION	URBAN PRINCIPAL ARTERIAL

COMMONWEALTH OF MASSACHUSETTS
STEPHEN J. RHOADS
CIVIL
No 50895
REGISTERED PROFESSIONAL ENGINEER

DATE	DESCRIPTION	REV #

massDOT
Massachusetts Department of Transportation
Highway Division

RECOMMENDED FOR APPROVAL

CHIEF ENGINEER — DATE

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED:

DIVISION ADMINISTRATOR — DATE

APPROVED

HIGHWAY ADMINISTRATOR — DATE

608742_HD(COV) - NOI.DWG Plotted on 20-Feb-2025 8:58 AM

Proposal No. 608742-132267

AV00860 - 98

DENNIS/HARWICH
MAIN STREET (ROUTE 28)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	2	15
PROJECT FILE NO.	608742		

LEGEND & ABBREVIATIONS

COMMONWEALTH OF MASSACHUSETTS
STEPHEN J. RHOADS
CIVIL
No 50895
REGISTERED PROFESSIONAL ENGINEER

GENERAL SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
JB	JB	JERSEY BARRIER
CB	CB	CATCH BASIN
		CATCH BASIN CURB 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
		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
		HAY BALES/SILT FENCE
		TREE LINE
		SAWCUT LINE
		TOP OR BOTTOM OF SLOPE
		EDGE OF PAVEMENT
		LIMIT OF MICROMILLING 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
Ø1	Ø1	CONTROLLER PHASE ACTUATED
		VIDEO DETECTION CAMERA
		VIDEO DETECTION ZONE, SIZE VARIES
		PEDESTRIAN PUSH BUTTON, SIGN AND SADDLE
		EMERGENCY PREEMPTION CONFIRMATION STROBE LIGHT
		VEHICULAR SIGNAL HEAD WITH BACKPLATE
		PEDESTRIAN SIGNAL HEAD, (TYPE AS NOTED OR AS SPECIFIED)
OR		SIGNAL POST AND BASE
	20'	MAST ARM, SHAFT AND BASE
		SIGN AND POST
		SIGN AND POST (2 POSTS)
		OVERHEAD SIGN
		OPTICAL PRE-EMPTION DETECTOR
		CONTROL CABINET, GROUND MOUNTED
		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 - WHITE, 12" WIDTH UNLESS OTHERWISE NOTED
	CW	CROSSWALK - WHITE, 12" WIDTH UNLESS OTHERWISE NOTED
	SWL	SOLID WHITE LINE, 6" WIDTH
	SYL	SOLID YELLOW LINE, 6" WIDTH
	DBYL	DOUBLE YELLOW LINE, 6" WIDTH
	SWCHL	SOLID WHITE CHANNELIZATION LINE, 12" WIDTH UNLESS OTHERWISE NOTED
	SYCHL	SOLID YELLOW CHANNELIZATION LINE, 12" WIDTH UNLESS OTHERWISE NOTED
		BICYCLE LANE LEGEND, SYMBOL AND/OR ARROW - WHITE
		BICYCLE CROSSING - WHITE/GREEN
		SHARROW LEGEND - WHITE
		TWO-STAGE TURN BOX - WHITE/GREEN

608742_HD(LEG) - NOI.DWG Plotted on 20-Feb-2025 8:58 AM
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A008860 - 99

GENERAL ABBREVIATIONS

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
CC	CEMENT CONCRETE
CCM	CEMENT CONCRETE MASONRY
CEM	CEMENT
CI	CURB INLET
CLF	CHAIN LINK FENCE
CL	CENTERLINE
CO.	COUNTY
CONC	CONCRETE
CONT	CONTINUOUS / CONTINUED
CONST	CONSTRUCTION
CR GR	CROWN GRADE
DIA	DIAMETER
DWY	DRIVEWAY
ELEV (or EL.)	ELEVATION
EMB	EMBANKMENT
EOP	EDGE OF PAVEMENT
EQ	EQUAL
EXIST (or EX)	EXISTING
EXC	EXCAVATION
FDN.	FOUNDATION
FDP	FULL DEPTH PAVEMENT
FLDSTN	FIELDSTONE
GAR	GARAGE
GD	GROUND
GRAN	GRANITE
GRAV	GRAVEL
GRD	GUARD
HMA	HOT MIX ASPHALT
HOR	HORIZONTAL
HWY	HIGHWAY
JCT	JUNCTION
LOAM	LOAM BORROW
LSA	LANDSCAPED AREA
LT	LEFT
MAHWL	MEAN AVERAGE HIGH WATER LINE
MAX	MAXIMUM
MB	MAILBOX
MHB	MASSACHUSETTS HIGHWAY BOUND
MIN	MINIMUM
MOD	MODIFIED
MSE	MECHANICALLY STABILIZED EARTH
NERR	NEW ENGLAND RAILROAD
NIC	NOT IN CONTRACT
NO.	NUMBER
NTS	NOT TO SCALE
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
P.G.L.	PROFILE GRADE LINE
PREV	PREVIOUS/PREVIOUSLY
PROJ	PROJECT
PROP	PROPOSED
PSB	PLANTABLE SOIL BORROW
PVMT	PAVEMENT
R&D	REMOVE AND DISCARD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
RD	ROAD
RDWY	ROADWAY
REB	REBUILD
REM	REMOVE
REMOD	REMODEL
RET	RETAIN
RET WALL	RETAINING WALL
ROW	RIGHT OF WAY
RR	RAILROAD
RT	RIGHT
SB	STONE BOUND
SHLD	SHOULDER
SHLO/S.H.L.O.	STATE HIGHWAY LAYOUT LINE

GENERAL ABBREVIATIONS (CONT)

ST	STREET
STA	STATION
STD	STANDARD
SW	SIDEWALK
TEMP	TEMPORARY
TC	TOP OF CURB
TOS	TOP OF SLOPE
TRANS	TRANSITION
TRM	TURF REINFORCING MAT
TYP	TYPICAL
VAR	VARIES
VERT	VERTICAL
WCR	WHEEL CHAIR RAMP
WP	WORKING POINT
X-SECT	CROSS SECTION

UTILITY ABBREVIATIONS

CB	CATCH BASIN
CBCI	CATCH BASIN WITH CURB INLET
CIP	CAST IRON PIPE
CIT	CHANGE IN TYPE
CMP	CORRUGATED METAL PIPE
CSP	CORRUGATED STEEL PIPE
DI	DROP INLET
DIP	DUCTILE IRON PIPE
DS	DRAINAGE STRUCTURE
FES	FLARED END SECTION
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
GG	GAS GATE
GI	GUTTER INLET
GIP	GALVANIZED IRON PIPE
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HDW	HEADWALL
HYD	HYDRANT
INV	INVERT
LB	LEACH BASIN
LP	LIGHT POLE
MH	MANHOLE
MW	MONITORING WELL
OHW	OVERHEAD WIRE
PVC	POLYVINYLCHLORIDE PIPE
PWW	PAVED WATER WAY
RCP	REINFORCED CONCRETE PIPE
SMH	SEWER MANHOLE
TSV&B	TAPPING SLEEVE VALVE & BOX
UP	UTILITY POLE
WG	WATER GATE
WIP	WROUGHT IRON PIPE
WM	WATER METER/WATER MAIN

ALIGNMENT & GRADING ABBREVIATIONS

CC	CENTER OF CURVE
HP	HIGH POINT
I.T.	INTERSECTION OF TANGENT
LP	LOW POINT
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PI	POINT OF INTERSECTION
PNT	POINT
POC	POINT ON CURVE
POT	POINT ON TANGENT
PRC	POINT OF REVERSE CURVATURE
PT	POINT OF TANGENCY
∠PT	ANGLE POINT
R	RADIUS OF CURVATURE
T	TANGENT DISTANCE OF CURVE
TAN	TANGENT
25.45	SPOT ELEVATION

PROFILE ABBREVIATIONS

AD	ALGEBRAIC DIFFERENCE IN RATES OF GRADE
HSD	HORIZONTAL SIGHT DISTANCE
K	RATE OF VERTICAL CURVATURE
L	LENGTH OF CURVE
PVC	POINT OF VERTICAL CURVATURE
PVCC	POINT OF VERTICAL COMPOUND CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVRC	POINT OF VERTICAL REVERSE CURVATURE
PVT	POINT OF VERTICAL TANGENCY
SSD	STOPPING SIGHT DISTANCE
VC	VERTICAL CURVE

TRAFFIC & SIGNAL ABBREVIATIONS

AADT	ANNUAL AVERAGE DAILY TRAFFIC
CAB.	CABINET
CCVE	CLOSED CIRCUIT VIDEO EQUIPMENT
COND	CONDUIT
CW	CROSS WALK
DW	STEADY DON'T WALK - PORTLAND ORANGE
DHV	DESIGN HOURLY VOLUME
FDW	FLASHING DON'T WALK
FR	FLASHING CIRCULAR RED
FRL	FLASHING RED LEFT ARROW
FRR	FLASHING RED RIGHT ARROW
FY	FLASHING CIRCULAR AMBER
FYL	FLASHING AMBER LEFT ARROW
FYR	FLASHING AMBER 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
HH	HAND HOLE
OL	OVERLAP
PB	PULL BOX
PED	PEDESTRIAN
PTZ	PAN, TILE, ZOOM
R	STEADY CIRCULAR RED
RL	STEADY RED LEFT ARROW
RR	STEADY RED RIGHT ARROW
SL	STOP LINE
T	TRUCK %
TS OR TR SIG	TRAFFIC SIGNAL
TSC	TRAFFIC SIGNAL CONDUIT
W	STEADY WALK
Y	STEADY CIRCULAR AMBER
YL	STEADY AMBER LEFT ARROW

COMMONWEALTH OF MASSACHUSETTS
STEPHEN J. RHOADS
CIVIL
No 50895
REGISTERED PROFESSIONAL ENGINEER

DENNIS/HARWICH
MAIN STREET (ROUTE 28)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	3	15
PROJECT FILE NO.	608742		

LEGEND & ABBREVIATIONS

608742_HD(LEG) - NOI.DWG Plotted on 20-Feb-2025 8:58 AM

Proposal No. 608742-132267

A008960 - 100

DENNIS/HARWICH
MAIN STREET (ROUTE 28)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	4	15
PROJECT FILE NO.	608742		

KEY PLAN & BORING LOCATIONS

COMMONWEALTH OF MASSACHUSETTS
STEPHEN J. RHOADS
CIVIL
No 50895
REGISTERED PROFESSIONAL ENGINEER

N

LIMIT OF WORK
STA. 5+85.38
N 2707337.7181
E 1032338.0808
UPPER COUNTY ROAD

LIMIT OF WORK
STA. 5+77.75
N 2707464.1700
E 1032646.9770
DIVISION STREET

6+28.80

MAIN STREET (ROUTE 28)

LIMIT OF WORK
STA. 8+35.55
N 2707630.5019
E 1033478.1728
HAMILTON PLACE

8+54.63

LIMIT OF WORK
STA. 9+87.67
N 2707860.6881
E 1033881.6002
DEPOT ROAD WEST

10+32.75

BEGIN PROJECT
STA. 9+32.00
N 2707239.4050
E 1032390.0610

LIMIT OF WORK
STA. 6+62.39
N 2707329.3096
E 1032685.7557

7+24.30

TOWN OF DENNIS
TOWN OF HARWICH

SILVER STREET

8+22.35

LIMIT OF WORK
STA. 7+50.00
N 2707464.2985
E 1033241.6249

BELMONT ROAD

11+03.86

LIMIT OF WORK
STA. 10+66.88
N 2707704.8613
E 1033893.9595

LIMIT OF WORK
STA. 11+90.62
N 2707908.3455
E 1034526.6916
MANSION STREET

12+46.32

B-1 B-2 B-3 C-1 C-2 C-3 C-4 C-5 C-6 C-7 C-8

5 10

LIMIT OF WORK
STA. 12+78.01
N 2707639.1773
E 1035391.5844
NORTH ROAD

13+48.87

3" WOOD POST

RIVERSIDE DRIVE
LIMIT OF WORK
STA. 13+79.64
N 2707470.4141
E 1035436.4445

14+39.61

HERRING RIVER

48+37.72

END OF PROJECT
STA. 47+26.84
N 2707458.5513
E 1036017.0509

6 11 7 12 8 9 13 14

PROJECT RESOURCE AREAS

0 80 200 300
SCALE: 1" = 80'

LEGEND

- (#) CONSTRUCTION PLANS
- (#) UTILITY PLANS
- (#) LANDSCAPE PLANS
- # SHEET NUMBER
- BORING LOCATION
- CORE LOCATION

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Proposal No. 608742-132267

A008560 - 101

DENNIS/HARWICH
MAIN STREET (ROUTE 28)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	5	15
PROJECT FILE NO.	608742		

CONSTRUCTION PLANS

LEGEND **PROJECT TOTAL**

= WORK WITHIN LAND SUBJECT TO COASTAL STORM FLOWAGE = 95,690 SF

COMMONWEALTH OF MASSACHUSETTS
STEPHEN J. RHOADS
CIVIL
No 50895
REGISTERED PROFESSIONAL ENGINEER

N

FIRST BAPTIST CHURCH AND SOCIETY IN HARWICH
AKA THE FIRST BAPTIST MEETING HOUSE
AKA FIRST BAPTIST CHURCH
AKA FIRST BAPTIST CHURCH OF WEST HARWICH AND DENNISPORT
AKA BAPTIST RELIGIOUS SOCIETY IN HARWICH
62 ROUTE 28
DEED BOOK/PAGE: 2/90

JOSHUA D. REGO
66 ROUTE 28
DEED BOOK/PAGE: 31875/8

WEST HARWICH OFFICE PARK CONDOMINIUM
72 ROUTE 28
DEED BOOK/PAGE: 6488/1

84 MAIN STREET WI HARWICH, LLC
84 ROUTE 28
DEED BOOK/PAGE: 22160/149

HARWICH REALTY TRUST, LLC
AKA HARWICH REALTY TRUST LLC
76 ROUTE 28
DEED BOOK/PAGE: 28128/67

MANSION STREET

100-YR COASTAL FLOODPLAIN

MAIN STREET (ROUTE 28)

PROP SERVICE CONNECTION
REM SIGN POSTS & RAISED PLANTER
RET UP & GUY
PROP HMA DRIVE
RET TREE
PROP SERVICE CONNECTION
PROP "REST AREA"
RET FENCE
PROP SERVICE RELOCATION
RET LIGHT
APPROX LIMIT OF GRADING (TYP)
PROP HMA DRIVE
RET STONE WALL
PROP LOAM & SEED (TYP)
SAWCUT
R&R UP & GUY
RET SIGNS
RET HEDGES
R&R UP
R&S SIGN
PROP TREE PROTECTION
RET SIGN
REM
PROP LOAM & SEED (TYP)
R&R MB
REM UP
START HMA WALK STA 27+42
PROP HMA DRIVE
PROP 5' HMA WALK (TYP)
PROP ELEC CONDUIT (TYP)
PROP GRAN CURB, TYPE VB (TYP)
PROP CEM CONC WALK
PROP FULL DEPTH PAVEMENT (RECLAIM)
PROP LP & HH (TYP)
PROP 5' HMA WALK (TYP)
MAIN ST CONST BL
PROP HYD
R&R UP
PROP LOAM & SEED
R&R MB (2)
R&R UP & GUY
PROP HYD
R&S SIGN
START HMA WALK STA 27+31
PROP HMA DRIVE
RET BOUND
R&R UP
PROP HMA WALK
RET CB'S
R&S HYD
RET FLAGPOLE
RET SHRUBS
RET WG
PROP HMA DRIVE
PROP SERVICE CONNECTION
RET BOUND
PROP LOAM & SEED (TYP)
RET FENCE
PROP CEM CONC WALK
R&S SIGN
RET LIGHT
RET LP
RET UP
RET LP
PROP HMA DRIVE
RET FENCE
REM GUY
PROP GRAN CURB, TYPE VB (TYP)
PROP TREE PROTECTION
RET CB
RET TREE
RET SIGN
RET LIGHTS & SIGN
RET SHRUBS
PROP SERVICE CONNECTION
R&R MB (2)
RET BOUND
R&R UP
100-YR COASTAL FLOODPLAIN

CONTINUED ON SHEET NO. 6

QUARTERS CONDOMINIUM
69 ROUTE 28
DEED BOOK/PAGE: 7805/24

73 MAIN STREET, LLC
AKA 73 MAIN STREET LLC
73 ROUTE 28
DEED BOOK/PAGE: 27236/189

JAMES TSOUKALAS
77 ROUTE 28
CERTIFICATE #: 216754
L.C.P. 19465A

VIRGINIA CHAMBERLAIN
87 ROUTE 28
DEED BOOK/PAGE: 29921/343

OWNERSHIP UNKNOWN

EX 20' WIDE ACCESS & UTILITY EASEMENT DOC. #1105648

OLE SALTS NOMINEE TRUST
55 ROUTE 28
DEED BOOK/PAGE: 14449/108

0 20 50 100
SCALE: 1" = 20'

608742_HD(CONST)_NOI.DWG Plotted on 20-Feb-2025 8:59 AM

Proposal No. 608742-132267

A088969 - 102

LEGEND **PROJECT TOTAL**

= WORK WITHIN LAND SUBJECT TO COASTAL STORM FLOWAGE = 95,690 SF

COMMONWEALTH OF MASSACHUSETTS
STEPHEN J. RHOADS
CIVIL
No 50895
REGISTERED PROFESSIONAL ENGINEER

DENNIS/HARWICH
MAIN STREET (ROUTE 28)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	6	15
PROJECT FILE NO.	608742		

CONSTRUCTION PLANS

608742_HD(CONST) - NOI.DWG Plotted on 20-Feb-2025 8:59 AM

Proposal No. 608742-132267

A008069 - 103

84 MAIN STREET W. HARWICH, LLC
84 ROUTE 28
DEED BOOK/PAGE: 22160/149

JASON S. VELEZ & ERIKA GOYZUETA
90 ROUTE 28
DEED BOOK/PAGE: 29043/179

HELEN BAKER
94 ROUTE 28
DEED BOOK/PAGE: 35978/195

RICHARD J. THOMPSON LIVING TRUST
100 ROUTE 28
DEED BOOK/PAGE: 34975/51

MAPLE ROCK TRUST
108 ROUTE 28 DEED
DEED BOOK/PAGE: 19547/201

VIRGINIA CHAMBERLAIN
87 ROUTE 28
DEED BOOK/PAGE: 29921/343

JAMES TSOUKALAS
77 ROUTE 28
CERTIFICATE #: 216754
L.C.P. 19465A

HABITAT FOR HUMANITY OF CAPE COD, INC.
MURRAY LANE
DEED BOOK/PAGE: 31004/143

TNT 93 REALTY TRUST
3 MURRAY LANE
DEED BOOK/PAGE: 31004/200

J&S CAPE HOUSES LLC
97 ROUTE 28
DEED BOOK/PAGE: 34964/273

THE RALPH ALFRED DIAMOND REVOCABLE TRUST
103 ROUTE 28
DEED BOOK/PAGE: 34239/223

EX 20' WIDE ACCESS & UTILITY EASEMENT DOC. #1105648

MAIN STREET (ROUTE 28)

CONTINUED ON SHEET NO. 5

CONTINUED ON SHEET NO. 7

N

0 20 50 100

SCALE: 1" = 20'

DENNIS/HARWICH
MAIN STREET (ROUTE 28)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	7	15
PROJECT FILE NO.	608742		

CONSTRUCTION PLANS

STEPHEN J. RHOADS CIVIL No. 50895 REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS

LEGEND **PROJECT TOTAL**

- = TEMPORARY 200' RIVERFRONT IMPACT AREA = 15,057 SF
- = PERMANENT 200' RIVERFRONT IMPACT AREA = 1,142 SF
- = WORK WITHIN LAND SUBJECT TO COASTAL STORM FLOWAGE = 95,690 SF

N

MAPLE ROCK TRUST
108 ROUTE 28 DEED
DEED BOOK/PAGE: 19547/201

STEPHEN L. FLATLEY
AND NIRA L. FLATLEY
114 ROUTE 28
DEED BOOK/PAGE: 22306/83

WEST HARWICH PROFESSIONAL
CENTER CONDOMINIUM
120 ROUTE 28
BOOK/PAGE: 4159/97

NORTH ROAD

MAIN STREET (ROUTE 28)

RIVERSIDE DRIVE

200' RIVER FRONT AREA

100' RIVER FRONT AREA

PROP LOAM & SEED
RET HEDGES
RET LIGHT POLES
PROP TREE PROTECTION
PROP HMA DRIVE
PROP TREE PROTECTION
RET LP
PROP 5.5' HMA WALK (TYP)
RET LP'S
REM TREE
REM UP
APPROX LIMIT OF GRADING (TYP)
PROP LOAM & SEED (TYP)
RET UP & GUYS
SAWCUT
R&D CURB
R&R CURB (TYP)
REM HEDGES (STA 38+30 TO STA 39+60)
PROP LP & HH (TYP)
REM LANDSCAPING
R&R UP & GUY
MAIN ST CONST BL
R&R MB
PROP FULL DEPTH PAVEMENT (WIDENING)
R&R UP
REM GUY
RET SHRUBS
REM BOUND
R&R UP
R&S HYD
R&R SIGN
PROP FULL DEPTH 30 PVMT (RECLAIM)
R&R CURB (TYP)
PROP 5.5' HMA WALK (TYP)
R&R UP
REM BOUND
RET SHRUB
PROP FIELD STONE WALK
PROP 5.5' HMA WALK (TYP)
MEET EXISTING PROP FIELD STONE WALK
R&R SIGN (B.O.)
R&S FENCE
RET SHRUB
REM SHRUB
RET FENCE
PROP TREE PROTECTION
PROP LOAM & SEED (TYP)
RET LIGHTS
(2) FLOODLIGHTS
PROP HMA DRIVE
REM SHRUBS
RET "WHIMSY" SIGN
REM FENCE
RET LIGHTS
PROP HMA DRIVE
RET LANDSCAPING
RET BOUND
RET LANDSCAPING
100-YR COASTAL FLOODPLAIN
REM SIGN
R&R SIGN
REM FENCE
PROP TREE PROTECTION
RET TREE
R&R SIGN (BO)
PROP ELEC CONDUIT (TYP)
100-YR COASTAL FLOODPLAIN
PROP HMA DRIVE
PROP SERVICE CONNECTION
PROP SERVICE CONNECTION
REM HEDGES
PROP 5.5' HMA WALK (TYP)
PROP TREE PROTECTION
RET TREE
REM HEDGES
MEET EXISTING
PROP CEM CONC WALK
PROP HYD
PROP TREE PROTECTION
PROP LOAM & SEED (TYP)
RET UP
REM GUYS
RET SIGN
SAWCUT
PROP LOAM & SEED (TYP)
RET HEDGES
GRAVEL DRIVE
RET SIGN
RET "WHIMSY" SIGN
PROP LOAM & SEED (TYP)
REM FENCE
RET LIGHTS
RET SHRUB
REM SHRUBS
PROP HMA DRIVE
RET LANDSCAPING
RET BOUND
RET LANDSCAPING
100-YR COASTAL FLOODPLAIN

CONTINUED ON SHEET NO. 6
CONTINUED ON SHEET NO. 8

ALEXANDRA HOYLAND
109 ROUTE 28
DEED BOOK/PAGE: 29991/30

PATRICIA CALLAHAN
156 RIVERSIDE DRIVE
DEED BOOK/PAGE: 26373/25

CHELSEA A. NICOLAS AND
JASON M. STROHMAIER
115 ROUTE 28
DEED BOOK/PAGE: 34071/15

THE RALPH ALFRED DIAMOND
REVOCABLE REALTY TRUST
103 ROUTE 28
DEED BOOK/PAGE: 34239/223

DCG INVESTORS 2017, LLC
121 ROUTE 28
DEED BOOK/PAGE: 30716/149

MCCHANG LLC
129 ROUTE 28
CERTIFICATE #: 234074
DOC. #: 1488518
L.C.P. 34930A

0 20 50 100
SCALE: 1" = 20'

608742_HD(CONST) - NOI.DWG Plotted on 20-Feb-2025 8:59 AM
Proposal No. 608742-132267
A98640 - 104

DENNIS/HARWICH
MAIN STREET (ROUTE 28)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	8	15
PROJECT FILE NO.	608742		

CONSTRUCTION PLANS

COMMONWEALTH OF MASSACHUSETTS
STEPHEN J. RHOADS
CIVIL
No 50895
REGISTERED PROFESSIONAL ENGINEER

LEGEND **PROJECT TOTAL**

- = TEMPORARY 100' RIVERFRONT IMPACT AREA = 9,522 SF
- = TEMPORARY 200' RIVERFRONT IMPACT AREA = 15,057 SF
- = PERMANENT 100' RIVERFRONT IMPACT AREA = 82 SF
- = PERMANENT 200' RIVERFRONT IMPACT AREA = 1,142 SF
- TOTAL RIVERFRONT IMPACT AREA = 25,803 SF
- = WORK WITHIN LAND SUBJECT TO COASTAL STORM FLOWAGE = 95,690 SF

N

IRISH PUB TRUST
126 ROUTE 28
DEED BOOK/PAGE: 6240/159

MCCHANG, LLC
129 ROUTE 28
CERTIFICATE #: 234074
DOC #: 1488518
L.C.P. 34930A

DCG INVESTORS 2017, LLC
121 ROUTE 28
DEED BOOK/PAGE: 30716/149
L.C.P 34930A

MAIN STREET (ROUTE 28)

HERRING RIVER

100-YR COASTAL FLOODPLAIN
100' RIVER FRONT AREA
200' RIVER FRONT AREA
100' BUFFER ZONE
50' NO DISTURB ZONE
EDGE OF WETLAND
EDGE OF RIVER
PROP SERVICE CONNECTION
PROP SERVICE RELOCATION
RET UP & GUY
RET RAMP
WOOD RAMP
PROP FIELD STONE WALK
BUILDING
R&S
WOOD POST/RAIL FENCE
FIELD STONE WALL
RET SHRUBS
PROP LOAM & SEED
PROP HMA DRIVE
APPROX LIMIT OF GRADING (TYP)
PROP COMPOST FILTER TUBE
PROP TREE PROTECTION
REM TREES
PROP GUARDRAIL TL-2
R&D HWY GUARDRAIL
RET SIGN
END GUARDRAIL LESS 10'
EDGE OF CONC BRIDGE
3.5' STEEL RAILING
CONC WALK
GRAN CURB
EDGE OF PAVEMENT
PROP 20' MILL & OVERLAY PAV'T TRANS
MAIN ST CONST BL
PROP ELEC CONDUIT (TYP)
REM FENCE
R&R GRAN CURB (TYP)
PROP LR & HH (TYP)
R&S SIGN
PROP HYD
PROP FULL DEPTH PAVEMENT (WIDENING)
PROP 5.5' HMA WALK (TYP)
PROP FULL DEPTH PAVEMENT (RECLAIM)
R&S HYD
R&R UP
R&D HWY GUARDRAIL
REM SHRUBS
PROP HMA DRIVE
RET BOUND
RET SHRUB
REM SHRUBS
RET LANDSCAPING
PROP TREE PROTECTION
R&R SIGN
PROP GUARDRAIL TL-2
PROP 5.5' HMA WALK (TYP)
PROP COMPOST FILTER TUBE
END GUARDRAIL LESS 10'
END OF PROJECT
STA. 47+26.84
N 2707458.5513
E 1036017.0509
CONTINUED ON SHEET NO. 7

WF-209, WF-201, WF-202, WF-203, WF-204, WF-205, WF-206, WF-207, WF-208, WF-209, WF-210, WF-211, WF-212, WF-111, WF-112, WF-113, WF-114, WF-115, WF-116, WF-117, WF-118, WF-119, WF-120

0 20 50 100
SCALE: 1" = 20'

608742_HD(CONST) - NOI.DWG Plotted on 20-Feb-2025 8:59 AM

Proposal No. 608742-13267

A008969 - 105

DENNIS/HARWICH
MAIN STREET (ROUTE 28)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	9	15
PROJECT FILE NO.	608742		

CONSTRUCTION PLANS

COMMONWEALTH OF MASSACHUSETTS
STEPHEN J. RHOADS
CIVIL
No 50895
REGISTERED PROFESSIONAL ENGINEER

608742_HD(CONST) - NOI.DWG Plotted on 20-Feb-2025 8:59 AM

Proposal No. 608742-132267

AM8869 - 106

LEGEND **PROJECT TOTAL**

= WORK WITHIN 50' NO DISTURB ZONE = 4,231 SF
= WORK WITHIN 100' BUFFER ZONE = 10,308 SF
= RIVERFRONT AREA CURRENTLY DEGRADED = 19,180 SF

N

IRISH PUB TRUST
126 ROUTE 28
DEED BOOK/PAGE: 6240/159

WF-209
WF-201
WF-202
WF-203
WF-204
WF-205
WF-206
WF-207
WF-208
WF-209
WF-210
WF-211
WF-212
WF-111
WF-112
WF-113
WF-114
WF-115
WF-116
WF-117
WF-118
WF-119
WF-120

100-YR COASTAL FLOODPLAIN
EDGE OF WETLAND
EDGE OF RIVER
RET UP & GUY
100' RIVER FRONT AREA
PROP SERVICE CONNECTION
100' BUFFER ZONE
50' NO DISTURB ZONE
RET RAMP
WOOD RAMP
R&R SIGN (B.O.)
PROP FIELD STONE WALK
RET SHRUBS
PROP LOAM & SEED
PROP HMA DRIVE
APPROX LIMIT OF GRADING (TYP)
PROP COMPOST FILTER TUBE
PROP TREE PROTECTION
REM TREES
PROP LOAM & SEED
PROP GUARDRAIL,TL-2
R&D HWY GUARDRAIL
RET SIGN
END GUARDRAIL LESS 10'
PROP 20' MILL & OVERLAY PAV'T TRANS
MAIN STREET (ROUTE 28)
PROP 5.5' HMA WALK (TYP)
PROP ELEC CONDUIT (TYP)
R&R GRAN CURB (TYP)
REM FENCE
PROP LP & HH (TYP)
R&S SIGN
PROP HYD
PROP FULL DEPTH PAVEMENT (WIDENING)
PROP FULL DEPTH PAVEMENT (RECLAIM)
R&R UP
R&D HWY GUARDRAIL
R&S HYD
R&R SIGN
REM SHRUBS
RET SHRUB
PROP HMA DRIVE
RET BOUND
RET LANDSCAPING
PROP SERVICE RELOCATION
PROP HMA DRIVE
PROP TREE PROTECTION
PROP GUARDRAIL, TL-2
PROP 5.5' HMA WALK (TYP)
PROP COMPOST FILTER TUBE
HERRING RIVER
MAIN ST CONST BL
EDGE OF PAVEMENT
3.5' STEEL RAILING CONC WALK GRAN CURB
EDGE OF CONC BRIDGE
END OF PROJECT
STA. 47+26.84
N 2707458.5513
E 1036017.0509
CONTINUED ON SHEET NO. 7

MCCHANG, LLC
129 ROUTE 28
CERTIFICATE #: 234074
DOC #: 148858
L.C.P. 34930A

DCG INVESTORS 2017, LLC
121 ROUTE 28
DEED BOOK/PAGE: 30716/149
L.C.P 34930A

200' RIVER FRONT AREA

0 20 50 100
SCALE: 1" = 20'

DENNIS/HARWICH
MAIN STREET (ROUTE 28)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	10	15
PROJECT FILE NO.	608742		

UTILITY PLANS

COMMONWEALTH OF MASSACHUSETTS
STEPHEN J. RHOADS
CIVIL
No 50895
REGISTERED PROFESSIONAL ENGINEER

ROUTE 28 DRAINAGE STRUCTURE DATA

NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
32	DMH	26+46.6 5.0 R	12.81	(31) 9.30	(35)9.20	
33	CBCI	27+54.2 15.0 R	11.79		(35)8.80	
34	ECCENTRIC CBCI	27+54.2 14.1 L	11.81		(35)8.80	
35	DMH	27+58.0 5.0 R	11.99	(34) 8.60 (33) 8.70 (32) 8.35	(38)8.25	
36	CBCI	27+74.2 15.0 R	11.82		(38)8.90	
37	ECCENTRIC CBCI	27+74.2 14.1 L	11.83		(38)8.90	
38	DMH	27+77.5 5.0 R	13.13	(36) 8.80 (35) 8.10 (37) 8.70	(39)8.00	
39	DMH	29+45.3 5.0 R	12.87	(38) 6.80	(42)6.70	
40	CBCI	30+96.1 15.0 R	9.83		(42)5.70	
41	CB	30+96.1 15.0 L	9.83		(42)5.70	
42	5' DMH	31+00.5 5.0 R	9.94	(40) 5.50 (41) 5.40 (39) 5.10	(43)5.00	
43	DMH	32+00.0 5.0 R	8.26	(42) 4.25	(46)4.15	

N

MAIN STREET (ROUTE 28)

PROP 1-1P ELEC SERVICE RELOCATION: 3" RGS RISER & SWEEP, 65'- 3" PVC CONC. ENCASED & EVERSOURCE APPROVED HANDHOLE (POLYMER CONC) CONNECT TO EXISTING

RET UP#37/421S

RET UP#37/421S

WATER SERVICE (TYP)

STA: 28+41
1.25" LPSL # 66

REM UP#37/421B
W/ PRIVATE LIGHT (BO)

REM UP#37/419A (BO)

ADJ

R&R 45' UP#37/ 418S
W/ PRIVATE LIGHT
AND 8' GUY (BO)

FIRE SERVICE
STA: 26+68
1.25" LPSL # 62

PSSR LP
STA: 29+19
1.25" LPSL # 72

STA: 29+91
1.25" LPSL # 76

R&R UP#37/422S
W/ 8' GUY (BO)

CUT AND CONNECT TO EXISTING 8" WATER MAIN WITH AC TO DIP TRANSITION COUPING W/ RESTRAINED JOINTS
RET UP#48/1/2

3" GV

8" 22.5 DIP BEND

8" DIP WM

8" DIP GV

3" HDPE LPS

3" HDPE LPS

16' - 12" RCP CLASS V
7' - 12" RCP CLASS V

15' - 12" RCP CLASS III

12" DIP WM 15" RCP CLASS III

12" X 6" DI TEE

6" DI GV

7' - 12" RCP CLASS IV

12" X 6" DI TEE

6" DI GV

150' - 18" RCP CLASS III

16' - 12" RCP
6' - 12" RCP

12" X 6" DIP TEE

12" X 8" DIP TEE

94' - 18" RCP CLASS IV

107' - 12" RCP CLASS V

141' - 12" RCP CLASS V

12" 11.25 DIP BEND

15' - 15" RCP CLASS III

RET

STA: 28+65
1.25" LPSL # 69

PROP LP (TYP)

R&S HYD

PROP HYDRANT

STA: 30+57
1.25" LPSL # 73

REM 12" VC PIPE

12" DIP WM

12" DIP GV

6" DIP GV

PROP HYDRANT

12" DIP GV

STA: 32+06
1.25" LPSL # 77

STA: 25+92
1.25" LPSL # 55

PROP HYDRANT

R&R 50' UP#37/418 (BO)

R&R 50' UP#37/419 (BO)

R&R 50' UP#37/420
W/ PRIVATE LIGHT (BO)

REM

REM

R&R 50' UP#37/421
W/ 20' PUSH BRACE (BO)

REM

R&R 50' UP#37/422 (BO)

100-YR COASTAL FLOODPLAIN

RET UP
R&R 50' UP#37/423
W/ 15' DE GUY (BO)

REM

CONTINUED ON SHEET NO. 11

0 20 50 100

SCALE: 1" = 20'

608742_HDU(UT) - NOI.DWG Plotted on 20-Feb-2025 9:00 AM
A009690 - 107
Proposal No. 608742-132267

DENNIS/HARWICH
MAIN STREET (ROUTE 28)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	11	15
PROJECT FILE NO.	608742		

UTILITY PLANS

COMMONWEALTH OF MASSACHUSETTS
STEPHEN J. RHOADS
CIVIL
No 50895
REGISTERED PROFESSIONAL ENGINEER

608742_HD(UT) - NOI.DWG Plotted on 20-Feb-2025 9:00 AM

Proposal No. 608742-132267

AM08600 - 108

MAIN STREET (ROUTE 28)

N

5
N: 2707848.713'
E: 1034541.244'
EL: 7.740'
PK NAIL RJO'C 14

6
N: 2707689.482'
E: 1034946.444'
EL: 11.440'
PK NAIL RJO'C 15

PROP 1-1P ELEC SERVICE RELOCATION:
3" RGS RISER & SWEEP, 84'- 3" PVC CONC. ENCASED & EVERSOURCE APPROVED HANDHOLE (POLYMER CONC) CONNECT TO EXISTING SEE NOTE * ON THIS PAGE

REM UP#425A (BO)

PROP 1-1P ELEC SERVICE RELOCATION:
3" RGS RISER & SWEEP, 150'- 3" PVC CONC. ENCASED & EVERSOURCE APPROVED HANDHOLE (POLYMER CONC) CONNECT TO EXISTING SEE NOTE * ON THIS PAGE.

REM

STA: 32+95
1.25" LPSL # 84

3" HDPE LPS

ABAN EXIST GAS

3" HDPE

MR-2

STA: 33+70
1.25" LPSL # 90

WATER SERVICE (TYP)

REM UP#424A (BO)

CUT AND CAP EXIST GAS

17' - 18" RCP CLASS III

CUT AND CAP EXIST GAS

STA: 35+80
1.25" LPSL # 94

STA: 36+34
1.25" LPSL # 100

PROP LP (TYP)

RELOCATE VERIZON DUCTBANK

16' - 12" RCP CLASS IV

16' - 12" RCP CLASS IV

3" HDPE

12" X 8" DIP TEE

17' - 12" RCP CLASS III

PT +67.66

153' - 18" RCP CLASS IV

PROP 6" GAS

6' - 12" RCP CLASS IV

7' - 12" RCP CLASS IV

12" DIP WM

190' - 24" RCP CLASS III

121' - 24" RCP CLASS III

PC +13.38

12" X 6" DIP TEE

194' - 24" RCP CLASS III

REM PIPE

7' - 12" RCP CLASS III

12" DIP WM

6" DIP GV

CONTINUED ON SHEET NO. 10

CONTINUED ON SHEET NO. 12

12" DIP GV

STA: 32+06
1.25" LPSL # 77

RET UP

R&R 50' UP#37/423
W/ 15' DE GUY (BO)

R&S HYD

R&R 50' UP#37/424 (BO)

STA: 34+05
1.25" LPSL # 87

3" HDPE
MURRAY LN STUB

8" DIP WM.
CONNECT TO EXISTING

STA: 35+16
1.25" LPSL # 93

R&R 50' UP#37/425 (BO)

STA: 35+85
1.25" LPSL # 97

PROP LP (TYP)

R&R 50' UP#37/426
W/ 15' GUY(BO)

PROP HYDRANT

STA: 37+24
1.25" LPSL # 103

R&R 50' UP#37/427
W/ 15' GUY(BO)

REM

PROP 1-1P ELEC SERVICE RELOCATION:
3" RGS RISER & SWEEP, 42'- 3" PVC & EVERSOURCE APPROVED HANDHOLE (POLYMER CONC) CONNECT TO EXISTING (ITEM 826.7).

RELOCATE PRIMARY ELECTRIC SERVICE (BO)

UTILITY NOTE:

* **CONTRACTOR TO COORDINATE CABLE AND TELEPHONE SERVICE WITH EACH RESPECTIVE UTILITY COMPANY WHERE AN ELECTRIC SERVICE RISER RELOCATION IS REQUIRED. CONDUIT FOR CABLE AND TELEPHONE SERVICE WILL BE PAID FOR WITH ITEM 804.2 - 2 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC (UL).**

100-YR COASTAL FLOODPLAIN

0 20 50 100
SCALE: 1" = 20'

ROUTE 28 DRAINAGE STRUCTURE DATA

NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
43	DMH	32+00.0 5.0 R	8.26	(42) 4.25	(46)4.15	
44	CBCI	33+54.4 15.0 L	7.21		(46)3.50	
45	CBCI	33+54.4 15.0 R	7.21		(46)3.50	
46	DMH	33+57.5 5.0 R	7.40	(44) 3.30 (43) 3.15 (45) 3.30	(49)3.15	
47	CBCI	33+74.5 15.0 R	7.18		(49)3.50	
48	CBCI	33+74.6 15.0 L	7.18		(49)3.50	
49	DMH	33+78.9 5.0 R	7.38	(47) 3.30 (46) 3.05 (48) 3.30	(52)3.05	
50	CBCI	35+65.8 15.0 L	9.33		(52)5.30	
51	CBCI	35+68.1 15.0 R	9.36		(52)5.20	
52	5' DMH	35+73.6 5.0 R	9.65	(49) 2.35 (50) 5.00 (51) 5.00	(53)2.35	
53	5' DMH	36+99.8 5.0 R	11.40	(52) 1.80	(54)1.80	

ROUTE 28 DRAINAGE STRUCTURE DATA

NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
54	DMH	38+97.9 5.0 R	10.83	(53) 1.00	(57)1.00	
55	CBCI	39+74.7 15.0 L	10.30		(57)6.60	
56	CBCI	39+74.6 15.0 R	10.30		(57)6.50	
57	5' DMH	39+83.1 4.9 R	10.49	(54) 0.65 (56) 6.30 (55) 6.30	(60)0.65	
59	CBCI	39+93.5 14.9 R	10.29		(60)6.50	
60	5' DMH	39+95.9 5.0 R	10.49	(57) 0.60 (58) 6.30 (59) 6.30	(62)0.60	
61	CBCI	41+26.3 15.0 L	10.88		(62)7.00	
62	5' DMH	41+35.8 5.1 R	11.13	(61) 6.70 (60) 0.60 (63) 6.70	(65)0.60	
63	CBCI	41+44.2 28.5 R	10.88		(62)7.00	
64	CBCI	41+74.4 27.5 R	10.88		(65)7.00	
65	DMH	41+77.5 5.0 R	11.38	(62) 0.60 (64) 6.70	(68)0.60	

DENNIS/HARWICH
MAIN STREET (ROUTE 28)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	12	15
PROJECT FILE NO.	608742		

UTILITY PLANS

COMMONWEALTH OF MASSACHUSETTS
STEPHEN J. RHOADS
CIVIL
No. 50895
REGISTERED PROFESSIONAL ENGINEER

608742_HDU(UT) - NOI.DWG Plotted on 20-Feb-2025 9:00 AM

Proposal No. 608742-13267

A008869 - 109

N

MAIN STREET (ROUTE 28)

NORTH RD

RIVERSIDE DR

200' RIVER FRONT AREA

100' RIVER FRONT AREA

100-YR COASTAL FLOODPLAIN

RELOCATE VERIZON DUCTBANK

CUT AND CAP EXIST GAS
ABAN EXIST GAS
CUT AND CAP EXIST GAS

PROP LP (TYP)

REM CB R=10.3± I=6.4±

REM CB(LEACHING) R=10.6±

REM

STA: 39+57
1.25" LPSL # 108

REM UP#429A (BO)

CUT AND CAP EXIST GAS
ABAN EXIST GAS
CUT AND CAP EXIST GAS

CUT AND CONNECT TO EXISTING 6" WATER MAIN WITH TRANSITION COUPLING WITH RESTRAINED JOINTS

UPGRADE 45' UP#95/1/2

STA: 39+69
1.25" LPSL # 114

8' - 24" RCP CLASS III

WATER SERVICE (TYP)

6" DIP WM

ADJ

6" 11.25 DIP BEND

3" GV

3" HDPE PIPE

REM CB R=10.7± I=6.6±

18' - 12" RCP CLASS III

21' - 12" RCP CLASS III

12" DIP GV

12" X 8" DIP TEE

38' - 24" RCP CLASS III

12" X 12" DIP TEE

12" DIP GV

245' - 24" RCP CLASS III

3" HDPE LPS

STA: 42+87
1.25" LPSL # 126A

PROP LP (TYP)

FIRE SERVICE

ADJ (BO)

REM PIPE

REM

PROP 6" GAS

PT +77.23

3" HDPE LPS

17' - 12" RCP CLASS IV

16' - 12" RCP CLASS IV

81' - 24" RCP CLASS III

PROP 6" GAS

9' - 12" RCP CLASS IV

6' - 12" RCP CLASS IV

6" DIP GV

12" DIP WM

135' - 24" RCP CLASS II

194' - 24" RCP CLASS III

19' - 12" RCP CLASS III

12" DIP WM

12" DIP GV

12" X 6" DIP TEE

R&S HYD

12" X 6" DIP TEE

6" DIP GV

PROP HYDRANT

R&R 50' UP#37/430 (BO)

8" DIP GV

8" 45 DIP BEND (TYP OF 2)

8" DIP WM

STA: 42+14
1.25" LPSL # 121

12" DIP GV

12" 45 DIP BEND (TYP OF 2)

R&R 50' UP#37/431 (BO)

R&R 50' UP#37/432 (BO)

RET UP#44/1
W/ 15' GUY &
2-6' DE SW GUYS (BO)

ADJ

12" DIP WM

3" HDPE LPS

RET UP#44/2

R&R 50' UP#37/428
W/ 15' GUY (BO)

STA: 39+64
1.25" LPSL # 109

PROP LP (TYP)

R&R 50' UP#37/429 (BO)

STA: 40+26
1.25" LPSL # 115

PROP 1-1P ELEC SERVICE RELOCATION:
3" RGS RISER & SWEEP, 14'-3" PVC CONC. ENCASED & EVERSOURCE APPROVED HANDHOLE (POLYMER CONC) CONNECT TO EXISTING

CUT AND CONNECT TO EXISTING 8" WATER MAIN WITH TRANSITION COUPLING WITH RESTRAINED JOINTS

CUT AND CONNECT TO EXISTING 12" WATER MAIN WITH TRANSITION COUPLING WITH RESTRAINED JOINTS

7
N: 2707523.694'
E: 1035489.940'
EL: 11.620'
PK NAIL RJO'C 20

CONTINUED ON SHEET NO. 11

CONTINUED ON SHEET NO. 13

0 20 50 100
SCALE: 1" = 20'

DENNIS/HARWICH
MAIN STREET (ROUTE 28)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	13	15
PROJECT FILE NO.	608742		

UTILITY PLANS

COMMONWEALTH OF MASSACHUSETTS
STEPHEN J. RHOADS
CIVIL
No 50895
REGISTERED PROFESSIONAL ENGINEER

608742_HDU(UT) - NOI.DWG Plotted on 20-Feb-2025 9:01 AM

AW9810 - 110

Proposal No. 608742-132267

N

100' RIVER FRONT AREA

STA: 42+87
1.25" LPSL # 126A

PROP LP (TYP)

REM

REM (LEACHING)

100' BUFFER ZONE

50' NO DISTURB ZONE

18' - 12" RCP CLASS IV

STA: 44+26
1.25" LPSL # 126

26' - 24" RCP CLASS III

FA-2

RET UP W/ PRIVATE LIGHT

REM UP#37/434A (BO)

185'± OF 12" DI INSULATED WATERMAIN HUNG FROM BOTTOM OF BRIDGE (BY OTHERS)

3" HDPE LPS

245' - 24" RCP CLASS III

21' - 12" RCP CLASS IV

3" HDPE PIPE

12" DIP GV

12" DIP WM

12" X 12" DIP TEE

CAPPED PIPE

12" X 6" DI TEE

6" DIP GV

R&S HYD

12" CAP

R&R 45° UP#37/435 (BO)

12" DIP WM

12" 45 DIP BEND (TYP OF 2)

CAPPED PIPE

250'± OF 12" HDPE WATERMAIN (BY OTHERS)

MAIN STREET (ROUTE 28)

RET UP#37/436

HERRING RIVER

R&R 50' UP#37/432 (BO)

PROP LR (TYP)

STA: 44+33
1.25" LPSL # 129

PROP HYDRANT

WATER SERVICE (TYP)

14' - 12" RCP CLASS IV

11' - 12" RCP CLASS IV

R&R 50' UP#37/433 W/2-15' GUYS (BO)

R&R 45' UP#37/434 W/ 15' GUY (BO)

50' NO DISTURB ZONE

100' BUFFER ZONE

PROP 2-1P ELEC SERVICE RELOCATION:
3" RGS RISER & SWEEP, 54'- 3" PVC CONC. ENCASED & EVERSOURCE APPROVED HANDHOLE (POLYMER CONC) CONNECT TO METER

100-YR COASTAL FLOODPLAIN

200' RIVER FRONT AREA

100' RIVER FRONT AREA

100-YR COASTAL FLOODPLAIN

END OF PROJECT
STA. 47+26.84
N 2707458.5513
E 1036017.0509

CONTINUED ON SHEET NO. 12

0 20 50 100
SCALE: 1" = 20'

ROUTE 28 DRAINAGE STRUCTURE DATA

NO.	TYPE	STATION	RIM ELEV.	INV. IN	INV. OUT	REMARKS
66	CBCI	44+14.9 15.0 L	10.47		(68)6.80	
67	CBCI	44+16.7 15.0 R	10.46		(68)6.80	
68	5' DMH	44+26.4 4.1 R	10.66	(66) 6.50 (65) 0.60 (67) 6.50	(71)0.60	
69	CB	44+41.3 15.0 L	10.42		(71)6.80	
70	CBCI	44+41.6 15.0 R	10.42		(71)6.80	
71	5' DMH	44+56.8 4.7 R	10.64	(68) 0.60 (69) 6.50 (70) 6.50	(EX-3)0.70	

COMMONWEALTH OF MASSACHUSETTS
STEPHEN J. RHOADS
CIVIL
No 50895
REGISTERED
PROFESSIONAL ENGINEER

DENNIS/HARWICH
MAIN STREET (ROUTE 28)

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	TBD	14	15
PROJECT FILE NO.	608742		

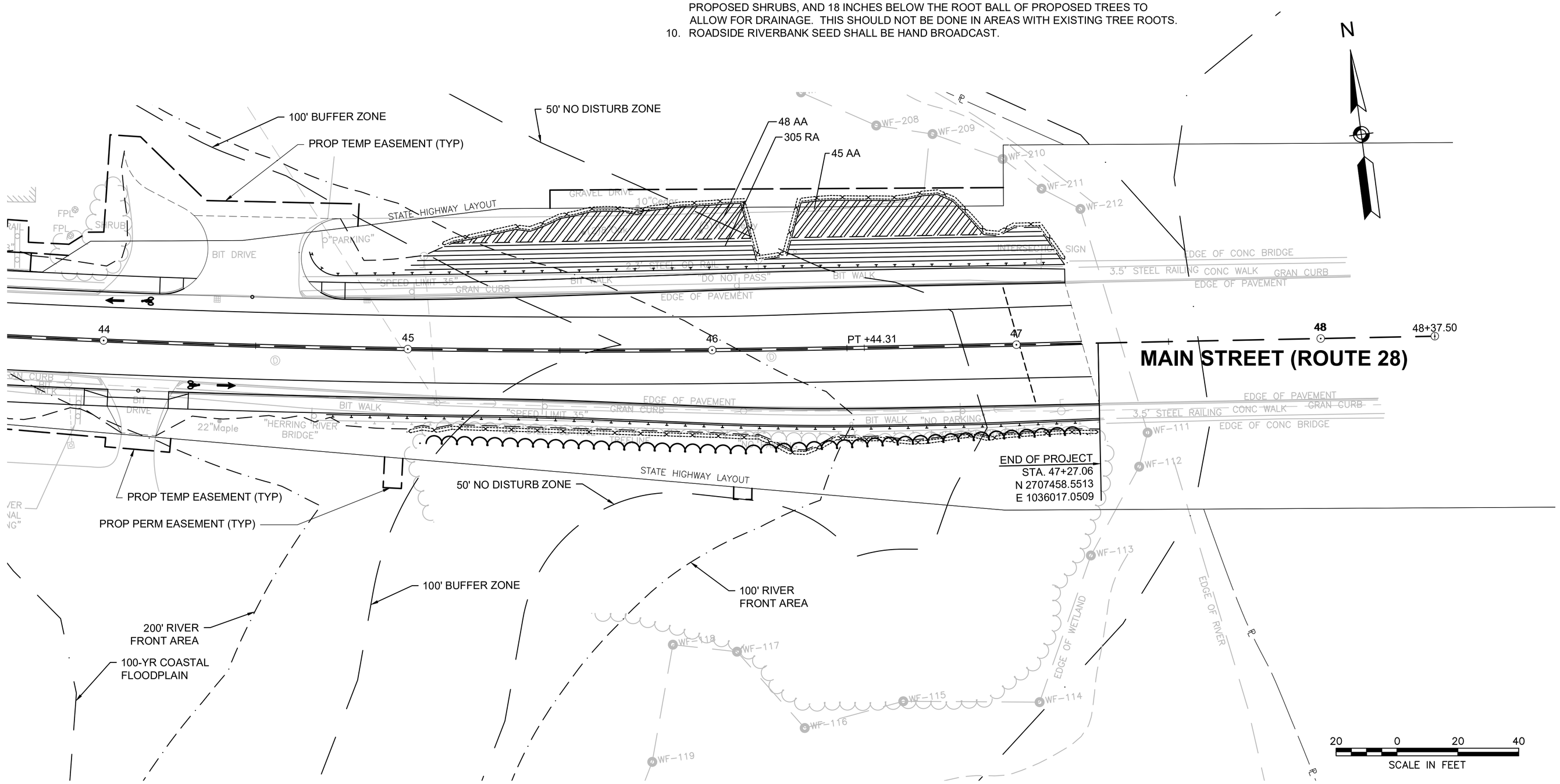
LANDSCAPE PLANS

PLANTING NOTES

1. CONTRACTOR SHALL HAVE ALL SUBSURFACE UTILITIES MARKED PRIOR TO THE START OF WORK.
2. PLANT LOCATIONS ARE APPROXIMATE. PRIOR TO PLANTING, LOCATION OF ALL PLANT MATERIAL WILL BE APPROVED BY THE RESIDENT ENGINEER AND THE LANDSCAPE ARCHITECT.
3. ALL PLANT MATERIAL WILL HAVE TAGS INDICATING COMMON NAME, BOTANICAL NAME, CULTIVAR, & SIZE.
4. IMMEDIATELY AFTER ACCEPTANCE OF PLANTING, TAGS AND RIBBONS SHALL BE REMOVED.
5. ALL PLANTS WILL BE MULCHED PER PLANS AND SPECIFICATIONS.
6. SEEDING SHALL BE MANUALLY BROADCAST FOR AREAS LESS THAN HALF AN ACRE (EACH AREA, NOT CUMULATIVE AREA) AND WHEN SPECIFIED ON THE PLANS. BROADCASTING SHALL BE IMMEDIATELY FOLLOWED BY HYDROMULCHING AS SPECIFIED IN SPECIFICATIONS. WHEN NOT SPECIFIED ON THE PLANS, LARGER AREAS MAY BE HYDROSEEDED AS IN SPECIFICATIONS.
7. ALL SHRUB AND PERENNIAL BEDS WILL BE WEEDED AND OTHERWISE NEATLY MAINTAINED FOR THE DURATION OF THE CONTRACT.
8. PLANTS AND PLANTING BEDS SHALL BE THOROUGHLY WATERED AS NECESSARY AND PER SPECIFICATIONS.
9. IN LOCATIONS WHERE EXISTING PAVEMENT IS REMOVED AND LANDSCAPE PLANTINGS ARE PROPOSED, THE CONTRACTOR SHALL LOOSEN EXISTING SUBGRADE SOIL TO A MINIMUM DEPTH OF 6 INCHES BELOW PROPOSED LOAM AND SEED AREAS, 12 INCHES BELOW PROPOSED SHRUBS, AND 18 INCHES BELOW THE ROOT BALL OF PROPOSED TREES TO ALLOW FOR DRAINAGE. THIS SHOULD NOT BE DONE IN AREAS WITH EXISTING TREE ROOTS.
10. ROADSIDE RIVERBANK SEED SHALL BE HAND BROADCAST.

PLANT SCHEDULE 07-LD SHEET

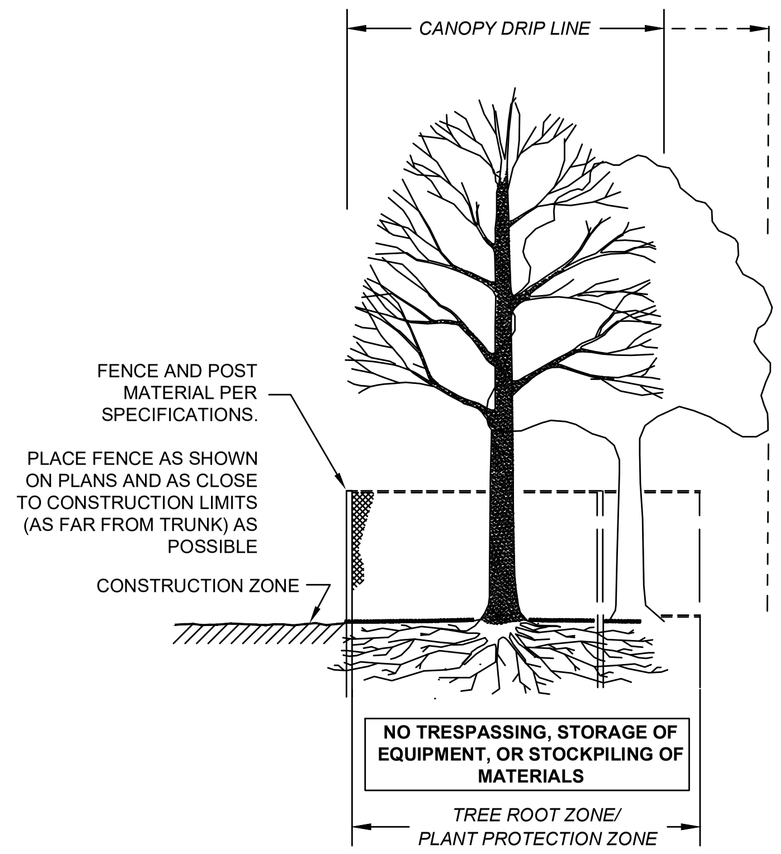
SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE
SHRUB AREAS					
	AA	93	Aronia arbutifolia	Chokeberry - Red	#3 CONT.
	RA	305	Rhus aromatica	Fragrant Sumac	#2 CONT.



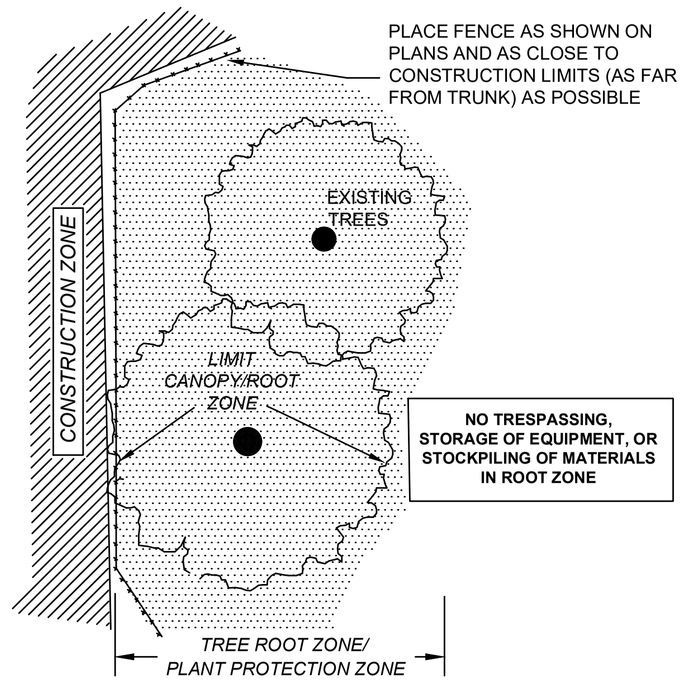
608742_HD(LA)-NOI.DWG Plotted on 20-Feb-2025 9:01 AM
Proposal No. 608742-132267
A008860 - 111

COMMONWEALTH OF MASSACHUSETTS
STEPHEN J. RHOADS
CIVIL
No 50895
REGISTERED PROFESSIONAL ENGINEER

608742_HD(DET) - NOI.DWG Plotted on 20-Feb-2025 9:02 AM
A008860 - 112
Proposal No. 608742-132267



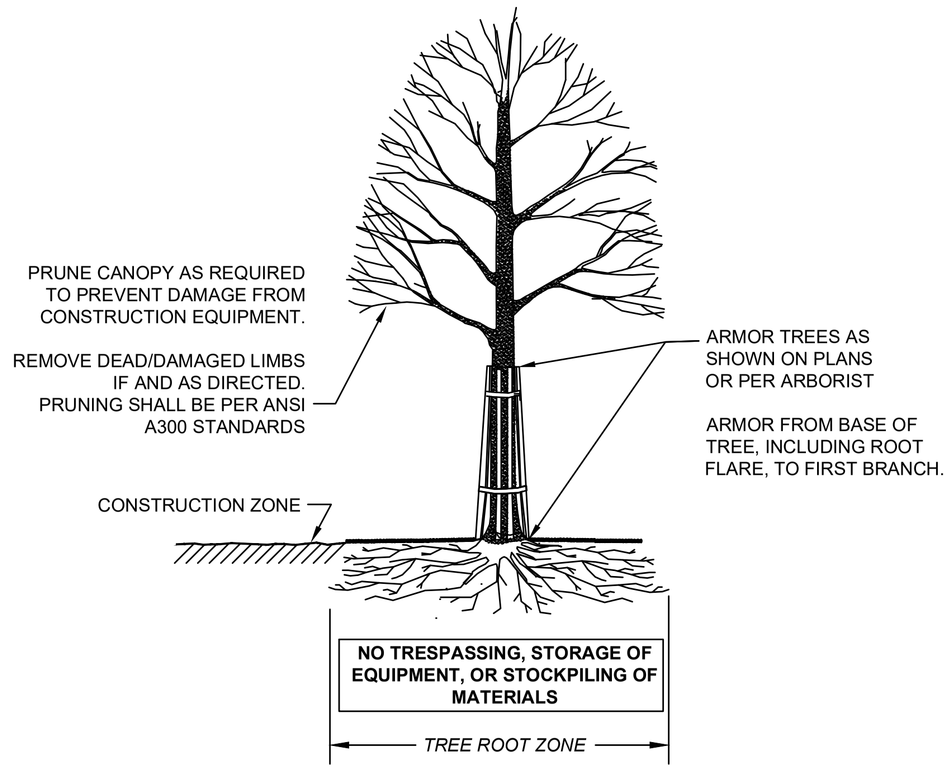
SECTION - FENCE PROTECTION OF ROOT ZONE



PLAN VIEW - FENCE PROTECTION OF ROOT ZONE

TREE PROTECTION - ROOT ZONE

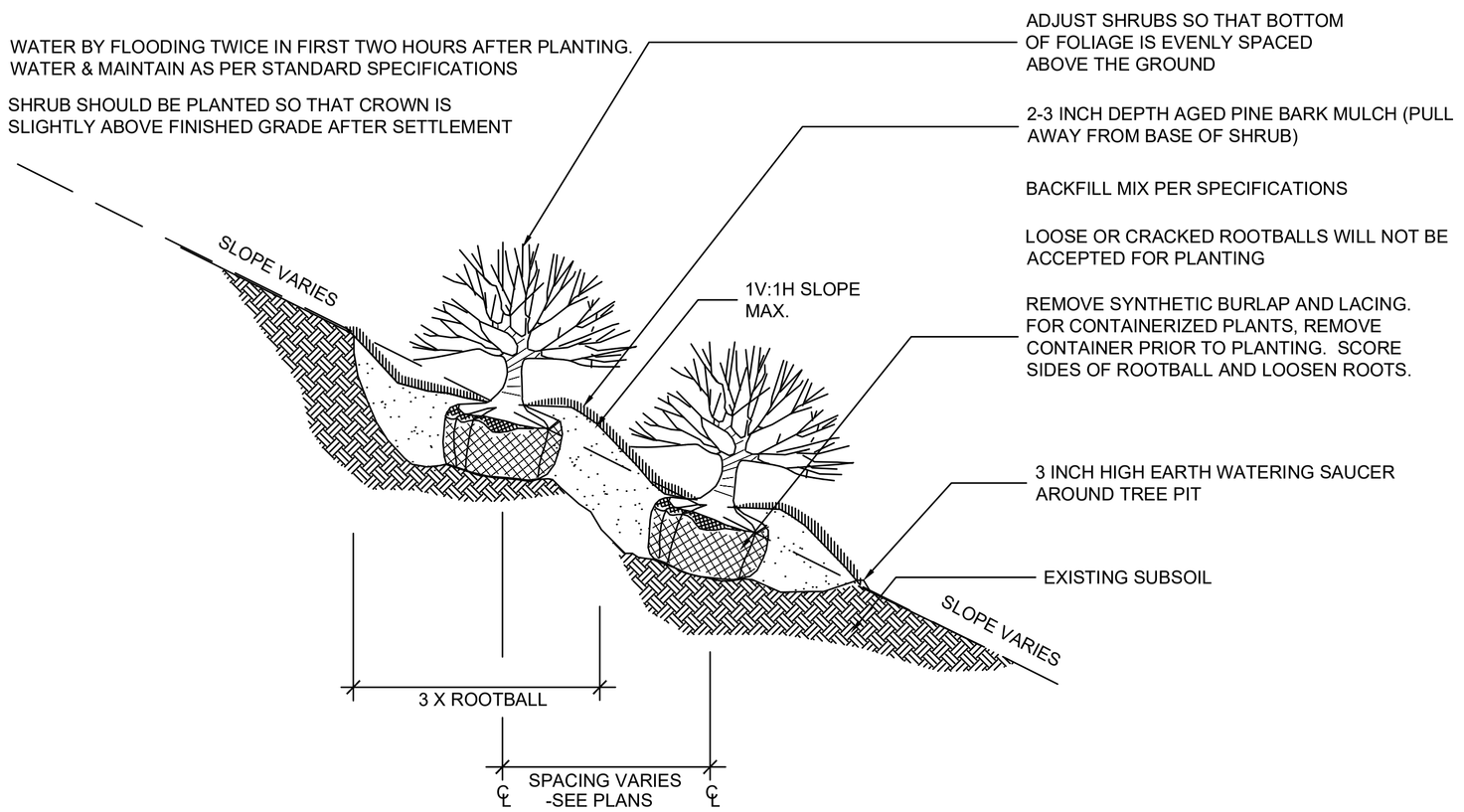
SCALE: NTS



SECTION - TRUNK ARMORING & PRUNING

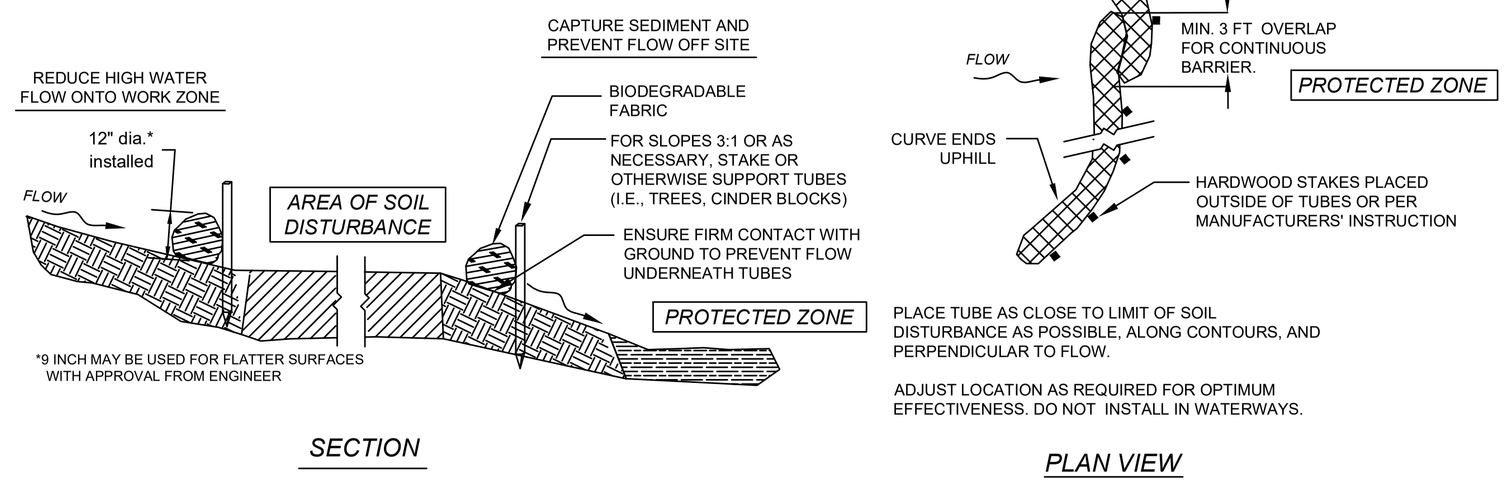
TREE PROTECTION - TRUNK

SCALE: NTS



CONTAINERIZED SHRUB PLANTING (SLOPE)

SCALE: NTS



SECTION

PLAN VIEW

SEDIMENT BARRIERS - COMPOST FILTER TUBES

SCALE: NTS

DOCUMENT A00861

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP) & TOWN OF HARWICH CONSERVATION COMMISSION

ORDER OF CONDITIONS - File #SE32-2592

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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:
SE32-2592
MassDEP File #
1894608
eDEP Transaction #
Harwich
City/Town

A. General Information

Please note: this form has been modified with added space to accommodate the Registry of Deeds Requirements

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

1. From: HARWICH
Conservation Commission

2. This issuance is for (check one): a. ☒ Order of Conditions b. ☐ Amended Order of Conditions

3. To: Applicant:

Lincoln
a. First Name

Hooper
b. Last Name

Town of Harwich
c. Organization

273 QUEEN ANNE ROAD, P.O. BOX 1543
d. Mailing Address

Harwich
e. City/Town

MA
f. State

02645
g. Zip Code

4. Property Owner (if different from applicant):

a. First Name

b. Last Name

MASSDOT DISTRICT 5
c. Organization

1000 COUNTY STREET
d. Mailing Address

TAUNTON
e. City/Town

MA
f. State

02780
g. Zip Code

5. Project Location:

Route 28
a. Street Address

Harwich
b. City/Town

N/A
c. Assessors Map/Plat Number

N/A
d. Parcel/Lot Number

Latitude and Longitude, if known: 41d66m91s
d. Latitude

70d11m22s
e. Longitude

Massachusetts Department of Environmental Protection
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Provided by MassDEP:
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A. General Information (cont.)

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):
Barnstable
a. County
b. Certificate Number (if registered land)
c. Book
d. Page

7. Dates: 3/13/2025 a. Date Notice of Intent Filed; 5/7/2025 b. Date Public Hearing Closed; 5/9/2025 c. Date of Issuance

8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):
MASSACHUSETTS DEPARTMENT OF TRANSPORTATION HIGHWAY DIVISION PLAN AND PROFILE OF MAIN STREET (ROUTE 28)
VHB
b. Prepared By
STEPHEN RHOADES, P.E.
c. Signed and Stamped by
4/9/2025
d. Final Revision Date
1"=20'
e. Scale
f. Additional Plan or Document Title
g. Date

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act:

Following the review of 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 significant to the following interests of the Wetlands Protection Act (the 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. ☒ Groundwater Supply h. ☒ Storm Damage Prevention i. ☒ Flood Control

2. This Commission hereby finds the project, as proposed, is: (check one of the following boxes)

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.

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Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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B. Findings (cont.)

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 the 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 Act's interests, 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 310 CMR 10.02(1)(a) _____ a. linear feet

Inland Resource Area Impacts: Check all that apply below. (For Approvals Only)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. ☐ Bank	a. linear feet	b. linear feet	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	a. square feet	b. square feet	c. square feet	d. square feet
	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
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

Massachusetts Department of Environmental Protection
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B. Findings (cont.)

Coastal Resource Area Impacts: Check all that apply below. (For Approvals Only)

	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. nourishment cu yd	d. nourishment cu yd
14. ☐ Coastal Dunes	a. square feet	b. square feet	c. nourishment cu yd	d. nourishment cu yd
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			
	a. c/y dredged	b. c/y dredged		
21. ☒ Land Subject to Coastal Storm Flowage	95690 a. square feet	95690 b. square feet		
22. ☒ Riverfront Area	25803 a. total sq. feet	25803 b. total sq. feet		
Sq ft within 100 ft	0 c. square feet	0 d. square feet	0 e. square feet	0 f. square feet
Sq ft between 100-200 ft	0 g. square feet	0 h. square feet	0 i. square feet	0 j. square feet

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B. Findings (cont.)

* #23. 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 (BVW) or B.17.c (Salt Marsh) above, please enter the additional amount here.

23. ☐ Restoration/Enhancement *:

a. square feet of BVW _____ b. square feet of salt marsh _____

24. ☐ Stream Crossing(s):

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.
   c. If the work is for a Test Project, this Order of Conditions shall be valid for no more than one year.
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. An Order of Conditions for a Test Project may be extended for one additional year only upon written application by the applicant, subject to the provisions of 310 CMR 10.05(11)(f).
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Order will expire on 5/9/2028 unless extended in writing by the Department.
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.

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C. General Conditions Under Massachusetts Wetlands Protection Act

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 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 SE32-2592 "

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 MassDEP.

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.

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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

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.

19. The work associated with this Order (the "Project")
(1) ☒ is subject to the Massachusetts Stormwater Standards
(2) ☐ is NOT subject to the Massachusetts Stormwater Standards

If the work is subject to the 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 Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 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 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;

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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

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 18(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 Pollution 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.

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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

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 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 (if you need more space for additional conditions, please attach a text document):

see attached

20. For Test Projects subject to 310 CMR 10.05(11), the applicant shall also implement the monitoring plan and the restoration plan submitted with the Notice of Intent. If the conservation commission or Department determines that the Test Project threatens the public health, safety or the environment, the applicant shall implement the removal plan submitted with the Notice of Intent or modify the project as directed by the conservation commission or the Department.

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D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? ☒ Yes ☐ No
2. The Harwich Conservation Commission hereby finds (check one that applies):
   a. ☐ that the proposed work 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 of Conditions is issued.

   b. ☒ that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:
      Harwich Wetlands Protection Bylaw (1. Municipal Ordinance or Bylaw) Chapter 310 (2. Citation)
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 (if you need more space for additional conditions, attach a text document):

   see attached

TOWN OF HARWICH

732 Main Street
Harwich, MA 02645

CONSERVATION COMMISSION (508)430-7538 FAX (508)430-7531

TOWN OF HARWICH CONSERVATION COMMISSION
ORDER OF CONDITIONS

DEP FILE # SE 32-2592
NAME: Lincoln Hooper
LOCATION: Main Street/Route 28, Map N/A, Parcel N/A
PLAN: Massachusetts Department of Transportation Highway Division Plan and Profile of Main Street (Route 28)

DATE: Printed 4/9/2025

PREPARED BY: VHB

SIGNED AND STAMPED BY: Stephen Rhoades, P.E.

RESOURCE: Riverfront Area, Land Subject to Coastal Storm Flowage, Coastal Bank

This permit allows for roadway improvements to Route 28/Main Street.

The provision of the Harwich By-Law Article VII which also applies is hereby certified to be complied with and is part of this ruling.

General Conditions 1 – 14 issued by the State Department of Environmental Protection on the following pages should be read and followed. Special Conditions issued by the Harwich Conservation Commission shall also be read and followed.

GENERAL CONDITIONS

1. No work shall commence on this project until the ten (10) business day appeal period has passed. This period shall begin on the day the Order of Conditions is hand delivered or postmarked, as appropriate.

2. The applicant or representative shall inform the Commission in writing of the name, address, and telephone number of the project contractor who will be responsible for on-site compliance with this order at least 72 hours in advance.
3. Members and Agent of the Harwich Conservation Commission shall have the right to enter and inspect the premises to evaluate compliance with the conditions stated in this Order, the Act, and 310 CMR 10.00.
4. This Order of Conditions applies only to the work permitted by this Order.
5. If any alteration of the Wetland/Resource Area does occur on this property or in the vicinity as a result of this project, the Commission shall impose measures, as it finds necessary to protect and restore those areas.
6. The construction site shall be left in a stable condition at the close of each day. Construction refuse and debris shall be controlled daily. Erosion and sedimentation controls shall be inspected, maintained, and reinforced if necessary daily.
7. Erosion and sediment control measures, as set forth in the referenced plan, shall be installed and kept in place for the duration of construction on the site and until permanent vegetative cover is established.
8. It is the responsibility of the applicant to procure all other applicable federal, state and local permits and approvals associated with this project.
9. Any refuse material from the site shall be disposed of at an approved location, and in no case will these materials be buried or disposed of in or near a Resource Area/Wetland.
10. This Order of Conditions shall apply to any successor in interest or assigns of the property.
11. **This Order of Conditions shall expire on May 9, 2028.** For an extension to be considered, the Commission must receive a written request 30 days prior to the expiration of this Order.
12. All work will be done in strict conformity with the plans approved by the Commission under this Order of Conditions. Failure to obtain the Commission's approval before deviating in any way from the approved plans shall constitute a violation of this Order of Conditions and permit.
13. If any unforeseen problem occurs during construction which affects any of the statutory interests of the Wetland Protection Act or Harwich By-Law Article VII, upon discovery, the Conservation Commission, or its Agent shall notify the developer immediately to determine the correct measures to be employed.
14. Failure to comply with all the conditions of this Order shall result in enforcement action by the Harwich Conservation Commission, which may include fines not to exceed $300.00 per day/per violation.

Special Conditions

1. There shall be an on-site pre-construction meeting between the Contractor, Engineer, and Conservation Administrator prior to any work starting. This shall be arranged by the Contractor or Engineer with the Conservation Administrator. Limit of work and erosion controls to be installed just prior to this meeting so that the Conservation Administrator may inspect.

2. At said on-site pre-construction meeting, the Contractor should work with the Conservation Administrator to propose a plan that prevents unnecessary removal of trees/shrubs/groundcover within the flood zone, 100' buffer, or 200' Riverfront area.
3. Disturbed areas shall be sufficiently revegetated with native grass seed mix and approved trees/shrubs if those are removed upon completion of the project in the same or next agreed upon growing season with the guidance of the Conservation Administrator.
4. Site to be cleaned daily of loose debris.
5. Erosion controls shall remain intact and functioning for the duration of the project until the site is stable.
6. Deviations from the approved plan must be approved by the Conservation Commission or Conservation Administrator prior to being done.
7. Appropriate containment measures should be employed to prevent siltation in the marine environment during all activities. These measures shall be agreed upon at the pre-construction meeting with the Administrator.
8. To minimize the risk of fuel spills impacting sensitive resource areas, all land-based construction equipment is prohibited from being re-fueled on site within the land subject to coastal storm flowage and the 200' Riverfront Area.
9. Any trees, shrubs, or grasses replanted are to maintain a 90% survival rate for at least two growing seasons following planting prior to obtaining a Certificate of Compliance.
10. Above ground drip irrigation is permitted for the first two growing seasons to support the establishment of newly planted vegetation.
11. Natural wood mulch (without dyes) may be incorporated around only the base of trees and shrubs for the first growing season to help the plants establish.
12. There shall be no fertilizers, pesticides, or herbicides applied on this property on the Coastal Bank, within the 100' buffer zone, 200' fiver front, or in the flood zone. This condition shall remain in perpetuity and shall not be released by a Certificate of Compliance. A copy of this Order of Conditions shall be provided to the landscape contractor by the owner/applicant.

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:
SE32-2592
MassDEP File #

eDEP Transaction #

Harwich
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
	WAYNE COULSON
	Vivienne Mulhall Maguire
	John W. Kotchuk
	MARK J. Coleman

☐ by hand delivery on

Date

☐ by certified mail, return receipt requested, on

Date

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 #:032-2592
eDEP Transaction #:1894608
City/Town:HARWICH

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.

5/9/2025
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.

4
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:

Vivienne Mulhall-Maguire

Wayne Coulson

John W. Ketchum

Mark J. Coleman

☐ 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 #:032-2592
eDEP Transaction #:1894608
City/Town:HARWICH

subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

HARWICH
Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

HARWICH
Conservation Commission

Please be advised that the Order of Conditions for the Project at:

ROUTE 28 * — 032-2592
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

DOCUMENT A00862

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP)

STATE REVOLVING FUND (SRF) FINANCIAL ASSISTANCE PROGRAM

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Supplement to Route 28 Reconstruction Project; DOT Project Number 608742

The following items are required by Massachusetts DEP State Revolving Fund program and apply to the sewer construction aspects of this project. Add the following as follows:

1. To the Instructions to Bidders, ADD the following:
    a. “Applicable provisions of Massachusetts General Laws and Regulations and/or the United States Code and Code of Federal Regulations govern this Contract and any provision in violation of the foregoing shall be deemed null, void and of no effect. Where conflict between Code of Federal Regulations and State Laws and Regulations exist, the more stringent requirement shall apply.”
    b. “Minimum Wage Rates as determined by the Executive Office of Labor and Workforce Development under the provision of the Massachusetts General Laws, Chapter 149, Sections 26 to 27D, as amended, apply to this project. It is the responsibility of the contractor, before bid opening, to request if necessary, any additional information on Minimum Wage Rates for those trades people who may be employed for the proposed work under this contract. Federal Minimum Wage Rates as determined by the United States Department of Labor under the Davis-Bacon Act also apply to this project.”
        i. Attachment A – Davis Bacon Act Requirements
    c. "The contractor guarantees that the Work and Services to be performed under the Contract, and all workmanship, materials and equipment performed, furnished, used or installed in the construction of the same shall be free from defects and flaws, and shall be performed and furnished in strict accordance with the Drawings, Specifications, and other contract documents, that the strength of all parts of all manufactured equipment shall be adequate and as specified and that the performance test requirements of the Contract shall be fulfilled. This guarantee shall be for a period of one year from and after the date of completion and acceptance

of the Work as stated in the final estimate. If part of the Work is accepted in accordance with that subsection of this AGREEMENT titled "Partial Acceptance", the guarantee for that part of the Work shall be for a period of one year from the date fixed for such acceptance."

c. "If at any time within the said period of guarantee any part of the Work requires repairing, correction or replacement, the Owner may notify the contractor in writing to make the required repairs, correction or replacements. If the Contractor neglects to commence making such repairs, corrections or replacements to the satisfaction of the Owner within seven (7) days from the date of receipt of such notice, or having commenced fails to prosecute such Work with diligence, the Owner may employ other persons to make said repairs, correction or replacements, and charge the costs, including compensation for additional professional services, to the Contractor."
d. "This project is subject to the Safety and Health Regulations of the U.S. Department of Labor set forth in Title 29 CFR, Part 1926 and to all subsequent amendments, and to any applicable Massachusetts regulations. Contractors shall be familiar with the requirements of these regulations."
e. "Whenever it is written that an equipment manufacturer must have a specified period of experience with his product, equipment which does not meet the specified experience period can be considered if the equipment supplier or manufacturer is willing to provide an "Efficiency Guarantee Bond" or cash deposit for the duration of the specified time period which will guarantee replacement of that equipment in the event of failure."
f. "This project is subject to the requirements of the Department of Environmental Protection's Diesel Retrofit Program. Bidders must submit a signed and dated Statement of Intent to Comply form as part of their bid proposal documents."
g. "This project is subject to the Build American, Buy America (BABA) requirements."
g. "This project is subject to the American Iron and Steel requirements of P.L. 113-76, the Consolidated Appropriations Act of 2014."
g. Attachment B - Build America, Buy America Act & The American Iron and Steel Act Requirements

2. To the Bid Proposal, ADD the following:
   c. "Pursuant to M.G.L.c.62C, s49A I certify under the penalties of perjury that I, to my best knowledge and belief, have filed all state tax returns and paid all State Taxes required under law"

d. “The undersigned bidder hereby certifies he/she will comply with the specific affirmative action steps contained in the EEO/AA provisions of this Contract, including compliance with the Disadvantaged Business Enterprise provisions as required under these contract provisions. The contractor receiving the award of the contract shall incorporate the EEO/AA provisions of this contract into all subcontracts and purchase orders so that such provisions will be binding upon each subcontractor or vendor.”
e. “The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of Section Twenty-Nine F of Chapter Twenty-Nine, or any other applicable debarment provisions of any other Chapter of the General Laws or any rule or regulation promulgated thereunder; and is not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency.”
f. “Bidders must fully comply with Subpart C of 2 CFR Part 180 and 2 CFR Part 1532, entitled responsibilities of Participants Regarding transactions (Doing Business with Other Persons). Contractors, subcontractors, or suppliers that appear on the Excluded Parties List System at www.usgovxml.com/dataservice.aspx?ds=EPLS are not eligible for award of any contracts funded by the Massachusetts State Revolving Fund.”
f. “The Contractor agrees that it will fully comply with Subpart C of 2 CFR Part 180 and 2 CFR Part1532, entitled Responsibilities of Participants Regarding Transactions (Doing Business with Other Persons). The Contractor shall not award any subcontracts or purchase any materials from suppliers that appear on the Excluded Parties List System.”
f. “The Contractor shall include this requirement in each subcontract and require it to be included in all subcontracts regardless of tier. The Contractor shall maintain reasonable records to demonstrate compliance with these requirements.”
    i. Attachment C - Certification Statement for contracts bid under c.30, s39M

3. To the Contract, ADD the following:
    a. “The fair share goals for disadvantaged business enterprise (DBE) participation for this contract are a minimum of 4.2 percent Disadvantaged Minority Business Enterprise (D/MBE) participation and 4.5 percent Disadvantaged Women Business Enterprise (D/WBE) participation, applicable to the total dollar amount paid for the construction contract. The Contractor shall take all affirmative steps necessary to achieve this goal,

and shall provide reports documenting the portion of contract and subcontract dollars paid to DBEs, and its efforts to achieve the goals, with each invoice submitted or at such greater intervals as specified by the (municipality). The contractor shall require similar reports from its subcontractors."

b. "During the performance of this contract, the contractor agrees as follows:
    i. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex or national origin. Such action shall include, but not be limited to the following: 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. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.
    ii. The contractor will, in all solicitations or advancements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin
    iii. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
    iv. The contractor will comply with all provisions of Executive Order No. 11246 of Sept. 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
    v. The contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules,

regulations, and orders. Comp., p. 684, EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p. 230

vi. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of Sept. 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

vii. The contractor will include the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States." [Sec. 202 amended by EO 11375 of Oct. 13, 1967, 32 FR 14303, 3 CFR, 1966- 1970”

c. “The contractor shall not participate in or cooperate with an international boycott, as defined in Section 999 (b)(3) and (4) of the Internal Revenue code 1986, as amended, or engage in conduct declared to be unlawful by Section 2 of Chapter 151E of the Massachusetts General Laws.”

a. Attachment B - Build America, Buy America Act & The American Iron and Steel Act Requirements

a. Attachment E – Massachusetts General Laws

a. Attachment A – Davis Bacon Act Requirements

a. "The Contractor agrees that it will fully comply with Subpart C of 2 CFR Part 180 and 2 CFR Part 1532, entitled Responsibilities of Participants Regarding Transactions (Doing Business with Other Persons). The Contractor shall not award any subcontracts or purchase any materials from suppliers that appear on the Excluded Parties List System. The

Contractor shall include this requirement in each subcontract and require it to be included in all subcontracts regardless of tier. The Contractor shall maintain reasonable records to demonstrate compliance with these requirements."

4. To the General/Supplementary Conditions, ADD the following:
    a. Attachment D - The Construction Bid Specifications SPECIAL PROVISIONS FOR DISADVANTAGED BUSINESS ENTERPRISES & The Department of Environmental Protection Division of Municipal Services
    a. Attachment E – Massachusetts General Laws
    a. Attachment B - Build America, Buy America Act & The American Iron and Steel Act Requirements
    b. Attachment F – Project Signage Guidelines

Attachment A

Davis Bacon Act Requirements

APPENDIX G
Davis Bacon Act Requirements

All construction projects are subject to the Davis Bacon wage rate requirements and must include the appropriate sections of the following document in its entirety in the contract documents.

The vast majority of SRF projects will be bid by Governmental Entities (i.e., Cities, Towns, Authorities, Water Districts, Wastewater Districts). These projects must include the following language in construction contracts:

I.3. Contract and Subcontract Provisions
I.4. Contract Provisions for Contracts in Excess of $100,000 (if applicable)
I.5. Compliance Verification

This language may be found on pages DB-3-DB-11.

In certain cases, SRF projects may be bid by non-Governmental Entities (i.e., private water companies, private PWSs, etc.). These projects must include the following language in construction contracts:

II.3. Contract and Subcontract Provisions
II.4. Contract Provisions for Contracts in Excess of $100,000 (if applicable)
II.5. Compliance Verification

This language my be found on pages DB-11-DB-21

Preamble

With respect to the Clean Water and Safe Drinking Water State revolving Funds, EPA provides capitalization grants to each State which in turn provides subgrants or loans to eligible entities within the State. Typically, the subrecipients are municipal or other local governmental entities that manage the funds. For these types of recipients, the provisions set forth under Roman Numeral I, below, shall apply. Although EPA and the State remain responsible for ensuring subrecipients' compliance with the wage rate requirements set forth herein, those subrecipients shall have the primary responsibility to maintain payroll records as described in Section 3(ii)(A), below and for compliance as described in Section I-5.

Occasionally, the subrecipient may be a private for profit or not for profit entity. For these types of recipients, the provisions set forth in Roman Numeral II, below, shall apply. Although EPA and the State remain responsible for ensuring subrecipients' compliance with the wage rate requirements set forth herein, those subrecipients shall have the primary responsibility to maintain payroll records as described in Section II-3(ii)(A), below and for compliance as described in Section II-5.

I. Requirements For Subrecipients That Are Governmental Entities:

The following terms and conditions specify how recipients will assist EPA in meeting its Davis-Bacon (DB) responsibilities when DB applies to EPA awards of financial assistance with respect to State recipients and subrecipients that are governmental entities. If a subrecipient has

questions regarding when DB applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring, it may contact the State recipient. If a State recipient needs guidance, the recipient may contact Valerie Marshall at EPA Region 1 (617-918-1674) for guidance. The recipient or subrecipient may also obtain additional guidance from DOL's web site at https://www.dol.gov/whd/govcontracts/dbra.htm

1. Applicability of the Davis- Bacon (DB) prevailing wage requirements.

DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving fund and to any construction project carried out in whole or in part by assistance made available by a drinking water treatment revolving loan fund. If a subrecipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the subrecipient must discuss the situation with the recipient State before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Subrecipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

(i) While the solicitation remains open, the subrecipient shall monitor www.wdol.gov weekly to ensure that the wage determination contained in the solicitation remains current. The subrecipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the subrecipients may request a finding from the State recipient that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The State recipient will provide a report of its findings to the subrecipient.

(ii) If the subrecipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the State recipient, at the request of the subrecipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The subrecipient shall monitor www.wdol.gov on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(b) If the subrecipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the subrecipient shall insert the appropriate DOL wage determination from www.wdol.gov into the ordering instrument.

(c) Subrecipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

(d) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a subrecipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the subrecipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the subrecipient shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The subrecipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract provisions.

(a) The Recipient shall insure that the subrecipient(s) shall insert in full in any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF or a construction project under the DWSRF financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 or the FY 2012 Appropriations Act, the following clauses:

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work 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 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.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) 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 shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in §5.5(a)(4). 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 classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall 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. Subrecipients may obtain wage determinations from the U.S. Department of Labor's web site, www.dol.gov.

(ii)(A) The subrecipient(s), on behalf of EPA, shall 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 shall be classified in conformance with the wage determination. The State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

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

(2) The classification is utilized in the area by the construction industry; and

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

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the subrecipient (s) to the State award official. The State award official will transmit the request, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the subrecipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall 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.

(iii) 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 shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) 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, 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.

(2) Withholding. The subrecipient(s), shall upon written request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, 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.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, 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 section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) 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 section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall 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. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the subrecipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at https://www.dol.gov/whd/forms/wh347.pdf or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the subrecipient(s) for transmission to the State or EPA if requested by EPA , the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the subrecipient(s).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed 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 Regulations, 29 CFR part 3;

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

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, 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 may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees--

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed 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 Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall 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 the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall 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, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(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.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may by appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 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.

(9) Disputes concerning labor standards. 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 Subrecipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) 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 section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of $100,000.

(a) Contract Work Hours and Safety Standards Act. The subrecipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any 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 Item 3, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen 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.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. 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 watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of $10 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 (a)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient**,** upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or 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, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(1) through (4) of this section.

(b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Subrecipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Subrecipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

(a) The subrecipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. The subrecipient must use Standard Form 1445 (SF 1445) or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.

(b) The subrecipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, the subrecipient should conduct interviews with a representative group of covered employees within two weeks of each contractor or subcontractor's submission of its initial weekly payroll data and two weeks prior to the estimated completion date for the contract or subcontract. Subrecipients must conduct more frequent interviews if the initial interviews or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. Subrecipients shall immediately conduct necessary interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.

(c) The subrecipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The subrecipient shall establish and follow a spot check schedule based on its

assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable, the subrecipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Subrecipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. In addition, during the examinations the subrecipient shall verify evidence of fringe benefit plans and payments thereunder by contractors and subcontractors who claim credit for fringe benefit contributions.

(d) The subrecipient shall periodically review contractors and subcontractors use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

(e) Subrecipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at https://www.dol.gov/whd/whd_district_offices.pdf.

II. Requirements For Subrecipients That Are Not Governmental Entities

The following terms and conditions specify how recipients will assist EPA in meeting its DB responsibilities when DB applies to EPA awards of financial assistance with respect to subrecipients that are not governmental entities. If a subrecipient has questions regarding when DB applies, obtaining the correct DB wage determinations, DB provisions, or compliance monitoring, it may contact the State recipient for guidance. If a State recipient needs guidance, the recipient may contact Valerie Marshall at EPA Region 1 (617-918-1674) for guidance. The recipient or subrecipient may also obtain additional guidance from DOL's web site at https://www.dol.gov/whd/govcontracts/dbra.htm

Under these terms and conditions, the subrecipient must submit its proposed DB wage determinations to the State recipient for approval prior to including the wage determination in any solicitation, contract task orders, work assignments, or similar instruments to existing contractors.

1. Applicability of the Davis- Bacon (DB) prevailing wage requirements.

DB prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a State water pollution control revolving fund and to any construction project carried out in whole or in part by assistance made available by a drinking water treatment revolving loan fund. If a subrecipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the subrecipient must discuss the situation with the recipient State before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Subrecipients must obtain proposed wage determinations for specific localities at www.wdol.gov. After the Subrecipient obtains its proposed wage determination, it must submit the wage determination to (insert contact information for State recipient DB point of contact for wage determination) for approval prior to inserting the wage determination into a solicitation, contract or issuing task orders, work assignments or similar instruments to existing contractors (ordering instruments unless subsequently directed otherwise by the State recipient Award Official.

(b) Subrecipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

(i) While the solicitation remains open, the subrecipient shall monitor www.wdol.gov. on a weekly basis to ensure that the wage determination contained in the solicitation remains current. The subrecipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the subrecipients may request a finding from the State recipient that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The State recipient will provide a report of its findings to the subrecipient.

(ii) If the subrecipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the State recipient, at the request of the subrecipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The subrecipient shall monitor www.wdol.gov on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(c) If the subrecipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the subecipient shall insert the appropriate DOL wage determination from www.wdol.gov into the ordering instrument.

(d) Subrecipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

(e) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a subrecipient’s contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the subrecipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the subecipient shall either terminate the contract or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL’s wage determination retroactive to the beginning of the contract or ordering instrument by change order. The subrecipient’s contractor must be compensated for any increases in wages resulting from the use of DOL’s revised wage determination.

3. Contract and Subcontract provisions.

(a) The Recipient shall insure that the subrecipient(s) shall insert in full in any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a treatment work under the CWSRF or a construction project under the DWSRF financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1 or the FY 2011 Full-Year Continuing Appropriation, the following clauses:

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work, 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 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. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) 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 shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in §5.5(a)(4). 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 classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall 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. Subrecipients may obtain wage determinations from the U.S. Department of Labor’s web site, www.dol.gov.

(ii)(A) The subrecipient(s), on behalf of EPA, shall 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 shall be classified in conformance with the wage determination. The State award official shall approve a request for an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

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

(2) The classification is utilized in the area by the construction industry; and

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

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), documentation of the action taken and the request, including the local wage determination shall be sent by the subrecipient(s) to the State award official. The State award official will transmit the report, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210 and to the EPA DB Regional Coordinator concurrently. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification request within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the and the subrecipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the request, and the local wage determination, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The request shall be sent to the EPA Regional Coordinator concurrently. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt of the request and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall 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.

(iii) 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 shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) 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, 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.

(2) Withholding. The subrecipient(s) shall upon written request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, 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.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, 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 section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) 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 section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall 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. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the subrecipient, that is, the entity that receives the sub-grant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is

available for this purpose from the Wage and Hour Division Web site at https://www.dol.gov/whd/forms/wh347.pdf or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the subrecipient(s) for transmission to the State or EPA if requested by EPA , the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the subrecipient(s).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed 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 Regulations, 29 CFR part 3;

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

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, 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 may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees--

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed 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 Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall 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 the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall 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, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of

fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(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.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may by appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 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.

(9) Disputes concerning labor standards. 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 Subrecipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) 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 section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of $100,000.

(a) Contract Work Hours and Safety Standards Act. The subrecipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any 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 Item 3, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen 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.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. 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 watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of $10 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 (b)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient shall upon the request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or 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, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

(c) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Subrecipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Subrecipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

(a). The subrecipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. The subrecipient must use Standard Form 1445 (SF 1445) or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.

(b) The subrecipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, the subrecipient should conduct interviews with a representative group of covered employees within two weeks of each contractor or subcontractor's submission of its initial weekly payroll data and two weeks prior to the estimated completion date for the contract or subcontract. Subrecipients must conduct more frequent interviews if the initial interviews or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. Subrecipients shall immediately conduct necessary interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.

(c). The subrecipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The subrecipient shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable the subrecipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Subrecipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB . In addition, during the examinations the subrecipient shall verify evidence of fringe benefit plans and payments thereunder by contractors and subcontractors who claim credit for fringe benefit contributions.

(d). The subrecipient shall periodically review contractors and subcontractors use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

(e) Subrecipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at https://www.dol.gov/whd/whd_district_offices.pdf.

Attachment B

Build America, Buy America Act & The American Iron and Steel Act Requirements

APPENDIX I

BUILD AMERICA, BUY AMERICA ACT (BABA)

AMERICAN IRON AND STEEL (AIS)

ATTACHMENTS

1. **Information Checklist for Waiver Request**
2. **HQ Review Checklist for Waiver Request**
3. **Example Loan Agreement Language**
4. **Sample Construction Contract Language**
5. **Sample Certification 1**
   Sample Certification 2

Appendix I
Build America, Buy America (BABA) Requirements

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

November 3, 2022

MEMORANDUM

SUBJECT: Build America, Buy America Act Implementation Procedures for EPA Office of Water Federal Financial Assistance Programs

FROM: RadhikaFox
Assistant Administrator

TO: EPA Regional Water Division Directors, Regions I - X
EPA Office of Water Office Directors

OVERVIEW

The Biden-Harris Administration recognized the Nation's critical need for infrastructure investment, championing the Bipartisan Infrastructure Law (BIL), which Congress passed on November 15, 2021 (also known as the Infrastructure Investment and Jobs Act (IIJA)). The BIL will provide an unprecedented level of federal investment in water and wastewater infrastructure in communities across America.

In Title IX of the IIJA, Congress passed the Build America, Buy America (BABA) Act, which establishes strong and permanent domestic sourcing requirements across all Federal financial assistance programs for infrastructure. The U.S. Environmental Protection Agency (EPA) Office of Water is honored to help lead the implementation of these provisions and is proud of its near decade of successful implementation of the American Iron and Steel (AIS) provisions for its flagship water infrastructure programs.

This is a transformational opportunity to build a resilient supply chain and manufacturing base for critical products here in the United States that will spur investment in good-paying American manufacturing jobs and businesses. EPA's efforts to implement BABA will help cultivate the domestic manufacturing base for a wide range of products commonly used across the water sector but not currently made domestically. This will take time, and flexibility will be important to ensure that EPA can leverage critical water investments on time and on budget to protect public health and improve water quality.

IMPLEMENTATION

Recognizing the opportunity and need for BABA implementation guidance, the Made in America Office (MIAO) of the Office of Management and Budget (OMB) published Initial Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure (OMB Guidance M-22-11) on April 18, 2022. The guidance provides government-wide implementation direction for all Federal financial assistance programs for infrastructure. Despite the extensive guidance developed by MIAO, EPA's Office of Water infrastructure investment programs have received many questions that were not addressed in OMB Guidance M-22-11 or that require further clarification for EPA water infrastructure programs. The following questions and answers serve to supplement OMB Guidance M-22-11 with implementation procedures specific to EPA's relevant water infrastructure programs.

Section 70914(a) of the IIJA states when a Buy America preference under BABA applies: "Not later than… [May 14, 2022], the head of each Federal agency shall ensure that none of the funds made available for a Federal financial assistance program for infrastructure…may be obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States." Therefore, Federal financial infrastructure investments obligated on or after May 14, 2022, must comply with the BABA requirements. Absent a waiver, all iron, steel, manufactured products, and construction materials permanently incorporated into an infrastructure project subject to the BABA requirements must be produced in the United States. For many of EPA's Office of Water infrastructure investment programs, the vast majority of products permanently incorporated into construction, maintenance, or repair projects must comply with the BABA requirements, with the exception of select construction materials (cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives), which are specifically excepted by the BABA statute.

EPA's Office of Water implements many infrastructure investment programs subject to BABA requirements, including the following:

- Alaska Native Villages and Rural Communities Water Grant Program (ANV) (and any associated Interagency Agreements with the Indian Health Service)
- Clean Water and Drinking Water State Revolving Fund Programs (CW and DWSRF)
- Clean Water and Drinking Water Grants to U.S. Territories and the District of Columbia
- Clean Water Indian and Drinking Water Tribal Infrastructure Grant Set-aside (and any associated Interagency Agreements with the Indian Health Service)
- Coastal Wetlands Planning, Protection and Restoration Act, (CWPPRA) Programs
- Congressionally Directed Spending/Community Project Funding (also known as Community Grants)
- Geographic Programs[1]
- Gulf Hypoxia Program
- National Estuaries Program (CWA Section 320)

[1] Geographic Programs include: Great Lakes Restoration Initiative, Chesapeake Bay, San Francisco Bay, Puget Sound, Long Island Sound, Gulf of Mexico, South Florida, Lake Champlain, Lake Pontchartrain, Southern New England Estuaries, Columbia River Basin, Pacific Northwest

- 319 Nonpoint Source Management Program Implementation
- Reducing Lead in Drinking Water Grant Program (SDWA §1459B)
- Assistance for Small and Disadvantaged Communities Grants: Small, Underserved, and Disadvantaged Community Grant Program (SUDC), Emerging Contaminants in Small or Disadvantaged Communities (EC-SDC) and Drinking Water Infrastructure Resilience & Sustainability (SDWA §1459A)
- Sewer Overflow and Stormwater Reuse Municipal Grants (OSG)
- USMCA Implementing Legislation (Section 821 and Title IX, USMCA Supplemental Appropriations, 2020)
- U.S.-Mexico Border Water Infrastructure Program
- Voluntary School and Child Care Program Lead Testing and Remediation Grant Program (SDWA 1464(d))
- Water Infrastructure Finance and Innovation Act (WIFIA)

The questions and answers in this document apply to the implementation of BABA requirements for the Office of Water infrastructure programs listed above unless superseded by regulation, statute, or other applicable guidance. For many of the programs listed above which did not have domestic preference requirements prior to BABA, additional implementation details are pending or may be developed after the issuance of these procedures. In addition, EPA notes that more direction will be helpful to inform the determination and definition of domestic content in manufactured goods. Supplemental guidance on these and other issues, from either OMB or EPA, may be forthcoming. These implementation procedures may also apply to additional, unlisted EPA programs which may be required to apply BABA subsequent to publication of this memorandum (e.g., future funding programs which have been authorized, but not yet appropriated).

For more information on the BABA requirements, visit the EPA Office of Water's dedicated website – https://www.epa.gov/cwsrf/build-america-buy-america-baba – or contact your funding authority (such as your grants officer, portfolio manager, or state contact). For information on approved waivers, visit https://www.epa.gov/cwsrf/build-america-buy-america-baba-approved-waivers. You may also email questions to BABA-OW@epa.gov.

This Implementation Procedures document is organized to provide responses to questions in the following topic areas:

- Section 1: General 4
- Section 2: Product Coverage 5
- Section 3: Co-funding 9
- Section 4: Waivers 10
- Section 5: Documenting Compliance 12
- Section 6: Programs with American Iron and Steel Requirements 16
- Section 7: Program-Specific Issues 17
- Appendix 1: Example Build America, Buy America (BABA) Act Construction Contract Language 22
- Appendix 2: Example Build America, Buy America (BABA) Act Assistance Agreement Language 23

QUESTIONS AND ANSWERS

SECTION 1: GENERAL

- Q1.1: Will EPA provide documentation for BABA for bid solicitations and suggested contract language? Will EPA provide suggested language for Assistance Agreements?

    - A1.1: See Appendix 1, which includes suggested language for construction contracts which addresses the BABA requirements. In addition to the language suggested in Appendix 1, EPA also recommends that assistance recipients prepare contract bid solicitation documents with a statement for the consulting engineers and construction firms as follows: "By signing payment application and recommending payment, Contractor certifies they have reviewed documentation for all products and materials submitted for payment, and the certifications are sufficient to demonstrate compliance with Build America, Buy America Act requirements." In most cases, the assistance recipient's representatives assume the responsibility for their clients to conduct due diligence on compliance with applicable domestic preference requirements.

      All Federal Financial infrastructure assistance agreements subject to BABA must have a clause requiring compliance with the requirements. See Appendix 2 for example assistance agreement language.

- Q1.2: Would federally-financed infrastructure projects outside of the United States need to comply with the BABA requirements?

    - A1.2: No. According to the OMB Guidance (M-22-11), a "project" is defined as "…any activity related to the construction, alteration, maintenance, or repair of infrastructure in the United States." Therefore, the BABA requirements are not implicated for infrastructure projects occurring outside of the United States, such as projects funded through the United States-Mexico-Canada Agreement with infrastructure activities occurring in Mexico or Canada (that is, outside the United States).
    -

- Q1.3: If most of the project is BABA compliant, and a small portion is not, can an assistance recipient self-fund (i.e., paying with non-federal dollars) the non-compliant products?

    - A1.3: Any project that is funded in whole or in part with federal assistance must comply with the BABA requirements, unless the requirements are otherwise waived. All iron, steel, manufactured products, and construction materials used in a project must meet the BABA requirements unless waived. Absent a waiver, there is no "small portion" or product that does not need to satisfy the BABA requirements unless the requirements are waived (or specifically excluded as is the case for cement and cementitious materials; aggregates such as stone, sand, or gravel; aggregate binding agents or additives; or non-permanent products). An assistance recipient may request a waiver or inquire as to whether a broad waiver, such as a *de minimis* waiver, might apply.

- Q1.4: How do international trade agreements affect the implementation of the BABA requirements?

    - A1.4: The BABA requirements apply in a manner consistent with United States obligations under international trade agreements. Typically, these obligations only apply to direct procurement by the entities that are signatories to these trade agreements. In general, assistance recipients are not signatories to such agreements, so these trade agreements have no impact on BABA implementation. In the few instances where such an agreement applies to a municipality, that municipality is responsible for determining its applicability and requirements and communicating with the funding authority (such as EPA and/or a state) on the actions taken to comply with BABA.

SECTION 2: PRODUCT COVERAGE

- Q2.1: For products made of iron and steel, what is the difference between predominantly and primarily iron and steel?

    - A2.1: EPA considers the terms "predominantly" and "primarily" to be interchangeable, such that a product is considered predominantly (or primarily) iron and steel if it contains greater than 50 percent iron and steel by material cost.

- Q2.2: What is the definition of construction materials (with examples)?

    - A2.2: From OMB Guidance M-22-11: "construction materials" include 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; aggregate binding agents or additives; or non-permanent products) 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), (including optic glass),
        - lumber, and
        - drywall.

      For example, a plate of glass would be a construction material under BABA, but a framed window that incorporates the glass into a frame would be a manufactured product. Another common construction material for water infrastructure projects would be polyvinyl chloride (PVC) pipe and fittings. However, if PVC components are incorporated into a more complex product such as instrumentation and control equipment or a water treatment unit, those items would be manufactured products.

- Q2.3: What are manufactured products (with examples)?

    - A2.3: From OMB Guidance M-22-11: "…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 the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of the total

cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation…"

The manufactured products category would cover the majority of potential water infrastructure products, including complex products made up of a variety of material types and components. For water infrastructure projects, common manufactured products would include, but not be limited to, pumps, motors, blowers, aerators, generators, instrumentation and control systems, gauges, meters, measurement equipment, treatment equipment, dewatering equipment, actuators, and many other mechanical and electrical items.

- Q2.4: Which category will valves fall under for BABA? Will it differ from the American Iron and Steel (AIS) requirements?
    - A2.4: For programs that are subject to BABA and AIS (SRF, WIFIA, and Community Project Funding), projects using valves should classify them as iron and steel products under BABA as long as their material cost is made up of more than 50 percent iron and/or steel. Valves with 50 percent or less iron and/or steel by material cost would be considered manufactured products under the BABA requirements.

      In accordance with OMB Guidance M-22-11, an article, material, or supply should be classified into only one of the three categories: iron and steel, manufactured products, or construction materials. Under the AIS requirements, all valves made primarily of iron and steel (that is, those with iron and/or steel material cost greater than 50 percent) must comply with the AIS requirements. For BABA, EPA interprets Section IV of OMB Guidance M-22-11 to mean that iron and steel products are those items that are primarily iron and steel, the same as for the AIS requirements.

- Q2.5: Does EPA have a list of products to be classified as "Iron and Steel" under BABA?
    - A2.5: Although this list is not comprehensive, the following products were classified as AIS products if made primarily (more than 50 percent) of iron and/or steel by materials cost (for programs subject to both AIS and BABA, this list would be equivalent for "iron and steel" items or products under either requirement):

Products likely made "primarily" of iron and steel to be classified as Iron and Steel under BABA		
Lined and Unlined Pipe	Lined and Unlined Fittings	Tanks
Flanges	Pipe Clamps and Restraints	Structural Steel
Valves	Hydrants	Pre-Cast, Iron/Steel Reinforced Concrete (of all types, regardless of iron/steel content percentage)
Manhole Covers and other Municipal Castings	Access Hatches	Ballast Screens
Iron or Steel Benches	Bollards	Cast Bases
Cast Iron Hinged Hatches	Cast Iron Riser Rings	Catch Basin Inlets
Cleanout/Monument Boxes	Construction Covers and Frames	Curb and Corner Guards

Products likely made "primarily" of iron and steel to be classified as Iron and Steel under BABA		
Curb Boxes	Curb Openings	Curb Stops
Detectable Warning Plates	Downspout Shoes	Drainage Grates
Drainage Grate Frames and Curb Inlets	Inlets	Junction Boxes
Lampposts	Manhole Rings and Frames	Manhole Risers
Meter Boxes	Service Boxes	Steel Hinged Hatches
Steel Riser Rings	Trash Receptacles	Tree Grates
Tree Guards	Trench Grates	Valve Boxes
Valve Box Covers and Risers	Access Ramps	Aeration Pipes and Fittings (separate from aeration/blowers)
Angles	Backflow Preventers/Double Check Valves	Baffle Curtains
Iron or Steel Bar	Bathroom Stalls	Beam Clamps
Cable Hanging Systems	Clarifier Tanks	Coiled Steel
Column Piping	Concrete Reinforcing Bar, Wire, and Fibers	Condensate Sediment Traps
Corrugated Pipe	Couplings	Decking
Digestor Covers	Dome Structures	Door Hardware
Doors	Ductwork	Expansion Joints
Expansion Tanks (diaphragm, surge, and hydropneumatics)	Fasteners	Fencing and Fence Tubing
Fire Escapes	Flanged Pipe	Flap Gates
Framing	Gate Valves	Generic Hanging Brackets
Grating	Ground Testing Boxes	Ground Test Wells
Guardrails	HVAC Registers, Diffusers, and Grilles	Joists
Knife Gates	Ladders	Lifting Hooks, J-bar, Connectors within, and Anchors for Concrete
Lockers	Man Baskets and Material Platforms	Manhole Steps
Mud Valves	Municipal Casting Junctions	Non-mechanical (aka stationary) Louvers and Dampers
Overhead Rolling Doors/ Uplifting Doors (manual open, no motor)	Pipe Connectors	Pipe Hangers
Pipe Pilings (any type of steel piling)	Pipe Spool (pipe, flanges, connectors, etc.)	Pipe Supports
Pitless Adaptors	Pre-fab Steel Buildings/Sheds (simple structure, unfurnished)	Pre-stressed Concrete Cylinder Pipe (PCCP)
Railings	Reduced Pressure Zone (RPZ) Valves	Roofing
Service Saddles	Sheet Piling	Sinks (not part of eyewash systems)
Solenoid Valves	Stairs	Static Mixers
Stationary Screens	Surface Drains	Tapping Sleeves
Telescoping Valves	Tipping Buckets	Trusses
Tubing	Valve Stem Extensions	Valve Stems (excluding handwheels and actuators)
Wall Panels	Wall Sleeves/Floor Sleeves	Welding Rods
Well Casing	Well Screens	Wire
Wire Cloth	Wire Rod	Wire Rope and Cables

Q2.6: Does EPA have a list of products that could be made "primarily" of iron and steel but would be classified as "manufactured products" under BABA?

A2.6: Although this list is not comprehensive, the following products would be considered "manufactured products" under the BABA requirements, even if the item might be composed primarily of iron and steel by materials cost (Note: These items are not subject to the AIS requirements.):

Products likely made "primarily" of iron and steel to be classified as Manufactured Products under BABA		
Actuator Superstructures/ Support Structures	Aeration Nozzles and Injectors	Aerators
Analytical Instrumentation	Analyzers (e.g., ozone, oxygen)	Automated Water Fill Stations
Blowers/Aeration Equipment	Boilers, Boiler Systems	Chemical Feed Systems (e.g., polymer, coagulant, treatment chemicals)
Chemical Injection Quills	Chemical Injectors	Clarifier Mechanisms/Arms
Compressors	Controls and Switches	Conveyors
Cranes	Desiccant Air Dryer Tanks	Dewatering Equipment
Dewatering Roll-offs	Disinfection Systems	Drives (e.g., variable frequency drives)
Electric/Pneumatic/Manual Accessories Used to Operate Valves (such as electric valve actuators)	Electrical Cabinetry and Housings (such as electrical boxes/enclosures)	Electrical Conduit
Electrical Junction Boxes	Electronic Door Locks	Elevator Systems (hydraulic, etc.,)
Emergency Life Systems (including eyewash stations, emergency safety showers, fire extinguishers, fire suppression systems including sprinklers /piping/valves, first aid, etc.)	Exhaust Fans	Fall Protection Anchor Points
Fiberglass Tank w/Appurtenances	Filters (and appurtenances, including underdrains, backwash systems)	Flocculators
Fluidized Bed Incinerators	Galvanized Anodes/Cathodic Protection	Gear Reducers
Generators	Geothermal Systems	Grinders
Heat Exchangers	HVAC (excluding ductwork)	HVAC Dampers (if appurtenances to aerators/blowers)
HVAC Louvers (mechanical)	Intake and Exhaust Grates (if appurtenances to aerators/blowers)	Instrumentation
Laboratory Equipment	Ladder Fall Prevention Systems	Ladder Safety Posts
Lighting Fixtures	Lightning and Grounding Rods	Mechanical or Actuated Louvers/Dampers
Membrane Bioreactor Systems	Membrane Filtration Systems	Metal Office Furniture (fixed)
Meters (including flow, wholesale, water, and service connection)	Motorized Doors (unit)	Motorized Mixers
Motorized Screens (such as traveling screens)	Motors	Pelton Wheels
Pipeline Flash Reactors (similar to injectors)	Plate Settlers	Precast Concrete without Iron/Steel Reinforcement

Products likely made "primarily" of iron and steel to be classified as Manufactured Products under BABA		
Furnished Pre-fab Buildings (such as furnished with pumps, mechanics inside)	Presses (including belt presses)	Pressure Gauges
Pump Cans/Barrels and Strainers	Pumps	Mechanical Rakes
Safety Climb Cable	Sampling Stations (unless also act as hydrant)	Scrubbers
Sensors	Sequencing Batch Reactors (SBR)	Steel Shelving (fixed)
Slide and Sluice Gates	Spray Header Units	Steel Cabinets (fixed interior/furniture)
Supervisory Control and Data Acquisition (SCADA) Systems	Tracer Wire	Valve Manual Gears, Actuators, Handles
Voltage Transformer	Water Electrostatic Precipitators (WESP)	Water Heaters
Weir Gates		

- Q2.7: Is asphalt paving a covered product under BABA?
    - A2.7: No. EPA interprets Section 70917(c) of the IIJA to exclude asphalt from BABA requirements. Asphalt paving is a type of concrete composed of an aggregate material mixed with a binder (bitumen). EPA considers asphalt concrete to be excluded by section 70917(c) due to its similarities with cement and cementitious materials.

SECTION 3: CO-FUNDING

- Q3.1: If projects are co-funded with funding mechanisms that don't require BABA, must the entire project comply with BABA?
    - A3.1: Yes. Any project that is funded in whole or in part with federal assistance must comply with the BABA requirements, unless the requirements are otherwise waived. A "project" consists of all construction necessary to complete the building or work regardless of the number of contracts or assistance agreements involved so long as all the contracts and assistance agreements awarded are closely related in purpose, time, and place. This precludes the intentional splitting of projects into separate and smaller contracts or assistance agreements to avoid BABA's applicability on some portions of a larger project, particularly where the activities are integrally and proximately related to the whole. However, there are many situations in which major construction activities are clearly undertaken in separate phases that are distinct in purpose, time, or place, in which case, separate contracts or assistance agreements would carry separate requirements.

- Q3.2: How will project requirements be determined for co-funded projects subject to potentially different general applicability/programmatic waiver conditions (such as different adjustment period waivers)?

    - A3.2: OMB Guidance M-22-11 addresses cases with project co-funding from separate programs. EPA would apply the guidance's "cognizant" program determination to projects that are co-funded with different general applicability/programmatic waivers. For instance, if a project were co-funded between WIFIA and SRF and the majority of the Federal funding for the project is from WIFIA, then WIFIA would be the "cognizant" program for application and determination of waivers. In that case, any conditions from an applicable WIFIA waiver would apply.

SECTION 4: WAIVERS

- Q4.1: Who may apply for a waiver and how do you apply?

    - A4.1: Assistance recipients and their authorized representatives may apply for a project-specific waiver. EPA does not accept waiver requests from suppliers, distributors, or manufacturers unless the assistance recipient endorses and submits the request on its own behalf to the funding authority. In the case where multiple programs are providing federal funds to the project, the assistance recipient should submit the waiver request to the cognizant program, the one providing the greatest amount of federal funds for the project. For information on applying for cost waivers, see questions 4.4 and 4.5. For information on the SRF program roles and responsibilities, see question 7.6.

      Project-specific waiver requests should generally include: (1) a brief summary of the project, (2) a description and explanation of the need for the waiver for the product(s) in question, (3) a brief summary of the due diligence conducted in search of domestic alternatives (which could include correspondence between assistance recipient and supplier/distributors), (4) the quantity and materials of the product(s) in question, (5) all engineering specifications and project design considerations relevant to the product(s) in question, (6) the approximate unit cost of items (both foreign and domestic) in addition to an estimated cost of the materials and overall project, (7) the date any products will be needed on site in order to avoid significant project schedule disruptions, and (8) any other pertinent information relevant to EPA's consideration of the waiver (e.g., if relevant for SRF projects: whether the project is designated as an equivalency project, the date the plans and specifications were submitted to the state, the date of construction initiation, expected date of project completion, any special considerations such as local zoning and building ordinances, seismic requirements, or noise or odor control requirements).

      In the case of indirect federal assistance, such as the SRF programs, the state authority reviews and conveys the waiver request to EPA. States should submit waiver requests to the appropriate program waiver request inbox. For SRF projects, please use CWSRFWaiver@epa.gov or DWSRFWaiver@epa.gov.

- Q4.2: Can an assistance recipient request a waiver based on a specification written for a specific brand or model of product (that is, a specification that names a branded item or model)?

    - A4.2: In most cases, performance-based specifications are expected and required for the majority of infrastructure projects funded by EPA's financial assistance programs. In rare cases where "branded" or product-specific sourcing may be included in project specifications, it is suggested that the specifications include the item in question (that is, not simply a catalog page, but also materials of construction, sizing, quantities, and applicable engineering performance design characteristics for the project, etc.) in addition to the standard phrase "or equal." For the purposes of product alternative market research, EPA will evaluate the BABA requirements based on performance-based engineering specifications for the product(s) in question. If the project's specifications do not include performance-based specifications, or at least an "or equal" designation, EPA will base its research on an "or equal" designation using best professional judgment to the extent practicable.

- Q4.3: If a manufactured product is not readily available domestically, will EPA provide short-term "limited availability" product waivers?

    - A4.3: EPA will address the unavailability of domestic products through the waiver process, including potential national short-term waivers for specific products, if appropriate. To the extent practicable and with the intent to maximize domestic market and supply chain development, EPA intends to address issues of broad product unavailability with targeted, time-limited, and conditional waivers, as prescribed in OMB Guidance M-22-11. EPA will follow its robust and thorough product research processes (those put into place for the AIS requirements for the SRF and WIFIA programs and expanded for the new BABA requirements) to identify and determine those products for which proposed national/general applicability waivers may be appropriate.

- Q4.4: What information is needed when applying for a cost waiver under BABA?

    - A4.4: As part of the cost waiver request, the assistance recipient must demonstrate that implementation of the BABA requirements will increase the overall project cost more than 25 percent. Depending on the circumstances of the overall project cost increases, documentation to justify the cost waiver can vary but may include itemized cost estimates or bid tabulations comparing project costs with and without BABA implementation. Assistance recipients should begin assessing the potential cost impacts of the BABA requirements during the design phase of a project.

- Q4.5: Can administrative costs associated with tracking and verification of certifications be considered when determining if the cost of a project increases by 25 percent or more?

    - A4.5: Yes. Section 70914(b)(3) of the IIJA states that a waiver may be provided if the overall cost of the project increases by more than 25 percent due to the "inclusion of iron, steel, manufactured products, or construction materials produced in the United States." EPA interprets this to mean that the "inclusion" of the BABA-covered products could encompass

reasonable administrative costs associated with complying with the BABA requirements, such as staff, contractor, and technological resources to collect and track BABA compliance documentation.

- Q4.6: How can assistance recipients and construction contractors address product delivery delays?
    - A4.6: Assistance recipients should reasonably plan for material procurement to account for known potential supply chain issues or extended lead times and shall notify the funding authority well in advance of the issues so that prompt attention can be given to explore options. Where extended lead times for compliant products are impacting project schedules and may significantly impact construction progress, timely communication with the funding agency is important. For products that are unavailable within a reasonable timeframe to meet the objectives and schedule of a project, EPA may consider a non-availability waiver with adequate justification. An assistance recipient would need to apply for the waiver and contact its funding authority (such as EPA and/or a state) to initiate the waiver process.

SECTION 5: DOCUMENTING COMPLIANCE

- Q5.1: Who will be responsible for BABA enforcement?
    - A5.1: Responsibility for BABA implementation applies at all levels, from manufacturers to suppliers and distributors, construction contractors, assistance recipients, and funding authorities.

      The manufacturers have responsibility to provide adequate and accurate documentation of the products manufactured. If suppliers and distributors are involved, they are responsible for passing along compliance documentation for products supplied to projects that are subject to the BABA requirements.

      The assistance recipient and their representatives are primarily responsible for ensuring the documentation collected for products used on the project is sufficient to document compliance with the BABA requirements.

      The funding authority is responsible for providing oversight and guidance as needed to ensure the proper implementation of the requirements. The Uniform Grants Guidance (UGG) (Title 2 of the Code of Federal Regulations (CFR) Part 200) applies to many Federal financial assistance agreements that will include BABA requirements. The general provisions of 2 CFR Part 200 determine the responsible party for the grant funding authority.

      For information on SRF program roles and responsibilities, see question 7.6.

      At all levels, where fraud, waste, abuse, or any violation of the law is suspected, the Office of Inspector General (OIG) should be contacted immediately. The OIG can be reached at 1-888-546-8740 or OIG_Hotline@epa.gov. More information can be found at this website: http://www.epa.gov/oig/hotline.htm.

- Q5.2: When will the BABA requirements be assessed for compliance? Do assistance recipients need to have waivers for potential non-domestic products before assistance agreements are in place, at the time products are procured or products are incorporated into the project (i.e., used)?

    - A5.2: Compliance is assessed where the domestic product is used (or installed) at the project site. Proper compliance documentation, whether it is a BABA certification letter or a waiver, should accompany a product prior to its "use", in accordance with Section 70914(a) of IIJA. This may occur prior to assistance agreements being in place but is not necessary. Additionally, communication of BABA requirements through appropriate Terms and Conditions in financial assistance agreements and in project solicitation and contract documents is key in ensuring all parties involved are informed of the requirements for the project before construction is underway.

- Q5.3: How can product compliance with the BABA requirements be demonstrated?

    - A5.3: Assistance recipients and their representatives should ensure that the products delivered to the construction site are accompanied by proper documentation that demonstrate compliance with the law and be made available to the funding authority upon request. The documentation may be received and maintained in hard copy, electronically, or could be embedded in construction management software. The use of a signed certification letter for the project is the most direct and effective form of compliance documentation for ensuring products used on site are BABA-compliant prior to their installation; however, other forms of documentation are also acceptable as long as collectively, the following can be demonstrated:

        (1) Documentation linked to the project. For example, this can be in the form of the project name, project location, contract number, or project number.
        (2) Documentation linked to the product used on the project. For example, description of product(s) (simple explanation sufficient to identify the product(s)), or an attached (or electronic link to) purchase order, invoice, or bill of lading.
        (3) Documentation includes statement attesting that the products supplied to the assistance recipient are compliant with BABA requirement. Reference to the Infrastructure Investment and Jobs Act ("IIJA") or the Bipartisan Infrastructure Law (BIL) are also acceptable. For iron and steel items under BABA, references to the American Iron and Steel (AIS) requirements are also acceptable and reciprocal with BABA for such items.
        (4) Documentation that manufacturing occurred in the United States, which could include, for example, the location(s) of manufacturing for each manufacturing step that is being certified. It is acceptable for manufactured products to note a single point of manufacturing, documenting that the final point of manufacturing is in the United States. Note that each BABA category may require different determinations for compliance.
        (5) Signature of company representative (on company letterhead and signature can be electronic). The signatory of the certifying statement affirms their knowledge of the manufacturing processes for the referenced product(s) and attests that the product meets the BABA requirements.

In addition to compliance documentation, assistance recipients or their representatives should also conduct a visual inspection of the product when it arrives to the project site, especially for iron and steel products which are often stamped with the country of origin. (Note: A country of origin stamp alone is not sufficient verification of compliance with BABA and assistance receipts should not rely on it to ensure compliance.)

EPA may develop alternative procedures for demonstrating compliance. Additional project- or program-specific instructions may be developed on a case-by-case basis in order to meet individual circumstances.

- Q5.4: Will EPA provide a form or template for tracking and documenting compliance?
    - A5.4: EPA does not require a specified format for tracking or documenting compliance. Assistance recipients are free to develop any system (from simple to complex software) for tracking items used on the project and the accompanying compliance documentation, e.g., certification letters, applicable waivers, if it helps with implementation and compliance. Elements that may help with keeping track of compliance may include: product description, quantity required/used, product category (i.e., iron and steel, manufactured product, or construction material), status of obtaining certification letter, product cost, and whether the item might qualify as *de minimis*, or qualify under another applicable waiver.
- Q5.5: If a manufacturer claims to comply with the Buy American Act, does it also comply with BABA?
    - A5.5: No. With the exception of the AIS requirements – which EPA interprets to be equivalent to the "iron and steel" requirements under BABA – EPA does not have an interpretation about the comparability of other domestic preference requirements relative to BABA. Any products that are to be certified as compliant with BABA should include a specific reference to the BABA requirements and appropriate attestation from a responsible manufacturing company official. See Question 5.3 for EPA's recommendations for BABA certification letters.
- Q5.6: How will assistance recipients manage certification letters for hundreds, possibly thousands of products?
    - A5.6: EPA recognizes that the new BABA requirements will cover most products used in typical water and wastewater infrastructure projects, and that the number of items which may require certification at large and/or complex projects may reach several hundred. EPA is concerned about the potential administrative burden that this would place on assistance recipients. EPA recommends that projects with a high number of potentially covered products meet with their funding authority about potential compliance strategies to minimize burden and streamline compliance activity. Assistance recipients should prepare contract bid solicitation documents with a statement for the consulting engineers and construction firms as follows: "By signing payment application and recommending payment, Contractor certifies they have reviewed documentation for all products and materials submitted for payment, and the documentation is sufficient to demonstrate compliance with Build America,

Buy America Act requirements." In most cases, the assistance recipient's representatives may assume the responsibility for their clients to conduct due diligence on compliance with applicable domestic preference requirements.

- Q5.7: Who is responsible for documenting the 55 percent content requirement for manufactured products under BABA? What if the final manufacturer cannot trace or verify domestic origin for all components?
    - A5.7: The manufacturer who signs a certification letter is responsible for documenting compliance with any of the three categories of products (iron and steel, manufactured products, or construction materials). For manufactured products, BABA requires that greater than 55 percent of the total cost of all components of the manufactured product be from domestic sources. EPA recommends that the certification letter for manufactured products document whether the item passes the content test in the final product along with a statement attesting to compliance with the BABA requirements for manufactured products.

- Q5.8: How do final product fabricators document compliance when the final step of manufacturing may be simply assembling components?
    - A5.8: It is acceptable, in many cases, especially for highly complex manufactured products that utilize many sub-components, for the final point of assembly to certify without using a "step certification" process. Multiple certifications (i.e., step certifications) or a singular certification can be used for a product, as long as the certifying official is willing to attest to the product's compliance with BABA requirements at all stages of manufacturing.

- Q5.9: Will Material Test Reports be acceptable in lieu of a BABA certification for iron and steel?
    - A5.9: Material Test Reports (MTRs, commonly referred to as "Mill Certifications" or "Mill Certs") provide the chemical composition of steel and iron from a mill or foundry. If an MTR accompanies the delivery of steel or iron to a project site with an invoice or bill of lading, EPA will consider it sufficient to demonstrate compliance (equivalent to a certification letter) as long as the MTR includes a manufacturer representative's signature in addition to the location (city and state) of the mill/foundry. It is common for MTRs to be the first letter in a "step certification" if the product is further fabricated or painted, etc., by another manufacturer.

- Q5.10: Can a manufacturer use a fillable certification letter for products?
    - A5.10: EPA recommends that certifications be signed by representatives of the manufacturing entity. EPA does not oppose manufacturers using forms to internally develop letters within their company, thereby providing signed, non-manipulable certification letters to suppliers, distributors, and/or assistance recipients. A fillable form that can be changed by someone outside of the manufacturer after signature does not demonstrate compliance and may create compliance concerns for the manufacturer or assistance recipient.

- Q5.11: Are product certifications from suppliers and distributors allowed?
    - A5.11: EPA recommends that representatives of product manufacturers certify compliance and discourages suppliers and distributors from creating certification letters. EPA does not rule out the possibility that a third-party certification process, such as a certification by a distributor, may be viable. However, EPA is currently not aware of a system or proposed system that meets the EPA's recommendations for documentation of product certification.

- Q5.12: How long should assistance recipients keep compliance documentation?
    - A5.12: Assistance recipients should apply recordkeeping requirements for the project according to the procedures dictated by the funding authority. For most EPA grant programs, this is prescribed in the UGG at 2 CFR 200.334-200.338; e.g., the SRF programs require a minimum of three years. Other funding programs may require longer documentation retention periods.

SECTION 6: PROGRAMS WITH AMERICAN IRON AND STEEL REQUIREMENTS

- Q6.1: Does BABA supersede the American Iron and Steel (AIS) Requirements?
    - A6.1: The BABA requirements for items considered "iron and steel" are equivalent to those for covered iron and steel products under the AIS requirements in the Clean Water Act and the Safe Drinking Water Act. These requirements apply to the CWSRF, DWSRF, WIFIA, and Water infrastructure Community Grants. BABA includes a "Savings Provision" (Section 70917(b)) that states that BABA does not affect existing domestic content procurement preferences for infrastructure projects funded by Federal financial assistance programs that meet the requirements of section 70914. EPA views the AIS requirements as meeting the "iron and steel" product requirements of BABA Section 70914, as they both include the key requirement that items made of iron and steel be wholly manufactured in the United States from the point of melting and/or pouring the iron or steel components through final manufacturing step. Because of the "Savings Provision" of Section 70917, the AIS requirements satisfy the "iron and steel" requirements of BABA. For the programs that have AIS requirements, EPA intends to implement BABA requirements the same way for iron and steel items as it has done for AIS products.

- Q6.2: For iron and steel products, does a manufacturer need to demonstrate compliance from initial melting through the finished product?
    - A6.2: For iron and steel products, the BABA requirements are the same as the existing AIS requirements, in that all of the iron and steel in a covered product (that is, the product is comprised of more than 50 percent iron and steel by material cost) must be melted and poured in the United States and all subsequent manufacturing processes (such as grinding, rolling, bending, reheating, and casting) must occur in the United States.

Q6.3: Will EPA apply the same manufacturing standards for BABA iron and steel products as for the American Iron and Steel (AIS) requirements?

- A6.3: Yes. For AIS, EPA did not require raw materials used in the production of steel or iron to be domestically sourced. For BABA, EPA interprets the requirements to be the same. Hence, like AIS, raw materials in the production of iron and steel subject to BABA requirements would not need to be domestically sourced. The key step for both AIS and BABA domestic iron and/or steel production is the melting/pouring (that is, the location of the furnace), which must be in the United States.

- Q6.4: Will the certification process be similar to the process established for the American Iron and Steel requirements?
  - A6.4: EPA expects the certification process for the BABA requirements to be very similar to that established for the AIS requirements. For iron and steel products, the process should remain the same for AIS and BABA. EPA recommends for manufactured products and for construction materials that certification letters include direct reference to the product/material content requirements under BABA, in addition to an affirmative statement verifying that the product meets the BABA requirements.

- Q6.5: Will duplicate certification letters be required for AIS and BABA for iron/steel products?
  - A6.5: No. Compliance with BABA requirements will be sufficient to demonstrate compliance with AIS requirements for iron and steel products. If a project is subject to BABA, the only demonstration of compliance necessary is with the BABA requirements, of which the iron and steel requirements are equivalent to those of the AIS statutory requirements: the iron or steel in a product made primarily or predominantly of iron and steel (comprising more than 50 percent iron and steel by material cost) must be melted and/or poured in the United States and all subsequent manufacturing processes must occur in the United States.

SECTION 7: PROGRAM-SPECIFIC ISSUES

- Q7.1.: How do the BABA requirements apply to Community Grants?
  - A7.1: The Community Project Funding/Congressionally Directed Spending grants for the construction of drinking water, wastewater, and stormwater infrastructure and for water quality protection are subject to the requirements specified in the explanatory statement accompanying the Consolidated Appropriations Act (Explanatory Statement for Division G of P.L. 117-13, the Consolidated Appropriations Act of 2022). The explanatory statement asserts: "Applicable Federal requirements that would apply to a Clean Water State Revolving Fund or Drinking Water State Revolving Fund project grant recipient shall apply to a grantee receiving a CPF grant under this section." Therefore, the federally funded Community Project Funding/Congressionally Directed Spending grants are subject to the same requirements that apply to CWSRF or DWSRF projects, including BABA and AIS requirements. See also A1.2.

- Q7.2: Should SRF projects covered by the BABA SRF Projects Design Planning Adjustment Period Waiver follow the same procedures for demonstrating compliance as outlined for American Iron and Steel requirements?

    - A7.2: Yes. The SRF Design Planning Adjustment Period waiver does not waive the iron and steel requirements under BABA. The SRF programs have existing domestic preference requirements for SRF projects under CWA Section 608 and SDWA Section 1452(a)(4) (AIS requirements) to use iron and steel products that are produced in the United States. Sections 70917(a) and (b) of BIL explain the application of BABA to existing domestic preference requirements. Specifically, the savings provision in Section 70917(b) states that existing domestic preference requirements that meet BABA requirements are not affected by BABA. The statutory AIS requirements were existing at the time BABA became law and satisfy the BABA iron and steel requirements. Therefore, the statutory AIS requirements that have previously applied to SRF-funded projects will continue to do so, and compliance with AIS requirements will satisfy the BABA iron and steel requirements. Demonstration of compliance for iron and steel products will follow the AIS implementation policies for projects subject to the waiver.

- Q7.3: For SRF programs, is BABA considered a federal cross-cutting authority? (i.e., do "equivalency" rules apply?)

    - A7.3: Yes, BABA is considered a federal cross-cutting requirement that applies to SRF assistance equivalent to the federal capitalization grant (i.e., "equivalency" projects). EPA's SRF regulations at 40 CFR 35.3145 and 35.3575 require states and recipients of SRF funds equivalent to the amount of the federal capitalization grant to comply with federal cross-cutting requirements. Section 70914 of the IIJA, which states when a Buy America preference applies, explains that "none of the funds made available for a Federal financial assistance program for infrastructure…may be obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States." Therefore, BABA only applies to projects funded in an amount equivalent to the federal capitalization grant and not to those projects receiving funds in excess of the capitalization grant (i.e., "non-equivalency" projects). (Note: The AIS requirements continue to apply for all SRF projects, including non-equivalency projects, and all WIFIA and Community Grant projects, because equivalency does not apply.)

- Q7.4: Do the BABA requirements apply to Drinking Water State Revolving Fund set-asides?

    - A7.4: Due to requirements related to the deposit of funds in the DWSRF program, almost all of the funds used to conduct set-aside activities are Federal dollars. Therefore, Federal cross-cutting requirements must be applied to all set-aside activities. However, in the case of most set-aside activities, the cross-cutting requirements will not be implicated because of the nature of the activities conducted under the set-asides. Because the BABA requirements only apply to infrastructure, and infrastructure typically is not an eligible set-aside expenditure (with one potential exception being loans for incentive-based source water protection

measures under the Local Assistance and Other State Programs Set-Aside), the BABA requirements will not apply to most set-aside activities.

- Q7.5: What if an SRF project is refinanced using Federal financial assistance on or after May 14, 2022?
    - A7.5: If an SRF project began construction, financed from another funding source, prior to May 14, 2022, but is refinanced through an assistance agreement executed on or after that date, BABA requirements will apply to all construction that occurs on or after May 14, 2022, through completion of construction, unless a waiver applies. There is no retroactive application of the BABA requirements where a refinancing occurs for an SRF project that has completed construction prior to May 14, 2022. (Note: If SRF funding is used for the refinancing, the AIS requirements may still apply depending on the timing of construction.)
- Q7.6: What are the roles and responsibilities for SRF programs for BABA implementation?
    - A7.6: Implementation of the BABA requirements for the State Revolving Fund programs will continue the roles and responsibilities from the successful AIS implementation process.

      As with AIS, it is both the assistance recipient's and the state's responsibility to ensure compliance with the BABA requirements. The state is the recipient of a federal capitalization grant and must comply with all grant conditions, including a condition requiring adherence to BABA requirements.

      Consequently, states are strongly advised to conduct site visits of projects during construction and review documentation demonstrating the assistance recipient's proof of compliance. In EPA's experience, most states conduct periodic site visits and arrange timely meetings with funded projects. Observed best practices typically include a meeting early in the process (sometimes before bid and usually prior to commencing construction) and at least one project site visit during the construction process. Assistance recipients must maintain documentation of compliance with the BABA requirements, as explained in question 5.3. The documents must be kept by the assistance recipient and should be reviewed by the state during project reviews.

      The state's role in the waiver process is to review any waiver requests submitted to the state to ensure that all necessary information has been provided by the assistance recipient prior to forwarding the request to EPA. If a state finds the request lacking, the state should work with the assistance recipient to help obtain complete information. Question 4.1 explains the information needed by EPA to expediently review a waiver request.

      In order to implement the BABA requirements, EPA has developed an approach for effective and efficient implementation of the waiver process to allow projects to proceed in a timely manner. The framework described below will allow states, on behalf of the assistance recipients, to apply for waivers of the BABA requirements directly to EPA Headquarters. Only waiver requests received and/or endorsed from states will be considered. Pursuant to BABA, EPA has the responsibility to make findings as to the issuance of waivers to the BABA requirements.

Step-by-step SRF Waiver Process

The waiver process begins with the assistance recipient. To fulfill the BABA requirements, the assistance recipient must in good faith design the project (where applicable) and solicit bids for construction with American-made iron and steel, manufactured goods, and construction materials. It is essential that the assistance recipient include the BABA terms in any request for proposals or solicitations for bids, and in all contracts (see Appendix 2 for sample construction contract language). The assistance recipient may receive a waiver at any point before, during, or after the bid process, if one or more of three statutory conditions is demonstrated to EPA and approved.

To apply for a project-specific waiver, the assistance recipient should email the request in the form of a Word document (.doc) or editable PDF (.pdf) to the funding program. It is strongly recommended that each state identify a person or persons for BABA communications. The state designee(s) will review the application for the waiver and determine whether the necessary information has been included (Note: More information may be provided in the future regarding what information is required to be included in waiver requests). Once the waiver application is complete, the designee will forward the application to CWSRFWaiver@epa.gov or DWSRFWaiver@epa.gov.

Evaluation by EPA

After receiving an application for waiver of the BABA requirements and ensuring sufficient information was provided, EPA will publish the request on its website for 15 days and receive public comment. EPA will then determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver.

In the event that EPA finds that adequate documentation and justification has been submitted, the Administrator may grant a waiver to the assistance recipient. EPA will notify the state designee whether a waiver request has been approved or not approved as soon as such a decision has been made. Granting such a waiver is a four-step process:

1. Research – After receiving an application for a waiver, EPA will perform market research to determine whether the iron, steel, manufactured goods, or construction materials are available domestically.

2. Posting – After research, if no domestic product has been identified, EPA is required to publish the application and all material submitted with the application on EPA's website for 15 days. During that period, the public will have the opportunity to review the request and provide informal comment to EPA. The website can be found at: https://www.epa.gov/cwsrf/build-america-buy-america-baba-waivers-open-public-comment.

3. Evaluation – After receiving an application for waiver of the BABA requirements, EPA will determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver to determine whether or not to grant the waiver.

3. Signature of waiver approval by the Administrator or another agency official with delegated authority – As soon as the waiver is signed and dated, EPA will notify the State SRF program and post the signed waiver on the Agency's website. The assistance recipient should keep a copy of the signed waiver in its project files.

(Note: Additional steps may be required in the future regarding the waiver process depending on additional guidance from OMB)

APPENDIX 1

Example Build America, Buy America (BABA) Act Construction Contract Language

ALL CONSTRUCTION CONTRACTS MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE BABA REQUIREMENTS. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN A PROJECT'S CONSTRUCTION CONTRACT. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE OR LOCAL LAW:

The Contractor acknowledges to and for the benefit of the _____ ("Owner") and the _____ (the "Funding Authority") that it understands the goods and services under this Agreement are being funded with federal monies and have statutory requirements commonly known as "Build America, Buy America;" that requires all of the iron and steel, manufactured products, and construction materials used in the project to be produced in the United States ("Build America, Buy America Requirements") including iron and steel, manufactured products, and construction materials provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Owner and Funding Authority (a) the Contractor has reviewed and understands the Build America, Buy America Requirements, (b) all of the iron and steel, manufactured products, and construction materials used in the project will be and/or have been produced in the United States in a manner that complies with the Build America, Buy America Requirements, unless a waiver of the requirements is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the Build America, Buy America Requirements, as may be requested by the Owner or the Funding Authority. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Owner or Funding Authority to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Owner or Funding Authority resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the Funding Authority or any damages owed to the Funding Authority by the Owner). If the Contractor has no direct contractual privity with the Funding Authority, as a lender or awardee to the Owner for the funding of its project, the Owner and the Contractor agree that the Funding Authority is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the Funding Authority.

APPENDIX 2

Example Build America, Buy America (BABA) Act Assistance Agreement Language

ALL FEDERAL FINANCIAL INFRASTRUCTURE ASSISTANCE AGREEMENTS MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE BABA REQUIREMENTS. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN AN ASSISTANCE AGREEMENT (E.G., SRF LOAN AGREEMENT). EPA MAKES NO CLAIMS REGARDING THE LEGAL SUFFICIENCY OF THIS CLAUSE WITH RESPECT TO STATE LAW:

Comply with all federal requirements applicable to the assistance received (including those imposed by the Infrastructure Investment and Jobs Act ("IIJA"), Public Law No. 117-58) which the Participant understands includes, but is not limited to, the following requirements: that all of the iron and steel, manufactured products, and construction materials used in the Project are to be produced in the United States ("Build America, Buy America Requirements") unless (i) the Participant has requested and obtained a waiver from the cognizant Agency[1] pertaining to the Project or the Project is otherwise covered by a general applicability waiver; or (ii) all of the contributing Agencies have otherwise advised the Participant in writing that the Build America, Buy America Requirements are not applicable to the Project.

Comply with all record keeping and reporting requirements under all applicable legal authorities, including any reports required by the funding authority (such as EPA and/or a state), such as performance indicators of program deliverables, information on costs and project progress. The Participant understands that (i) each contract and subcontract related to the Project is subject to audit by appropriate federal and state entities and (ii) failure to comply with the applicable legal requirements and this Agreement may result in a default hereunder that results in a repayment of the assistance agreement in advance of the maturity of the Bonds, termination and/or repayment of grants, cooperative agreements, direct assistance or other types of financial assistance, and/or other remedial actions.

[1] From OMB Guidance M-22-11: To avoid a need for duplicative waiver requests from entities that receive funding for one infrastructure project through multiple Federal agencies, the Federal agency contributing the greatest amount of Federal funds for the project should be considered the "Cognizant Agency for Made in America" and should take responsibility for coordinating with the other Federal awarding agencies. Such coordination will provide uniform waiver criteria and adjudication processes, minimize duplicative efforts among Federal agencies, and reduce burdens on recipients. The Cognizant Agency for Made in America shall be responsible for consulting with the other Federal awarding agencies, publicizing the proposed joint waiver, and submitting the proposed joint waiver for review to MIAO.

APPENDIX I
AMERICAN IRON AND STEEL (AIS) REQUIREMENTS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 20 2014

OFFICE OF WATER

MEMORANDUM

SUBJECT: Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014

FROM: For Andrew D. Sawyers, Director
Office of Wastewater Management (4201M)

Peter C. Grevatt, Director
Office of Ground Water and Drinking Water (4601M)

TO: Water Management Division Directors
Regions I - X

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel (AIS)" requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Federal Fiscal Year 2014.

Section 436 also sets forth certain circumstances under which EPA may waive the AIS requirement. Furthermore, the Act specifically exempts projects where engineering plans and specifications were approved by a State agency prior to January 17, 2014.

The approach described below explains how EPA will implement the AIS requirement. The first section is in the form of questions and answers that address the types of projects that must comply with the AIS requirement, the types of products covered by the AIS requirement, and compliance. The second section is a step-by-step process for requesting waivers and the circumstances under which waivers may be granted.

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Implementation

The Act states:

Sec. 436. (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term ''iron and steel products'' means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the ''Administrator'') finds that—

(1) applying subsection (a) would be inconsistent with the public interest;

(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

(e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out

the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.

(f) This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency's capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of the enactment of this Act.

The following questions and answers provide guidance for implementing and complying with the AIS requirements:

Project Coverage

1) What classes of projects are covered by the AIS requirement?

All treatment works projects funded by a CWSRF assistance agreement, and all public water system projects funded by a DWSRF assistance agreement, from the date of enactment through the end of Federal Fiscal Year 2014, are covered. The AIS requirements apply to the entirety of the project, no matter when construction begins or ends. Additionally, the AIS requirements apply to all parts of the project, no matter the source of funding.

2) Does the AIS requirement apply to nonpoint source projects or national estuary projects?

No. Congress did not include an AIS requirement for nonpoint source and national estuary projects unless the project can also be classified as a 'treatment works' as defined by section 212 of the Clean Water Act.

3) Are any projects for the construction, alteration, maintenance, or repair of a public water system or treatment works excluded from the AIS requirement?

Any project, whether a treatment works project or a public water system project, for which engineering plans and specifications were approved by the responsible state agency prior to January 17, 2014, is excluded from the AIS requirements.

4) What if the project does not have approved engineering plans and specifications but has signed an assistance agreement with a CWSRF or DWSRF program prior to January 17, 2014?

The AIS requirements do not apply to any project for which an assistance agreement was signed prior to January 17, 2014.

5) What if the project does not have approved engineering plans and specifications, but bids were advertised prior to January 17, 2014 and an assistance agreement was signed after January 17, 2014?

If the project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the approval date for purposes of the exemption in section 436(f).

6) What if the assistance agreement that was signed prior to January 17, 2014, only funded a part of the overall project, where the remainder of the project will be funded later with another SRF loan?

If the original assistance agreement funded any construction of the project, the date of the original assistance agreement counts for purposes of the exemption. If the original assistance agreement was only for planning and design, the date of that assistance agreement will count for purposes of the exemption only if there is a written commitment or expectation on the part of the assistance recipient to fund the remainder of the project with SRF funds.

7) What if the assistance agreement that was signed prior to January 17, 2014, funded the first phase of a multi-phase project, where the remaining phases will be funded by SRF assistance in the future?

In such a case, the phases of the project will be considered a single project if all construction necessary to complete the building or work, regardless of the number of contracts or assistance agreements involved, are closely related in purpose, time and place. However, there are many situations in which major construction activities are clearly undertaken in phases that are distinct in purpose, time, or place. In the case of distinct phases, projects with engineering plans and specifications approval or assistance agreements signed prior to January 17, 2014 would be excluded from AIS requirements while those approved/signed on January 17, 2014, or later would be covered by the AIS requirements.

8) What if a project has split funding from a non-SRF source?

Many States intend to fund projects with "split" funding, from the SRF program and from State or other programs. Based on the Act language in section 436, which requires that American iron and steel products be used in any project for the construction, alteration, maintenance, or repair of a public water system or treatment works receiving SRF funding between and including January 17, 2014 and September 30, 2014, any project that is funded in whole or in part with such funds must comply with the AIS requirement. A "project" consists of all construction necessary to complete the building or work regardless of the number of contracts or assistance agreements involved so long as all contracts and assistance agreements awarded are closely related in purpose, time and place. This precludes the intentional splitting of SRF projects into separate and smaller contracts or assistance agreements to avoid AIS coverage on some portion of a larger

project, particularly where the activities are integrally and proximately related to the whole. However, there are many situations in which major construction activities are clearly undertaken in separate phases that are distinct in purpose, time, or place, in which case, separate contracts or assistance agreement for SRF and State or other funding would carry separate requirements.

9) What about refinancing?

If a project began construction, financed from a non-SRF source, prior to January 17, 2014, but is refinanced through an SRF assistance agreement executed on or after January 17, 2014 and prior to October 1, 2014, AIS requirements will apply to all construction that occurs on or after January 17, 2014, through completion of construction, unless, as is likely, engineering plans and specifications were approved by a responsible state agency prior to January 17, 2014. There is no retroactive application of the AIS requirements where a refinancing occurs for a project that has completed construction prior to January 17, 2014.

10) Do the AIS requirements apply to any other EPA programs, besides the SRF program, such as the Tribal Set-aside grants or grants to the Territories and DC?

No, the AIS requirement only applies to funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12)

Covered Iron and Steel Products

11) What is an iron or steel product?

For purposes of the CWSRF and DWSRF projects that must comply with the AIS requirement, an iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the public water system or treatment works:

Lined or unlined pipes or fittings;
Manhole Covers;
Municipal Castings (defined in more detail below);
Hydrants;
Tanks;
Flanges;
Pipe clamps and restraints;
Valves;
Structural steel (defined in more detail below);
Reinforced precast concrete; and
Construction materials (defined in more detail below).

12) What does the term 'primarily iron or steel' mean?

'Primarily iron or steel' places constraints on the list of products above. For one of the listed products to be considered subject to the AIS requirements, it must be made of greater than 50% iron or steel, measured by cost. The cost should be based on the material costs.

13) Can you provide an example of how to perform a cost determination?

For example, the iron portion of a fire hydrant would likely be the bonnet, body and shoe, and the cost then would include the pouring and casting to create those components. The other material costs would include non-iron and steel internal workings of the fire hydrant (i.e., stem, coupling, valve, seals, etc). However, the assembly of the internal workings into the hydrant body would not be included in this cost calculation. If one of the listed products is not made primarily of iron or steel, United States (US) provenance is not required. An exception to this definition is reinforced precast concrete, which is addressed in a later question.

14) If a product is composed of more than 50% iron or steel, but is not listed in the above list of items, must the item be produced in the US? Alternatively, must the iron or steel in such a product be produced in the US?

The answer to both question is no. Only items on the above list must be produced in the US. Additionally, the iron or steel in a non-listed item can be sourced from outside the US.

15) What is the definition of steel?

Steel means an alloy that includes at least 50 percent iron, between .02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel covers carbon steel, alloy steel, stainless steel, tool steel and other specialty steels.

16) What does 'produced in the United States' mean?

Production in the United States of the iron or steel products used in the project requires that all manufacturing processes, including application of coatings, must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the

material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components do not have to be of domestic origin.

17) Are the raw materials used in the production of iron or steel required to come from US sources?

No. Raw materials, such as iron ore, limestone, scrap iron, and scrap steel, can come from non-US sources.

18) If an above listed item is primarily made of iron or steel, but is only at the construction site temporarily, must such an item be produced in the US?

No. Only the above listed products made primarily of iron or steel, permanently incorporated into the project must be produced in the US. For example trench boxes, scaffolding or equipment, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel.

19) What is the definition of 'municipal castings'?

Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are:

Access Hatches;
Ballast Screen;
Benches (Iron or Steel);
Bollards;
Cast Bases;
Cast Iron Hinged Hatches, Square and Rectangular;
Cast Iron Riser Rings;
Catch Basin Inlet;
Cleanout/Monument Boxes;
Construction Covers and Frames;
Curb and Corner Guards;
Curb Openings;
Detectable Warning Plates;
Downspout Shoes (Boot, Inlet);
Drainage Grates, Frames and Curb Inlets;
Inlets;
Junction Boxes;
Lampposts;
Manhole Covers, Rings and Frames, Risers;

Meter Boxes;
Service Boxes;
Steel Hinged Hatches, Square and Rectangular;
Steel Riser Rings;
Trash receptacles;
Tree Grates;
Tree Guards;
Trench Grates; and
Valve Boxes, Covers and Risers.

20) What is 'structural steel'?

Structural steel is rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees and zees. Other shapes include H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

21) What is a 'construction material' for purposes of the AIS requirement?

Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered "structural steel". This includes, but is not limited to, the following products: wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), welding rods, decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, and stationary screens.

22) What is not considered a 'construction material' for purposes of the AIS requirement?

Mechanical and electrical components, equipment and systems are not considered construction materials. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

The following examples (including their appurtenances necessary for their intended use and operation) are NOT considered construction materials: pumps, motors, gear reducers, drives (including variable frequency drives (VFDs)), electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators), mixers, gates, motorized screens (such as traveling screens), blowers/aeration equipment, compressors, meters, sensors, controls and switches, supervisory control and

data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters, heat exchangers, generators, cabinetry and housings (such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, analytical instrumentation, and dewatering equipment.

23) If the iron or steel is produced in the US, may other steps in the manufacturing process take place outside of the US, such as assembly?

No. Production in the US of the iron or steel used in a listed product requires that all manufacturing processes must take place in the United States, except metallurgical processes involving refinement of steel additives.

24) What processes must occur in the US to be compliant with the AIS requirement for reinforced precast concrete?

While reinforced precast concrete may not be at least 50% iron or steel, in this particular case, the reinforcing bar and wire must be produced in the US and meet the same standards as for any other iron or steel product. Additionally, the casting of the concrete product must take place in the US. The cement and other raw materials used in concrete production are not required to be of domestic origin.

If the reinforced concrete is cast at the construction site, the reinforcing bar and wire are considered to be a construction material and must be produced in the US.

Compliance

25) How should an assistance recipient document compliance with the AIS requirement?

In order to ensure compliance with the AIS requirement, specific AIS contract language must be included in each contract, starting with the assistance agreement, all the way down to the purchase agreements. Sample language for assistance agreements and contracts can be found in Appendix 3 and 4.

EPA recommends the use of a step certification process, similar to one used by the Federal Highway Administration. The step certification process is a method to ensure that producers adhere to the AIS requirement and assistance recipients can verify that products comply with the AIS requirement. The process also establishes accountability and better enables States to take enforcement actions against violators.

Step certification creates a paper trail which documents the location of the manufacturing process involved with the production of steel and iron materials. A step certification is a process under which each handler (supplier, fabricator, manufacturer,

processor, etc) of the iron and steel products certifies that their step in the process was domestically performed. Each time a step in the manufacturing process takes place, the manufacturer delivers its work along with a certification of its origin. A certification can be quite simple. Typically, it includes the name of the manufacturer, the location of the manufacturing facility where the product or process took place (not its headquarters), a description of the product or item being delivered, and a signature by a manufacturer's responsible party. Attached, as Appendix 5, are sample certifications. These certifications should be collected and maintained by assistance recipients.

Alternatively, the final manufacturer that delivers the iron or steel product to the worksite, vendor, or contractor, may provide a certification asserting that all manufacturing processes occurred in the US. While this type of certification may be acceptable, it may not provide the same degree of assurance. Additional documentation may be needed if the certification is lacking important information. Step certification is the best practice.

26) How should a State ensure assistance recipients are complying with the AIS requirement?

In order to ensure compliance with the AIS requirement, States SRF programs must include specific AIS contract language in the assistance agreement. Sample language for assistance agreements can be found in Appendix 3.

States should also, as a best practice, conduct site visits of projects during construction and review documentation demonstrating proof of compliance which the assistance recipient has gathered.

27) What happens if a State or EPA finds a non-compliant iron and/or steel product permanently incorporated in the project?

If a potentially non-compliant product is identified, the State should notify the assistance recipient of the apparent unauthorized use of the non-domestic component, including a proposed corrective action, and should be given the opportunity to reply. If unauthorized use is confirmed, the State can take one or more of the following actions: request a waiver where appropriate; require the removal of the non-domestic item; or withhold payment for all or part of the project. Only EPA can issue waivers to authorize the use of a non-domestic item. EPA may use remedies available to it under the Clean Water Act, the Safe Drinking Water Act, and 40 CFR part 31 grant regulations, in the event of a violation of a grant term and condition.

It is recommended that the State work collaboratively with EPA to determine the appropriate corrective action, especially in cases where the State is the one who identifies the item in noncompliance or there is a disagreement with the assistance recipient.

If fraud, waste, abuse, or any violation of the law is suspected, the Office of Inspector General (OIG) should be contacted immediately. The OIG can be reached at 1-

888-546-8740 or OIG_Hotline@epa.gov. More information can be found at this website: https://oig.hhs.gov/fraud/report-fraud/

28) How do international trade agreements affect the implementation of the AIS requirements?

The AIS provision applies in a manner consistent with United States obligations under international agreements. Typically, these obligations only apply to direct procurement by the entities that are signatories to such agreements. In general, SRF assistance recipients are not signatories to such agreements, so these agreements have no impact on this AIS provision. In the few instances where such an agreement applies to a municipality, that municipality is under the obligation to determine its applicability and requirements and document the actions taken to comply for the State.

Waiver Process

The statute permits EPA to issue waivers for a case or category of cases where EPA finds (1) that applying these requirements would be inconsistent with the public interest; (2) iron and steel products are not produced in the US in sufficient and reasonably available quantities and of a satisfactory quality; or (3) inclusion of iron and steel products produced in the US will increase the cost of the overall project by more than 25 percent.

In order to implement the AIS requirements, EPA has developed an approach to allow for effective and efficient implementation of the waiver process to allow projects to proceed in a timely manner. The framework described below will allow States, on behalf of the assistance recipients, to apply for waivers of the AIS requirement directly to EPA Headquarters. Only waiver requests received from states will be considered. Pursuant to the Act, EPA has the responsibility to make findings as to the issuance of waivers to the AIS requirements.

Definitions

The following terms are critical to the interpretation and implementation of the AIS requirements and apply to the process described in this memorandum:

Reasonably Available Quantity: The quantity of iron or steel products is available or will be available at the time needed and place needed, and in the proper form or specification as specified in the project plans and design.

Satisfactory Quality: The quality of iron or steel products, as specified in the project plans and designs.

Assistance Recipient: A borrower or grantee that receives funding from a State CWSRF or DWSRF program.

Step-By-Step Waiver Process

Application by Assistance Recipient

Each local entity that receives SRF water infrastructure financial assistance is required by section 436 of the Act to use American made iron and steel products in the construction of its project. However, the recipient may request a waiver. Until a waiver is granted by EPA, the AIS requirement stands, except as noted above with respect to municipalities covered by international agreements.

The waiver process begins with the SRF assistance recipient. In order to fulfill the AIS requirement, the assistance recipient must in good faith design the project (where applicable) and solicit bids for construction with American made iron and steel products. It is essential that the assistance recipient include the AIS terms in any request for proposals or solicitations for bids, and in all contracts (see Appendix 3 for sample construction contract language). The assistance recipient may receive a waiver at any point before, during, or after the bid process, if one or more of three conditions is met:

1. Applying the American Iron and Steel requirements of the Act would be inconsistent with the public interest;
2. Iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
3. Inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Proper and sufficient documentation must be provided by the assistance recipient. A checklist detailing the types of information required for a waiver to be processed is attached as Appendix 1.

Additionally, it is strongly encouraged that assistance recipients hold pre-bid conferences with potential bidders. A pre-bid conference can help to identify iron and steel products needed to complete the project as described in the plans and specifications that may not be available from domestic sources. It may also identify the need to seek a waiver prior to bid, and can help inform the recipient on compliance options.

In order to apply for a project waiver, the assistance recipient should email the request in the form of a Word document (.doc) to the State SRF program. It is strongly recommended that the State designate a single person for all AIS communications. The State SRF designee will review the application for the waiver and determine whether the necessary information has been included. Once the waiver application is complete, the State designee will forward the application to either of two email addresses. For CWSRF waiver requests, please send the application to: cwsrfwaiver@epa.gov. For DWSRF waiver requests, please send the application to: dwsrfwaiver@epa.gov.

Evaluation by EPA

After receiving an application for waiver of the AIS requirements, EPA Headquarters will publish the request on its website for 15 days and receive informal comment. EPA Headquarters will then use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.

In the event that EPA finds that adequate documentation and justification has been submitted, the Administrator may grant a waiver to the assistance recipient. EPA will notify the State designee that a waiver request has been approved or denied as soon as such a decision has been made. Granting such a waiver is a three-step process:

1. Posting – After receiving an application for a waiver, EPA is required to publish the application and all material submitted with the application on EPA's website for 15 days. During that period, the public will have the opportunity to review the request and provide informal comment to EPA. The website can be found at: http://water.epa.gov/grants_funding/aisrequirement.cfm

2. Evaluation – After receiving an application for waiver of the AIS requirements, EPA Headquarters will use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.

3. Signature of waiver approval by the Administrator or another agency official with delegated authority – As soon as the waiver is signed and dated, EPA will notify the State SRF program, and post the signed waiver on our website. The assistance recipient should keep a copy of the signed waiver in its project files.

Public Interest Waivers

EPA has the authority to issue public interest waivers. Evaluation of a public interest waiver request may be more complicated than that of other waiver requests so they may take more time than other waiver requests for a decision to be made. An example of a public interest waiver that might be issued could be for a community that has standardized on a particular type or manufacturer of a valve because of its performance to meet their specifications. Switching to an alternative valve may require staff to be trained on the new equipment and additional spare parts would need to be purchased and stocked, existing valves may need to be unnecessarily replaced, and portions of the system may need to be redesigned. Therefore, requiring the community to install an alternative valve would be inconsistent with public interest.

EPA also has the authority to issue a public interest waiver that covers categories of products that might apply to all projects.

EPA reserves the right to issue national waivers that may apply to particular classes of assistance recipients, particular classes of projects, or particular categories of iron or steel products. EPA may develop national or (US geographic) regional categorical waivers through the identification of similar circumstances in the detailed justifications presented to EPA in a waiver request or requests. EPA may issue a national waiver based on policy decisions regarding the public's interest or a determination that a particular item is not produced domestically in reasonably available quantities or of a sufficient quality. In such cases, EPA may determine it is necessary to issue a national waiver.

If you have any questions concerning the contents of this memorandum, you may contact us, or have your staff contact Jordan Dorfman, Attorney-Advisor, State Revolving Fund Branch, Municipal Support Division, at dorfman.jordan@epa.gov or (202) 564-0614 or Kiri Anderer, Environmental Engineer, Infrastructure Branch, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

Attachments

Attachment 1: Information Checklist for Waiver Request

The purpose of this checklist is to help ensure that all appropriate and necessary information is submitted to EPA. EPA recommends that States review this checklist carefully and provide all appropriate information to EPA. This checklist is for informational purposes only and does not need to be included as part of a waiver application.

Items	✓	Notes
General • Waiver request includes the following information: — Description of the foreign and domestic construction materials — Unit of measure — Quantity — Price — Time of delivery or availability — Location of the construction project — Name and address of the proposed supplier — A detailed justification for the use of foreign construction materials • Waiver request was submitted according to the instructions in the memorandum • Assistance recipient made a good faith effort to solicit bids for domestic iron and steel products, as demonstrated by language in requests for proposals, contracts, and communications with the prime contractor		
Cost Waiver Requests • Waiver request includes the following information: — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products — Relevant excerpts from the bid documents used by the contractors to complete the comparison — Supporting documentation indicating that the contractor made a reasonable survey of the market, such as a description of the process for identifying suppliers and a list of contacted suppliers		
Availability Waiver Requests • Waiver request includes the following supporting documentation necessary to demonstrate the availability, quantity, and/or quality of the materials for which the waiver is requested: — Supplier information or pricing information from a reasonable number of domestic suppliers indicating availability/delivery date for construction materials — Documentation of the assistance recipient's efforts to find available domestic sources, such as a description of the process for identifying suppliers and a list of contacted suppliers. — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of construction materials • Waiver request includes a statement from the prime contractor and/or supplier confirming the non-availability of the domestic construction materials for which the waiver is sought • Has the State received other waiver requests for the materials described in this waiver request, for comparable projects?		

Attachment 2: HQ Review Checklist for Waiver Request

Instructions: To be completed by EPA. Review all waiver requests using the questions in the checklist, and mark the appropriate box as Yes, No or N/A. Marks that fall inside the shaded boxes may be grounds for denying the waiver. If none of your review markings fall into a shaded box, the waiver is eligible for approval if it indicates that one or more of the following conditions applies to the domestic product for which the waiver is sought:

1. The iron and/or steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality.
2. The inclusion of iron and/or steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Review Items	Yes	No	N/A	Comments
Cost Waiver Requests • Does the waiver request include the following information? — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products				
— Relevant excerpts from the bid documents used by the contractors to complete the comparison				
— A sufficient number of bid documents or pricing information from domestic sources to constitute a reasonable survey of the market				
• Does the Total Domestic Project exceed the Total Foreign Project Cost by more than 25%?				
Availability Waiver Requests • Does the waiver request include supporting documentation sufficient to show the availability, quantity, and/or quality of the iron and/or steel product for which the waiver is requested? — Supplier information or other documentation indicating availability/delivery date for materials — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of materials				
• Does supporting documentation provide sufficient evidence that the contractors made a reasonable effort to locate domestic suppliers of materials, such as a description of the process for identifying suppliers and a list of contacted suppliers?				
• Based on the materials delivery/availability date indicated in the supporting documentation, will the materials be unavailable when they are needed according to the project schedule? (By item, list schedule date and domestic delivery quote date or other relevant information)				
• Is EPA aware of any other evidence indicating the non-availability of the materials for which the waiver is requested? Examples include: — Multiple waiver requests for the materials described in this waiver request, for comparable projects in the same State — Multiple waiver requests for the materials described in this waiver request, for comparable projects in other States — Correspondence with construction trade associations indicating the non-availability of the materials				
• Are the available domestic materials indicated in the bid documents of inadequate quality compared those required by the project plans, specifications, and/or permits?				

Attachment 3: Example Loan Agreement Language

ALL ASSISTANCE AGREEMENT MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN SRF ASSISTANCE AGREEMENTS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE LAW:

Comply with all federal requirements applicable to the Loan (including those imposed by the 2014 Appropriations Act and related SRF Policy Guidelines) which the Participant understands includes, among other, requirements that all of the iron and steel products used in the Project are to be produced in the United States ("American Iron and Steel Requirement") unless (i) the Participant has requested and obtained a waiver from the Agency pertaining to the Project or (ii) the Finance Authority has otherwise advised the Participant in writing that the American Iron and Steel Requirement is not applicable to the Project.

Comply with all record keeping and reporting requirements under the Clean Water Act/Safe Drinking Water Act, including any reports required by a Federal agency or the Finance Authority such as performance indicators of program deliverables, information on costs and project progress. The Participant understands that (i) each contract and subcontract related to the Project is subject to audit by appropriate federal and state entities and (ii) failure to comply with the Clean Water Act/Safe Drinking Water Act and this Agreement may be a default hereunder that results in a repayment of the Loan in advance of the maturity of the Bonds and/or other remedial actions.

Attachment 4: Sample Construction Contract Language

ALL CONTRACTS MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN ALL CONTRACTS IN PROJECTS THAT USE SRF FUNDS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE OR LOCAL LAW:

The Contractor acknowledges to and for the benefit of the City of _____("Purchaser") and the _____(the "State") that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as "American Iron and Steel;" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

Attachment 5: Sample Certification 1

The following information is provided as a sample letter of certification for BABA and AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: BABA and AIS Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

BIL extends this procurement requirement to all construction projects going forward with the inclusion of the Build America, Buy America Act (BABA). Starting on May 14, 2022, all steel, iron, manufactured products, 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, and drywall used in infrastructure projects for federal financial assistance programs must be produced in the United States.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

Attachment 5: Sample Certification 2

The following information is provided as a sample letter of certification for BABA and AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: BABA and AIS Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

BIL extends this procurement requirement to all construction projects going forward with the inclusion of the Build America, Buy America Act (BABA). Starting on May 14, 2022, all steel, iron, manufactured products, non-ferrous metals, plastic and polymer-based products (including polyvinyl chloride, composite building materials, and polymers used in fiber optic cables), glass (including optic glass), lumber, and drywall used in infrastructure projects for federal financial assistance programs must be produced in the United States.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

Attachment C

Certification Statement for contracts bid under c.30, s39M

APPENDIX A1

Certification Statements wording required in the BID PROPOSAL of contracts bid under the provisions of c.30, s39M (Non-Building/Public Works Contract).

Pursuant to M.G.L. Ch. 62C, s49A, I certify under the penalties of perjury that I, to my best knowledge and belief, have filed all state tax returns and paid all State Taxes Required under law.

C.30 s39 (c) The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work.

The undersigned bidder hereby certifies he/she will comply with the specific affirmative action steps contained in the Equal Employment Opportunity/Affirmative Action (EEO/AA) provisions of this Contract, including compliance with the Disadvantaged Business Enterprise provisions as required under these contract provisions. The contractor receiving the award of the contract shall incorporate the EEO/AA provisions of this contract into all subcontracts and purchase orders so that such provisions will be binding upon each subcontractor or vendor.

C.30 s39 (a) The undersigned certifies under penalties of perjury that this bid is in all respects bonafide, fair and made without collusion or fraud with any other person. As use in this paragraph the "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

Certification undersigned is not presently debarred from doing public construction work in the Commonwealth of Massachusetts under the provisions of Section Twenty-Nine F of Chapter Twenty-Nine, or any other applicable debarment provisions of any other Chapter of the General Laws or any rule or regulations promulgated thereunder; and is not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency.

(Date) (Name of General Bidder) (Federal Employer Identification No.)

By: _____

(Signature)

_____

(Title & Name of person signing bid)

_____

(Business Address)

_____

(City, State, Zip)

Attachment D

The Construction Bid Specifications SPECIAL PROVISIONS FOR DISADVANTAGED BUSINESS ENTERPRISES & The Department of Environmental Protection Division of Municipal Services

APPENDIX E
CONSTRUCTION BID SPECIFICATIONS
SPECIAL PROVISIONS FOR DISADVANTAGED BUSINESS ENTERPRISES
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF MUNICIPAL SERVICES

DISADVANTAGED BUSINESS ENTERPRISE PROGRAM BACKGROUND

In May 2008 a United States Environmental Protection Agency (EPA) rule became effective that changed the Minority Business Enterprise (MBE) and Women Business Enterprise (WBE) Program to a Disadvantaged Business Enterprise (DBE) Program.

For firms to qualify under the old MBE/WBE program they needed to be socially disadvantaged and had to be certified by the Supplier Diversity Office (SDO). Under the new DBE rule, the firms must be both **socially** and **economically** disadvantaged, **citizens of the United States**, and certified as a DBE. Women and certain minorities are presumed to be socially disadvantaged. The economic disadvantage is measured by the owner's initial and continuing personal net worth of less than $1,320,000.

Because the Clean Water Act requires the use of MBEs and WBEs, these firms will still be utilized in the State Revolving Fund (SRF) Loan Program, but they must also be certified as DBEs.

SDO will continue to be the certifying agency for the SRF program. SDO certifies firms under the federal Department of Transportation program, which is acceptable for use in the SRF program. An additional form has been added to the DBE package to verify that DBEs are owned or controlled by United States citizens.

BID SPECIFICATIONS

I. In this contract, the percentage of business activity to be performed by disadvantaged business enterprise(s) (DBE) shall not be less than the following percentages of the total contract price or the percentage submitted by the contractor in the Schedule of Participation, whichever is greater:

Disadvantaged MBE (D/MBE) 4.2% Disadvantaged WBE (D/WBE) 4.5%

II. DEFINITIONS

For the purpose of these provisions, the following terms are defined as follows:

A. Awarding Authority – Entity that awards a prime contract under a State Revolving Fund loan.

B. Bidder - Any individual, partnership, joint venture, corporation, or firm submitting a price, directly or through an authorized representative, for the purpose of performing construction or construction related activities under a Contract.

C. Certified DBE – A DBE certified by the United States Small Business Administration, under its 8(a) Business Development Program (13 CFR part 124, subpart A) or its Small Disadvantaged Business Program (13 CFR part 124, subpart B); The United States Department of Transportation (DOT), under its regulations for Participation by DBSs in DOT programs (49 CFR parts 23 and 26); or SDO in accordance with 40 CFR part 33; provided that the certification meets the U.S. citizenship requirement under 40 CFR §33.202 or §33.203.

D. Compliance Unit - A subdivision of MassDEP's Affirmative Action Office designated to ensure compliance under these provisions.

E. Contractor - Any business that contracts or subcontracts for construction, demolition, renovation, survey, or maintenance work in the various classifications customarily used in work and that is acting in this capacity under the subject contract.

F. Construction Related Services - Those services performed at the work site ancillary to, and/or in support of, the construction work, such as hauling, trucking, equipment operation, surveying or other technical services, etc. For the purposes hereof, supply and delivery of materials (e.g. pre-cast concrete elements) to the site by a supplier who has manufactured those goods, or substantially altered them before re-sales shall be considered as "construction related services

G. Construction Work - The activities at the work site, or labor and use of materials in the performance of constructing, reconstructing, erecting, demolishing, altering, installing, disassembling, excavating, etc, all or part of the work required by the Contract Documents.

H. Disadvantaged Business Enterprise (DBE) - An entity owned or controlled by a socially and economically disadvantaged individual as described by Public Law 102-389 (42 U.S.C. 4370d) or an entity owned and controlled by a socially and economically disadvantaged individual as described by Title X of the Clean Air Act Amendments of 1990 (42 U.S.C. 7601 note); a Small Business Enterprise (SBE); a Small Business in a Rural Area (SBRA); or a Labor Surplus Area Firm (LAF), a Historically Underutilized Business (HUB) Zone Small Business Concern, or a concern under a successor program.

I. Equipment Rental Firm - A firm that owns equipment and assumes actual and contractual responsibility for renting said equipment to perform a useful function of the work of the contract consistent with normal industry practice

J. Good Faith Efforts – The race and/or gender neutral measures described in 40 CFR 33, subpart C.

K. HUBZone - A historically underutilized business zone, which is an area located within one or more qualified census tracts, qualified metropolitan counties, or lands within the external boundaries of an Indian reservation.

L. HUBZone small business concern - A small business concern that appears on the List of Qualified HUBZone Small Business Concerns maintained by the Small Business Administration.

M. Joint Venture - An agreement between SDO certified DBE and a non-DBE or non-DBE controlled enterprise.

1. A pairing of companies will be considered a DBE joint venture if the SDO certified DBE which is part of the relationship has more than 51% of the profits that are derived from that project.

2. A joint venture between a certified DBE subcontractor and a non DBE subcontractor, in which the DBE for that proportion of the joint venture's contract equal to the DBE participation in the joint venture.

3. Whenever a general bid is filed by a joint venture with a certified DBE participant in the joint venture that does not exercise more than 51% control over management and profits, that joint venture shall be entitled to credit as a DBE for that portion of the joint venture's contract equal to the DBE participation in the joint venture. Minority As deemed by SDO.

N. Labor surplus area firm (LSAF) - A concern that together with its first-tier subcontractors will perform substantially in labor surplus areas (as identified by the Department of Labor in accordance with 20 CFR part 654). Performance is substantially in labor surplus areas if the costs incurred under the contract on account of manufacturing, production or performance of appropriate services in labor surplus areas exceed 50 percent of the contract price.

O. Letter of Intent – Certified document signed by the principal(s) of the DBE with respect to the work to be performed under contract.

P. Local Government Unit (LGU) – A city, town, or municipal district which applies for a loan under the Clean Water Trust Program.

Q. Material Supplier – A vendor certified by SDO as a DBE in sales to supply industry from an established place of business or source of supply, and that vendor.

1. Manufactures goods from raw materials, or substantially utilizes them in the work, or substantially alters them before resale, entitling the general contractor to DBE credit for 100% of the purchase order.

2. Provides and maintains a storage facility for materials utilized in the work, entitling the general contractor to DBE credit for 10% of the purchase order

R. Minority and Women Business Enterprise (M/WBE) – Any business concern certified by the SDO as a bona-fide M/WBE. A bona-fide M/WBE is a business whose minority group/women ownership interests are real, which have at least 51% ownership and control over management and operation.

S. Percent of Total Price – Is the percentage to be paid to the DBE, work they perform, as compared to the total bid price

T. Recipient - An agency, person or political subdivision which has been awarded or received financial assistance by the Trust or MassDEP.

U. Small business, small business concern or small business enterprise (SBE) - A concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding, and qualified as a small business under the criteria and size standards in 13 CFR part 121.

V. Small business in a rural area (SBRA) - A small business operating in an area identified as a rural county with a code 6-9 in the Rural-Urban continuum Classification Code developed by the United States Department of Agriculture in 1980.

W. SDO – The Supplier Diversity Office.

X. Subcontractor – A company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

Y. Total Contract Price – The total amount of compensation to be paid for all materials, work or services rendered in the performance of the contract

Z. Trust – The Massachusetts Clean Water Trust established by M.G.L. c.29.

III. REQUIREMENTS FOR CONTRACT AWARD

DBE packages must be submitted by the two lowest bidders on the project. Following bid opening, the LGU shall notify the two lowest bidders to submit DBE packages to the LGU or the LGUs consultant, as directed. By the close of business on the third business day after notification, the two lowest bidders, including a bidder who is a MBE, WBE or DBE, shall submit the following information:

A. A Schedule of Participation (Form EEO-DEP-190). The Schedule of Participation shall list those certified DBEs the bidder intends to use in fulfilling the contract obligations, the nature of the work to be performed by each certified DBE subcontractor and the total price they are to be paid.

1. A listing of bona-fide services such as a professional, technical, consultant or managerial services, assistance in the procurement of essential personnel, facilities, equipment, materials, or supplies required for performance of the contract, and reasonable fees or commissions charged.

2. A listing of haulers, truckers, or delivery services, not the contractors, including reasonable fees for delivery of said materials or supplies to be included on the project.

B. A Letter of Intent (Form EEO-DEP-191) for each DBE the bidder intends to use on the project. The Letter of Intent shall include, among other things, a reasonable description of the work the certified DBE is proposing to perform and the prices the certified DBE proposes to charge for the work. A Letter of Intent shall be jointly signed by the certified DBE and the General Contractor who proposes to use them in the performance of the Contract.

C. Each DBE must also sign and return the DBE Certification of United States Citizenship form to verify that the firm is owned or controlled by a United States citizen.

D. The SDO "DBE Certification" as prepared by each certified DBE.

E. A completed Request for Waiver form and backup documentation should the goals not be achieved (See IV below).

IV. REQUIREMENTS FOR MODIFICATION OR WAIVERS.

The bidder shall make every possible effort to meet the minimum requirements of certified DBE participation. If the percentage of DBE participation submitted by the bidder on its Schedule of Participation (EEO-DEP-190) does not meet the minimum requirements, the bid may be rejected by the Awarding Authority and found not to be eligible for award of the contract.

In the event that the bidder is unable to meet the minimum requirements of DBE participation, the bidder shall submit with his/her submittal required in Section III. Requirement of Contract Award a Request for Waiver form (EEO-DEP-490). The Awarding Authority shall review the waiver request to determine if the request should proceed. If approved by the Awarding Authority, the Awarding Authority shall submit the waiver request and supporting documentation, with a recommendation to MassDEP within five days of receipt of the Request for Waiver. MassDEP in conjunction with the project manager, Compliance Unit, will determine whether the waiver will be granted.

The waiver request shall include detailed information as specified below to establish that the bidder has made a good faith effort to comply with the minimum requirements of DBE participation specified in Part I. In addition, the bidder must show that such efforts were undertaken well in advance of the time set for opening of bids to allow adequate response. A waiver request shall include the following:

A. A detailed record of the effort made to contact and negotiate with the certified DBE, including, but not limited to:

   1. names, addresses and telephone numbers of all such companies contacted;

   2. copies of written notices(s) which were sent to certified DBE potential subcontractors, prior to bid opening;

   3. a detailed statement as to why each subcontractor contacted (i) was not willing to do the job or (ii) was not qualified to perform the work as solicited; and

   4. in the case(s) where a negotiated price could not be reached the bidder should detail what efforts were made to reach an agreement on a competitive price;

   5. copies of advertisements, dated not less than ten (10) days prior to bid opening, as appearing in general publications, trade-oriented publications, and applicable minority/ women-focused media detailing the opportunities for participation.

B. MassDEP may require the bidder to produce such additional information as it deems appropriate.

C. No later than fifteen (15) days after MassDEP receives all required information and documentation, it shall make a decision in writing, whether the waiver is granted and shall provide that determination to the bidder and Awarding Authority. If the waiver request is denied, the facts upon which a denial is based will be set forth in writing. If the waiver request is denied, the bid shall be rejected by the Awarding Authority, or the contract will be determined ineligible for SRF funding.

   If a Request for Waiver is denied by MassDEP and the bid is rejected by the Awarding Authority, the Awarding Authority may then move to the second bidder on the project. At the Awarding Authority's discretion, it may collect a DBE package from the third bidder on the project.

V. DISADVANTAGED BUSINESS ENTERPRISES PARTICIPATION

A. Reporting Requirements

1. The Contractor's utilization of certified DBEs will be documented based upon submittal of the LGU's monthly Payment Requisitions as reported on Form-2000. The Form-2000 form will show all certified DBEs performing work on the project regardless of any billing activity for that month. For auditing and accounting purposes, the Contractor periodically may be required to submit copies of canceled checks verifying that payments have been made to the certified DBE as listed on the schedule. The Contractor may also be required to submit current schedules on utilization of all DBEs to indicate when their services will commence and be billed for.

2. During the life of the Contract, the Contractor's fulfillment of the percentage requirements in Part I shall be determined with reference to the Contract price as follows:

   A. If the price in the Contract executed exceeds the base bid price (e.g., because an alternate was selected or because unit prices were used in awarding the Contract), the Contractor shall submit for approval by MassDEP a revised Schedule of Participation by certified DBEs satisfying the percentage requirements and such other information concerning additional DBE participation as may be requested by MassDEP.

   B. If the Contract price increases after execution due to change orders or other adjustments, MassDEP may require the Contractor to subcontract additional work or to purchase additional goods and services from certified DBEs up to the percentages stated in Part I.

VI. COMPLIANCE

A. If the Schedule or any of the Letters of Intent are materially incomplete or not submitted in a timely manner, the LGU may rescind its vote of award; treat the bid informal as to substance and reject the bid. If the bid is incomplete in any other respect than the Schedule the LGU with the approval of MassDEP may waive the informalities upon satisfactory completion of the required information by the Contractor and the certified DBE as applicable.

B. If the LGU finds that the percentage of certified DBE participation submitted by the contractor on its Schedule does not meet the percentage requirement in Part I, it shall rescind its vote of award and find such contractor not to be eligible for award of the contract.

C. The Contractor shall not perform with its own organization, or subcontract to any other primary or subcontractor any work designated for the named certified DBEs on the schedule submitted by the Contractor under Part III without the approval of MassDEP.

D. A Contractor's compliance with the percentage requirement in Part I shall continue to be determined by reference to the required percentage of the total contract price as stated in Section I even though the total of actual contract payments may be greater or less than the bid price.

E. If the Contractor for reasons beyond its control cannot comply with Part III in accordance with the Schedule submitted under Part III, Section B, the contractor must submit to MassDEP as soon as they are aware of the deficiency, the reason for its inability to comply. Proposed revisions to the Schedule stating how the contractor intends to meet its obligations under these conditions must be submitted within ten (10) working days of notification.

F. If the Contractor is becomes aware by any means that that DBE is no longer certified, the Contractor shall immediately notify MassDEP. The Contractor shall use good faith efforts to retain a substitute certified DBE.

G. If a certified DBE listed by the bidder in its Schedule of M/WBE contractors fails to obtain a performance or payment bond requested by the bidder, said failure shall not entitle the bidder to avoid the requirements of Part III (A). After a bidder has been awarded the contract, he shall not change the certified DBE listed in its Schedule at the time of the award or make any other such substitutions without the written approval of MassDEP.

VII. SANCTIONS

A. If the Contractor does not comply with the terms of these Special Provisions, the Awarding Authority may (1) suspend any payment for the work that should have been performed by a certified DBE pursuant to the schedule, or (2) require specific performance of the Contractor's obligation by requiring the Contractor to subcontract with a DBE for any contract or specialty item at the contract price established for that item in the proposal submitted by the Contractor.

B. To the extent that the Contractor has not complied with the terms of these Special Provisions, the Awarding Authority may retain in connection with Estimates and Payments an amount determined by multiplying the bid price of this contract by the percentage in Section I, less the amount paid to DBE's for work performed under the contract and any payments already suspended under VII A.

C. The Awarding Authority may suspend, terminate or cancel this contract, in whole or in part, or may call upon the Contractor's surety to perform all terms and conditions in the contract, unless the contractor is able to demonstrate his compliance with the terms

of these Special Provisions, and further deny to the Contractor, the right to participate in any future contracts awarded by the Awarding Authority for a period of up to three years.

D. In any proceeding involving the imposition of sanctions by the Awarding Authority, no sanctions shall be imposed if the Awarding Authority finds that the contractor has taken every possible measure to comply with these Special Provisions or that some other justifiable reason exists for waiving these Special Provisions in whole or in part.

E. The contract shall provide such information as is necessary in the judgment of the Awarding Authority to ascertain its compliance with the terms of these Special Provisions.

F. A contractor shall have the right to request suspension of any sanctions imposed under this section upon demonstrating that he is in compliance with these Special Provisions.

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF MUNICIPAL SERVICES

SCHEDULE OF PARTICIPATION FOR SRF CONSTRUCTION

Project Title: _____ **Project Location:** _____

Disadvantaged Minority Business Enterprise Participation in the SRF Loan Work

Name & Address of D/MBE	Nature of Participation	Dollar Value of Participation
1.		
2.		
3.		
	Total D/MBE Commitment: $	
Percentage D/MBE Participation = (Total D/MBE Commitment) / (Bid Price) =		**%**

Disadvantaged Women Business Enterprise Participation in the SRF Loan Work

Name & Address of D/WBE	Nature of Participation	Dollar Value of Participation
1.		
2.		
3.		
	Total D/WBE Commitment: $	
Percentage D/WBE Participation = (Total D/WBE Commitment) / (Bid Price) =		**%**

The Bidder agrees to furnish implementation reports as required by MassDEP to indicate the D/MBEs and D/WBE(s) which it has used or intends to use. Breach of this commitment constitutes a breach of the contract.

Name of Bidder: _____

Date: _____ By: _____
Signature

NOTE: Participation of a DBE may be counted in only their certified category; the same dollar participation cannot be used in computing the percentage of D/MBE participation and again of D/WBE participation.

LETTER OF INTENT FOR SRF CONSTRUCTION

This form is to be completed by the D/MBE and D/WBE and must be submitted by the Bidder no later than close of business on the third business day after notification by the LGU. A separate form must be completed for each D/MBE and D/WBE involved in the project.

Project Title: _____ Project Location: _____

TO: _____
(Name of Bidder)

FROM: _____
(Please Indicate Status ☐ D/MBE or ☐ D/WBE)

º I/we intend to perform work in connection with the above project as (check one):

☐ An individual
☐ A corporation
☐ Other (explain): _____

☐ A partnership
☐ A joint venture with: _____

º It is understood that if you are awarded the contract, you intend to enter into an agreement to perform the activity described below for the prices indicated.

DBE PARTICIPATION

Description of Activity	Date of Project Commencement	$ Amount	% Bid Price
		$	**%**

º The undersigned certify that they will enter into a formal agreement upon execution of the contract for the above referenced project.

BIDDER	**DBE**
(Authorized Original Signature) Date ADDRESS:	(Authorized Original Signature) Date ADDRESS:
TELEPHONE #:	TELEPHONE #:
FEIN:	FEIN:
EMAIL ADDRESS:	EMAIL ADDRESS:

ORIGINALS:

- **o Compliance Mgr. City/Town Project Location**
- **o DEP Program Manager for DEP's AAO Director**

*** Attach a copy of current (within 2 years) DBE Certification**

EEO-DEP-191C

DBE CERTIFICATION OF UNITED STATES CITIZENSHIP

For the SRF program, under the EPA Disadvantage Business Enterprise (DBE) Rule, a DBE must be owned or controlled by a socially and economically disadvantaged person that is also a **citizen of the United States** (*See* 40 CFR 33.202). "Ownership" is defined at 13 CFR 124.105 and "control" is defined at 13 CFR 124.106.

DBEs are certified for the SRF program through the Supplier Diversity Office using the federal Department of Transportation (DOT) DBE rules. EPA allows the use of DBEs certified under the DOT rules as long as they are also United States citizens. To ensure compliance with the EPA rule, MassDEP must verify United States citizenship through the completion of the following form for each DBE used on the project.

SRF Project Number _____

Contract Number _____

Contract Title _____

DBE Subcontractor _____

The undersigned, on behalf of the above named DBE subcontractor, hereby certifies that the DBE firm is either owned or controlled by a person or persons that are citizens of the United States.

_____
Printed Name and Title of DBE Signatory

_____
DBE Signature

_____
Date

DISADVANTAGED BUSINESS ENTERPRISE PROGRAM DBE SUBCONTRACTOR PARTICIPATION FORM

The United States Environmental Protection Agency (EPA) requires that this form be provided to all subcontractors on the project. At the option of the subcontractor, this form may be filled out and submitted directly to the EPA DBE Coordinator.

NAME OF SUBCONTRACTOR	PROJECT NAME
ADDRESS	CONTRACT NO.
TELEPHONE NO.	E-MAIL ADDRESS
PRIME CONTRACTOR NAME:	

Please use the space below to report any concerns regarding the above EPA-funded project (e.g., reason for termination by prime contractor, late payment, etc.).

_____

_____

_____

_____

_____

CONTRACT ITEM NO.	ITEM OF WORK OR DESCRIPTION OF SERVICES RECEIVED FROM THE PRIME CONTRACTOR	AMOUNT SUBCONTRACTOR WAS PAID BY PRIME CONTRACTOR

_____ _____

Subcontractor Signature Title/Date

Equivalent to EPA form 6100-2

REQUEST FOR WAIVER FOR SRF CONSTRUCTION

Upon exhausting all known sources and making every possible effort to meet the minimum requirements for DBE participation, the Bidder may seek relief either partially or entirely from these requirements by submitting a completed waiver package by the close of business on the third business day after notification by the LGU. Failure to comply with this process shall be cause to reject the bid thereby rendering the Bidder not eligible for award of the contract.

General Information

Project Title: _____ Project Location: _____

Bid Opening (time/date) _____

Bidder: _____

Mailing Address: _____

Contact Person: _____ Telephone No. _____

Minimum Requirements

The bidder must demonstrate that good faith efforts were undertaken to comply with the percentage goals as specified. The firm seeking relief must show that such efforts were taken appropriately in advance of the time set for opening bid proposals to allow adequate time for response(s) by submitting the following:

A. A detailed record of the effort made to contact and negotiate with disadvantaged minority and/or woman owned businesses, including:

1. names, addresses, telephone numbers and contact dates of all such companies contacted;

2. copies of written notice(s) which were sent to DBE potential subcontractors prior to bid opening;

3. a detailed statement as to why each subcontractor contacted (i) was not willing to do the job or (ii) was not qualified to perform the work as solicited; and

4. in the case(s) where a negotiated price could not be reached the bidder should detail what efforts were made to reach an agreement on a competitive price.

5. copies of advertisements, dated not less than ten (10) days prior to bid opening, as appearing in general publications, trade-oriented publications, and applicable minority/women-focused media detailing the opportunities for participation;

B. MassDEP may require the bidder to produce such additional information as it deems appropriate.

C. No later than fifteen (15) days after submission of all required information and documentation, MassDEP shall make a determination, in writing, whether the waiver request is granted and shall provide that determination to the bidder and Awarding Authority. If the waiver request is denied, the facts upon which a denial is based will be set forth in writing.

CERTIFICATION

The undersigned herewith certifies that the above information and appropriate attachments are true and accurate to the best of my knowledge and that I have been authorized to act on behalf of the bidder in this matter.

_____ _____

(authorized original signature) DATE

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF MUNICIPAL SERVICES

STATE REVOLVING FUND LOAN PROGRAM - SCHEDULE OF SUBCONTRACTOR PARTICIPATION

Local Governmental Unit _____

Project Name _____.

SRF Identification Number _____.

General Contractor _____.

Contract Value _____

The United States Environmental Protection Agency EPA reTuires that all SRF borrowers develop and maintain a list of all MBE :BE and non MBE :BE subcontractors on the project.

This form must be completed and returned to MassDEP within 90 days of award of the contract.

Subcontractor	Point of Contact	Mailing Address	Telephone Number	Email Address	MBE	WBE	DBE	Type of Work	Subcontractor Value

A00862 - 94

Proposal No. 608742-132267

Attachment E

Massachusetts General Law

Part I	ADMINISTRATION OF THE GOVERNMENT
Title III	LAWS RELATING TO STATE OFFICERS
Chapter 30	GENERAL PROVISIONS RELATIVE TO STATE DEPARTMENTS, COMMISSIONS, OFFICERS AND EMPLOYEES
Section 38A	PRICE ADJUSTMENT CLAUSE IN CONTRACTS FOR ROAD, BRIDGE, WATER AND SEWER PROJECTS AWARDED UNDER SEC. 39M

Section 38A. Contracts for road and bridge projects awarded as a result of a proposal or invitation for bids under section 39M shall include a price adjustment clause for each of the following materials: fuel, both diesel and gasoline; asphalt; concrete; and steel. Contracts for water and sewer projects awarded as a result of a proposal or invitation for bids under said section 39M shall include a price adjustment clause for fuel, both diesel and gasoline; liquid asphalt; and portland cement contained in cast-in-place concrete. A base price for each material shall be set by the awarding authority or agency and shall be included in the bid documents at the time the project is advertised. The awarding authority or agency shall also identify in the bid documents the price index to be used for each material. The price adjustment clause shall provide for a contract adjustment to be made on a monthly basis when the monthly cost change exceeds plus or minus 5 per cent.

Part I	ADMINISTRATION OF THE GOVERNMENT
Title III	LAWS RELATING TO STATE OFFICERS
Chapter 30	GENERAL PROVISIONS RELATIVE TO STATE DEPARTMENTS, COMMISSIONS, OFFICERS AND EMPLOYEES
Section 39F	CONSTRUCTION CONTRACTS; ASSIGNMENT AND SUBROGATION; SUBCONTRACTOR DEFINED; ENFORCEMENT OF CLAIM FOR DIRECT PAYMENT; DEPOSIT, REDUCTION OF DISPUTED AMOUNTS

Section 39F. (1) Every contract awarded pursuant to sections forty-four A to L, inclusive, of chapter one hundred and forty-nine shall contain the following subparagraphs (a) through (i) and every contract awarded pursuant to section thirty-nine M of chapter thirty shall contain the following subparagraphs (a) through (h) and in each case those subparagraphs shall be binding between the general contractor and each subcontractor.

(a) Forthwith after the general contractor receives payment on account of a periodic estimate, the general contractor shall pay to each subcontractor the amount paid for the labor performed and the materials furnished by that subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(b) Not later than the sixty-fifth day after each subcontractor substantially completes his work in accordance with the plans and specifications, the entire balance due under the subcontract less amounts retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the subcontractor; and the awarding authority shall pay that amount to the general contractor. The general contractor shall forthwith pay to the subcontractor the full amount received from the awarding authority less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(c) Each payment made by the awarding authority to the general contractor pursuant to subparagraphs (a) and (b) of this paragraph for the labor performed and the materials furnished by a subcontractor shall be made to the general contractor for the account of that subcontractor; and the awarding authority shall take reasonable steps to compel the general contractor to make each such payment to each such subcontractor. If the awarding authority has received a demand for direct payment from a subcontractor for any amount which has already been included in a payment to the general contractor or which is to be included in a payment to the general contractor for payment to the subcontractor as provided in subparagraphs (a) and (b), the awarding authority shall act upon the demand as provided in this section.

(d) If, within seventy days after the subcontractor has substantially completed the subcontract work, the subcontractor has not received from the general contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, the subcontractor may demand direct payment of that balance from the awarding authority. The demand shall be by a sworn statement delivered to or sent by certified mail to the awarding authority, and a copy shall be delivered to or sent by certified mail to the general contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth day after the subcontractor has substantially completed the subcontract work. Within ten days after the subcontractor has delivered or so mailed the demand to the awarding authority and delivered or so mailed a copy to the general contractor, the general contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the awarding authority and a copy shall be delivered to or sent by certified

mail to the subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor and of the amount due for each claim made by the general contractor against the subcontractor.

(e) Within fifteen days after receipt of the demand by the awarding authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the awarding authority shall make direct payment to the subcontractor of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount (i) retained by the awarding authority as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the general contractor in the sworn reply; provided, that the awarding authority shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph (d). The awarding authority shall make further direct payments to the subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.

(f) The awarding authority shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (e) in an interest-bearing joint account in the names of the general contractor and the subcontractor in a bank in Massachusetts selected by the awarding authority or agreed upon by the general contractor and the subcontractor and shall notify the general contractor and the subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the general contractor and the subcontractor or as determined by decree of a court of competent jurisdiction.

(g) All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (f) shall be made out of amounts payable to the general contractor at the time of receipt of a demand for direct payment from a subcontractor and out of amounts which later become payable to the general contractor and in the order of receipt of such demands from subcontractors. All direct payments shall discharge the obligation of the awarding authority to the general contractor to the extent of such payment.

(h) The awarding authority shall deduct from payments to a general contractor amounts which, together with the deposits in interest-bearing accounts pursuant to subparagraph (f), are sufficient to satisfy all unpaid balances of demands for direct payment received from subcontractors. All such amounts shall be earmarked for such direct payments, and the subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the general contractor.

(i) If the subcontractor does not receive payment as provided in subparagraph (a) or if the general contractor does not submit a periodic estimate for the value of the labor or materials performed or furnished by the subcontractor and the subcontractor does not receive payment for same when due less the deductions provided for in subparagraph (a), the subcontractor may demand direct payment by following the procedure in subparagraph (d) and the general contractor may file a sworn reply as provided in that same subparagraph. A demand made after the first day of the month following that for which the subcontractor performed or furnished the labor and materials for which the subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the general contractor. Thereafter the awarding authority shall proceed as provided in subparagraph (e), (f), (g) and (h).

(2) Any assignment by a subcontractor of the rights under this section to a surety company furnishing a bond under the provisions of section twenty-nine of chapter one hundred forty-nine shall be invalid. The assignment and subrogation rights of the surety to amounts included in a demand for direct payment which are in the possession of the awarding authority or which are on deposit pursuant to subparagraph (f) of paragraph (1) shall be subordinate to the rights of all subcontractors who are entitled to be paid under this section and who have not been paid in full.

(3) "Subcontractor" as used in this section (i) for contracts awarded as provided in sections forty-four A to forty-four H, inclusive, of chapter one hundred forty-nine shall mean a person who files a sub-bid and receives a subcontract as a result of that filed sub-bid or who is approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor, (ii) for contracts awarded as provided in paragraph (a) of section thirty-nine M of chapter thirty shall mean a person approved by the awarding authority in writing as

a person performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor, and (iii) for contracts with the commonwealth not awarded as provided in forty-four A to forty-four H, inclusive, of chapter one hundred forty-nine shall also mean a person contracting with the general contractor to supply materials used or employed in a public works project for a price in excess of five thousand dollars.

(4) A general contractor or a subcontractor shall enforce a claim to any portion of the amount of a demand for direct payment deposited as provided in subparagraph (f) of paragraph 1 by a petition in equity in the superior court against the other and the bank shall not be a necessary party. A subcontractor shall enforce a claim for direct payment or a right to require a deposit as provided in subparagraph (f) of paragraph 1 by a petition in equity in the superior court against the awarding authority and the general contractor shall not be a necessary party. Upon motion of any party the court shall advance for speedy trial any petition filed as provided in this paragraph. Sections fifty-nine and fifty-nine B of chapter two hundred thirty-one shall apply to such petitions. The court shall enter an interlocutory decree upon which execution shall issue for any part of a claim found due pursuant to sections fifty-nine and fifty-nine B and, upon motion of any party, shall advance for speedy trial the petition to collect the remainder of the claim. Any party aggrieved by such interlocutory decree shall have the right to appeal therefrom as from a final decree. The court shall not consolidate for trial the petition of any subcontractor with the petition of one or more subcontractors or the same general contract unless the court finds that a substantial portion of the evidence of the same events during the course of construction (other than the fact that the claims sought to be consolidated arise under the same general contract) is applicable to the petitions sought to be consolidated and that such consolidation will prevent unnecessary duplication of evidence. A decree in any such proceeding shall not include interest on the disputed amount deposited in excess of the interest earned for the period of any such deposit. No person except a subcontractor filing a demand for direct payment for which no funds due the general contractor are available for direct payment shall have a right to file a petition in court of equity against the awarding authority claiming a demand for direct payment is premature and such subcontractor must file the petition before the awarding authority has made a direct payment to the subcontractor and has made a deposit of the disputed portion as provided in part (iii) of subparagraph (e) and in subparagraph (f) of paragraph (1).

(5) In any petition to collect any claim for which a subcontractor has filed a demand for direct payment the court shall, upon motion of the general contractor, reduce by the amount of any deposit of a disputed amount by the awarding authority as provided in part (iii) of subparagraph (e) and in subparagraph (f) of paragraph (1) any amount held under a trustee writ or pursuant to a restraining order or injunction.

Part I	ADMINISTRATION OF THE GOVERNMENT
Title III	LAWS RELATING TO STATE OFFICERS
Chapter 30	GENERAL PROVISIONS RELATIVE TO STATE DEPARTMENTS, COMMISSIONS, OFFICERS AND EMPLOYEES
Section 39I	DEVIATIONS FROM PLANS AND SPECIFICATIONS

Section 39I. Every contractor having a contract for the construction, alteration, maintenance, repair or demolition of, or addition to, any public building or public works for the commonwealth, or of any political subdivision thereof, shall perform all the work required by such contract in conformity with the plans and specifications contained therein. No wilful and substantial deviation from said plans and specifications shall be made unless authorized in writing by the awarding authority or by the engineer or architect in charge of the work who is duly authorized by the awarding authority to approve such deviations. In order to avoid delays in the prosecution of the work required by such contract such deviation from the plans or specifications may be authorized by a written order of the awarding authority or such engineer or architect so authorized to approve such deviation. Within thirty days thereafter, such written order shall be confirmed by a certificate of the awarding authority stating: (1) If such deviation involves any substitution or elimination of materials, fixtures or equipment, the reasons why such materials, fixtures or equipment were included in the first instance and the reasons for substitution or elimination, and, if the deviation is of any other nature, the reasons for such deviation, giving justification therefor; (2) that the specified deviation does not materially injure the project as a whole; (3) that either the work substituted for the work specified is of the same cost and quality, or that an equitable adjustment has been agreed upon between the contracting agency and the contractor and the amount in dollars of said adjustment; and (4) that the deviation is in the best interest of the contracting authority.

Such certificate shall be signed under the penalties of perjury and shall be a permanent part of the file record of the work contracted for.

Whoever violates any provision of this section wilfully and with intent to defraud shall be punished by a fine of not more than five thousand dollars or by imprisonment for not more than six months, or both.

Part I	ADMINISTRATION OF THE GOVERNMENT
Title III	LAWS RELATING TO STATE OFFICERS
Chapter 30	GENERAL PROVISIONS RELATIVE TO STATE DEPARTMENTS, COMMISSIONS, OFFICERS AND EMPLOYEES
Section 39J	PUBLIC CONSTRUCTION CONTRACTS; EFFECT OF DECISIONS OF CONTRACTING BODY OR ADMINISTRATIVE BOARD

Section 39J. Notwithstanding any contrary provision of any contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building or public works by the commonwealth, or by any county, city, town, district, board, commission or other public body, when the amount of the contract is more than five thousand dollars in the case of the commonwealth and more than two thousand dollars in the case of any county, city, town, district, board, commission or other public body, a decision, by the contracting body or by any administrative board, official or agency, or by any architect or engineer, on a dispute, whether of fact or of law, arising under said contract shall not be final or conclusive if such decision is made in bad faith, fraudulently, capriciously, or arbitrarily is unsupported by substantial evidence, or is based upon error of law.

Part I	ADMINISTRATION OF THE GOVERNMENT
Title III	LAWS RELATING TO STATE OFFICERS
Chapter 30	GENERAL PROVISIONS RELATIVE TO STATE DEPARTMENTS, COMMISSIONS, OFFICERS AND EMPLOYEES
Section 39L	PUBLIC CONSTRUCTION WORK BY FOREIGN CORPORATIONS; RESTRICTIONS AND REPORTS

Section 39L. The commonwealth and every county, city, town, district, board, commission or other public body which, as the awarding authority, requests proposals, bids or sub-bids for any work in the construction, reconstruction, alteration, remodeling, repair or demolition of any public building or other public works (1) shall not enter into a contract for the work with, and shall not approve as a subcontractor furnishing labor and materials for a part of the work, a foreign corporation which has not filed with the awarding authority a certificate of the state secretary stating that the corporation has complied with requirements of section 15.03 of subdivision A of Part 15 of chapter 156D and the date of compliance, and further has filed all annual reports required by section 16.22 of subdivision B of Part 16 of said chapter 156D, and (2) shall report to the state secretary and to the department of corporations and taxation any foreign corporation performing work under such contract or subcontract, and any person, other than a corporation, performing work under such contract or subcontract, and residing or having a principal place of business outside the commonwealth.

Part I	ADMINISTRATION OF THE GOVERNMENT
Title III	LAWS RELATING TO STATE OFFICERS
Chapter 30	GENERAL PROVISIONS RELATIVE TO STATE DEPARTMENTS, COMMISSIONS, OFFICERS AND EMPLOYEES
Section 39M	CONTRACTS FOR CONSTRUCTION AND MATERIALS; MANNER OF AWARDING

Section 39M. (a) Every contract for the construction, reconstruction, alteration, remodeling or repair of any public work, or for the purchase of any material, as hereinafter defined, by the commonwealth, or political subdivision thereof, or by any county, city, town, district or housing authority that is and estimated by the awarding authority to cost less than $10,000 dollars shall be obtained through the exercise of sound business practices as defined in section 2 of chapter 30B. The awarding authority shall make and keep a record of each procurement that, at a minimum, shall include the name and address of the person from whom the services were procured. An awarding authority that utilizes a vendor on a statewide contract procured through the operational services division, or a blanket contract procured by the awarding authority pursuant to this section, shall be deemed to have obtained the contract through sound business practices.

Every contract for the construction, reconstruction, alteration, remodeling or repair of any public work, or for the purchase of any material, as hereinafter defined, by the commonwealth, or political subdivision thereof, or by any county, city, town, district or housing authority that is estimated by the awarding authority to cost not less than $10,000 but not more than $50,000 shall be awarded to the responsible bidder offering to perform the contract at the lowest price. The awarding authority shall make public notification of the contract and shall seek written responses from no fewer than 3 persons who customarily perform such work. For purposes of this subsection, the term "public notification" shall include, but need not be limited to, posting, at least 2 weeks before the time specified in the notification for the receipt of responses, the contract and scope-of-work statement: (1) on the website of the awarding authority, (2) on the COMMBUYS system administered by the operational services division, (3) in the central register published pursuant to section 20A of chapter 9 and (4) in a conspicuous place in or near the primary office of the awarding authority; provided, however, that if the awarding authority obtains a minimum of 2 written responses from a vendor list established through a blanket contract or a statewide contract procured through the operational services division, and the lowest of those written responses is deemed acceptable to the awarding authority, public notification is not required. The solicitation shall include a scope-of-work statement that defines the work to be performed and provides potential responders with sufficient information regarding the objectives and requirements of the awarding authority and the time period within which the work shall be completed. The awarding authority shall record the names and addresses of all persons from whom written responses were sought, the names of the persons submitting written responses and the date and amount of each written response.

An awarding authority may utilize a vendor list established through a statewide contract procured through the operational services division to identify 1 or more of the persons from whom it will seek written responses for purposes of this subsection. An awarding authority may also procure a blanket contract to establish a listing of vendors in certain defined categories of work that are under contract to provide services for multiple individual tasks of not more than $50,000 each, and from whom written responses will be sought. Any such blanket contract procured by the awarding authority shall be procured pursuant to this section or sections 44A to 44J, inclusive, of chapter 149 which are applicable to projects over $50,000.

Every contract for the construction, reconstruction, alteration, remodeling or repair of any public work, or for the purchase of any material, as hereinafter defined, by the commonwealth, or political subdivision thereof, or by any county, city, town, district or housing authority that is estimated by the awarding authority to cost more than $50,000, and every contract for the

construction, reconstruction, installation, demolition, maintenance or repair of any building by a public agency, as defined by subsection (1) of section 44A of chapter 149, estimated to cost more than $50,000 but not more than $150,000, shall be awarded to the lowest eligible responsible bidder on the basis of competitive bids publicly opened and read by the awarding authority forthwith upon expiration of the time for the filing thereof; provided, however, that such awarding authority may reject any and all bids, if it is in the public interest to do so. Every bid for such contract shall be accompanied by a bid deposit in the form of: (1) a bid bond, (2) cash, or (3) a certified check on, or a treasurer's or cashier's check issued by, a responsible bank or trust company, payable to the awarding authority. The amount of the bid deposit shall be 5 per cent of the value of the bid. Any person submitting a bid pursuant to this section shall, on such bid, certify as follows:

The undersigned certifies under penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this paragraph the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

(Name of person signing bid)

(Company)

This subsection shall not apply to the award of any contract subject to the provisions of sections 44A to 44J, inclusive, of chapter 149 and every such contract shall continue to be awarded as provided therein. In cases of extreme emergency: (1) caused by enemy attack, sabotage or other such hostile actions or (2) resulting from an imminent security threat explosion, fire, flood, earthquake, hurricane, tornado or other such catastrophe, an awarding authority may, without competitive bids and notwithstanding any general or special law, award contracts otherwise subject to this subsection to perform work and to purchase or rent materials and equipment, all as may be necessary for temporary repair and restoration to service of any and all public work in order to preserve the health and safety of persons or property; provided, that this exception shall not apply to any permanent reconstruction, alteration, remodeling or repair of any public work.

(b) Specifications for such contracts, and specifications for contracts awarded pursuant to the provisions of said sections forty-four A to forty-four L of said chapter one hundred and forty-nine, shall be written to provide for full competition for each item of material to be furnished under the contract; except, however, that said specifications may be otherwise written for sound reasons in the public interest stated in writing in the public records of the awarding authority or promptly given in writing by the awarding authority to anyone making a written request therefor, in either instance such writing to be prepared after reasonable investigation. Every such contract shall provide that an item equal to that named or described in the said specifications may be furnished; and an item shall be considered equal to the item so named or described if, in the opinion of the awarding authority: (1) it is at least equal in quality, durability, appearance, strength and design, (2) it will perform at least equally the function imposed by the general design for the public work being contracted for or the material being purchased, and (3) it conforms substantially, even with deviations, to the detailed requirements for the item in the said specifications. For each item of material the specifications shall provide for either a minimum of three named brands of material or a description of material which can be met by a minimum of three manufacturers or producers, and for the equal of any one of said name or described materials.

(c) The term "lowest responsible and eligible bidder" shall mean the bidder: (1) whose bid is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance of the work; (2) who shall certify, that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (3) who shall certify that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; (4) who, where the provisions of section 8B of chapter 29 apply, shall have been determined to be qualified thereunder; and (5) who obtains within 10 days of the notification of contract award the security by bond required under section 29 of chapter 149; provided that for the purposes of this section the term

"security by bond" shall mean the bond of a surety company qualified to do business under the laws of the commonwealth and satisfactory to the awarding authority; provided further, that if there is more than 1 surety company, the surety companies shall be jointly and severally liable.

(d) The provisions of this section shall not apply (1) to the extent that they prevent the approval of such specifications by any contributing federal agency, (2) to materials purchased under specifications of the state department of highways at prices established by the said department pursuant to advertisement and bidding in connection with work to be performed under the provisions of chapter eighty-one or chapter ninety, (3) to any transaction between the commonwealth and any of its political subdivisions or between the commonwealth and any public service corporation, and (4) to any contract of not more than $50,000 awarded by a governmental body, as defined by section two of chapter thirty B, in accordance with the provisions of section five of said chapter thirty B; and (5) to any contract solely for the purchase of material awarded by a governmental body, as defined by section 2 of chapter 30B, in accordance with section 5 of said chapter 30B, or procured through the operational services division pursuant to sections 22 and 52 of chapter 7.

(e) The word "material" as used in this section shall mean and include any article, assembly, system, or any component part thereof.

Part I	ADMINISTRATION OF THE GOVERNMENT
Title III	LAWS RELATING TO STATE OFFICERS
Chapter 30	GENERAL PROVISIONS RELATIVE TO STATE DEPARTMENTS, COMMISSIONS, OFFICERS AND EMPLOYEES
Section 39N	CONSTRUCTION CONTRACTS; EQUITABLE ADJUSTMENT IN CONTRACT PRICE FOR DIFFERING SUBSURFACE OR LATENT PHYSICAL CONDITIONS

Section 39N. Every contract subject to section forty-four A of chapter one hundred and forty-nine or subject to section thirty-nine M of chapter thirty shall contain the following paragraph in its entirety and an awarding authority may adopt reasonable rules or regulations in conformity with that paragraph concerning the filing, investigation and settlement of such claims:

If, during the progress of the work, the contractor or the awarding authority discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the contract documents either the contractor or the contracting authority may request an equitable adjustment in the contract price of the contract applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a contractor, or upon its own initiative, the contracting authority shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the contract documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and contract documents and are of such a nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the contracting authority shall make an equitable adjustment in the contract price and the contract shall be modified in writing accordingly.

Part I	ADMINISTRATION OF THE GOVERNMENT
Title III	LAWS RELATING TO STATE OFFICERS
Chapter 30	GENERAL PROVISIONS RELATIVE TO STATE DEPARTMENTS, COMMISSIONS, OFFICERS AND EMPLOYEES
Section 39O	CONTRACTS FOR CONSTRUCTION AND MATERIALS; SUSPENSION, DELAY OR INTERRUPTION DUE TO ORDER OF AWARDING AUTHORITY; ADJUSTMENT IN CONTRACT PRICE; WRITTEN CLAIM

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.

Part I	ADMINISTRATION OF THE GOVERNMENT
Title III	LAWS RELATING TO STATE OFFICERS
Chapter 30	GENERAL PROVISIONS RELATIVE TO STATE DEPARTMENTS, COMMISSIONS, OFFICERS AND EMPLOYEES
Section 39P	CONTRACTS FOR CONSTRUCTION AND MATERIALS; AWARDING AUTHORITY'S DECISIONS ON INTERPRETATION OF SPECIFICATIONS, ETC.; TIME LIMIT; NOTICE

Section 39P. Every contract subject to section thirty-nine M of this chapter or section forty-four A of chapter one hundred forty-nine which requires the awarding authority, any official, its architect or engineer to make a decision on interpretation of the specifications, approval of equipment, material or any other approval, or progress of the work, shall require that the decision be made promptly and, in any event, no later than thirty days after the written submission for decision; but if such decision requires extended investigation and study, the awarding authority, the official, architect or engineer shall, within thirty days after the receipt of the submission, give the party making the submission written notice of the reasons why the decision cannot be made within the thirty day period and the date by which the decision will be made.

Section 39R

INTERNAL ACCOUNTING CONTROL; FINANCIAL STATEMENTS; ENFORCEMENT

Section 39R. (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.

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

Part I	ADMINISTRATION OF THE GOVERNMENT
Title XIV	PUBLIC WAYS AND WORKS
Chapter 82	THE LAYING OUT, ALTERATION, RELOCATION AND DISCONTINUANCE OF PUBLIC WAYS, AND SPECIFIC REPAIRS THEREON
Section 40	DEFINITIONS APPLICABLE TO SECS. 40A TO 40E

Section 40. The following words, as used in this section and sections 40A to 40E, inclusive, shall have the following meanings:—

"Company", natural gas pipeline company, petroleum or petroleum products pipeline company, public utility company, cable television company, municipal traffic signal department, and municipal utility company or department that supply gas, electricity, telephone, communication or cable television services or private water companies within the city or town where such excavation is to be made.

"Description of excavation location", such description shall include the name of the city or town, street, way, or route number where appropriate, the name of the streets at the nearest intersection to the excavation, the number of the buildings closest to the excavation or any other description, including landmarks, utility pole numbers or other information which will accurately define the location of the excavation.

"Emergency", a condition in which the safety of the public is in imminent danger, such as a threat to life or health or where immediate correction is required to maintain or restore essential public utility service.

"Excavation", an operation for the purpose of movement or removal of earth, rock or the materials in the ground including, but not limited to, digging, blasting, augering, backfilling, test boring, drilling, pile driving, grading, plowing in, hammering, pulling in, jacking in, trenching, tunneling and demolition of structures.

"Excavator", any entity including, but not limited to, a person, partnership, joint venture, trust, corporation, association, public utility, company or state or local government body which performs excavation operations.

"Marking standards", the methods by which a company designates its facilities in accordance with standards established by the Common Ground Alliance and the American Public Works Association.

"Non-mechanical means", excavation using any device or tool manipulated by human power, including air vacuum, air blowing or similar methods of excavation designed to minimize direct contact with utilities.

"Premark", to delineate the general scope of the excavation or boring on the paved surface of the ground using white paint, or stakes or other suitable white markings on nonpaved surfaces. No premarking shall be acceptable if such marks can reasonably interfere with traffic or pedestrian control or are misleading to the general public. Premarking shall not be required of any continuous excavation that is over 500 feet in length.

"Professional land surveyor", a professional land surveyor as defined in section 81D of chapter 112.

"Safety zone", a zone designated on the surface by the use of standard color-coded markings which contains the width of the facilities plus not more than 18 inches on each side.

"Standard color-coded markings", red - electric power lines, cables, conduit or light cables; yellow - gas, oil, street petroleum, or other gaseous materials; orange - communications cables or conduit, alarm or signal lines; blue - water, irrigation and slurry lines; green - sewer and drain lines; white - premark of proposed excavation.

"System", the underground plant damage prevention system as defined in section 76D of chapter 164.

Part I	ADMINISTRATION OF THE GOVERNMENT
Title XXI	LABOR AND INDUSTRIES
Chapter 149	LABOR AND INDUSTRIES
Section 34	PUBLIC CONTRACTS; STIPULATION AS TO HOURS AND DAYS OF WORK; VOID CONTRACTS

Section 34. Every contract, except for the purchase of material or supplies, involving the employment of laborers, workmen, mechanics, foremen or inspectors, to which the commonwealth or any county or any town, subject to section thirty, is a party, shall contain a stipulation that no laborer, workman, mechanic, foreman or inspector working within the commonwealth, in the employ of the contractor, sub-contractor or other person doing or contracting to do the whole or a part of the work contemplated by the contract, shall be required or permitted to work more than eight hours in any one day or more than forty-eight hours in any one week, or more than six days in any one week, except in cases of emergency, or, in case any town subject to section thirty-one is a party to such a contract, more than eight hours in any one day, except as aforesaid; provided, that in contracts entered into by the department of highways for the construction or reconstruction of highways there may be inserted in said stipulation a provision that said department, or any contractor or sub-contractor for said department, may employ laborers, workmen, mechanics, foremen and inspectors for more than eight hours in any one day in such construction or reconstruction when, in the opinion of the commissioner, public necessity so requires. Every such contract not containing the aforesaid stipulation shall be null and void.

Part I ADMINISTRATION OF THE GOVERNMENT

Title XXI LABOR AND INDUSTRIES

Chapter 149 LABOR AND INDUSTRIES

Section 44J INVITATIONS TO BID; NOTICE; CONTENTS; VIOLATIONS; PENALTY

Section 44J. (1) No public agency or authority of the commonwealth or any political subdivision thereof shall award any contract for which competitive bids are required pursuant to section forty-four A of this chapter or section thirty-nine M of chapter thirty, or for which competitive proposals are required pursuant to subsection (4) of section forty-four E of this chapter or section eleven C of chapter twenty-five A, unless a notice inviting bids or proposals therefor shall have been posted no less than one week prior to the time specified in such notice for the receipt of said bids or proposals in a conspicuous place in or near the offices of the awarding authority, and shall have remained posted until the time so specified, and unless such notice shall also have been published at least once not less than two weeks prior to the time so specified in the central register published by the secretary of state pursuant to section twenty A of chapter nine and in a newspaper of general circulation in the locality of the proposed project, and on the COMMBUYS system administered by the operational services division. Said notice shall also be published at such other times and in such other newspapers or trade periodicals as the commissioner of capital asset management and maintenance may require, having regard to the locality of the work involved.

(2) Said notice shall specify the time and place where plans and specifications of the proposed work may be had; the time and place of submission of general bids; and the time and place for opening of the general bids. For contracts subject to the provisions of sections forty-four A to H, inclusive, of this chapter, said notice shall also specify the time and place for submission of filed sub-bids, where required pursuant to section forty-four F; and the time and place for opening of said filed sub-bids.

Said notice shall also provide sufficient facts concerning the nature and scope of such project, the type and elements of construction, and such other information as will assist applicants in deciding to bid on such contract.

(3) No contract or preliminary plans and specifications shall be split or divided for the purpose of evading the provisions of this section.

(4) General bids and filed sub-bids for any contract subject to this section shall be in writing and shall be opened in public at the time and place specified in the posted or published notice, and after being so opened shall be open to public inspection.

(5) The provisions of this section shall not apply to any transaction between the commonwealth and any public service corporation.

(6) The provisions of this section may be waived in cases of extreme emergency involving the health and safety of the people and their property, upon the written approval of said commissioner. The written approval shall contain a description of the circumstances and the reasons for the commissioner's determination.

(7) Whoever violates any provision of this section shall be punished by a fine of not more than ten thousand dollars or by imprisonment in the state prison for not more than three years or in a jail or house of correction for not more than two and one-half years, or by both said fine and imprisonment; and in the event of final conviction, said person shall be incapable of holding any office of honor, trust or profit under the commonwealth or under any county, district of municipal agency.

Each and every person who shall cause or conspire to cause any contract or preliminary plans and specifications to be split or divided for the purpose of evading the provisions of this section shall forfeit and pay to the commonwealth, a political subdivision thereof or other awarding authority subject to this section, the sum of not more than five thousand dollars and, in addition, such person or persons shall pay, apportioned among them, double the amount of damages which the commonwealth or political subdivision thereof or other awarding authority may have sustained by reason of the doing of such act, together with the costs of the action.

(8) If an awarding authority rejects all general bids or does not receive any general bids, and advertises for a second opening of general bids with the original filed sub-bids as set forth in subsection (1) of section forty-four E the notice for receipt of such general bids may be published in the central register and elsewhere as required not less than one week prior to the time specified for such second opening of general bids.

(9) No request for proposals or invitation for bids issued under sections 38A1/2 to 38O, inclusive, of chapter 7, section 11C of chapter 25A, section 39M of chapter 30, this section and sections 44A to 44H, inclusive, shall be advertised if the awarding authority's cost estimate is greater than 1 year old.

Attachment F

Project Signage Guidelines

INVESTING IN AMERICA

Investing In America Signage Guidelines

The Bipartisan Infrastructure Law
The CHIPS and Science Act
The Inflation Reduction Act
The American Rescue Plan

Last Updated: March 2, 2023

Office of Digital Strategy
White House Office, EOP

Meena Yi
Abbey Pitzer

Guidelines for Logo Applications

The purpose of this document is to provide general guidelines for signs displayed at project sites for projects funded under the Bipartisan Infrastructure Law (also known as the Infrastructure Investment and Jobs Act), the CHIPS and Science Act, the Inflation Reduction Act, the American Rescue Plan, and other Federally-funded projects as appropriate. The first part of this document pertains to signs for Federally-funded projects that are not installed in the highway right-of-way. For highway signage guidance that is MUTCD compliant please see pages 13 and 14. For all other signs please start here. This document provides information about the Investing In America logo mark as well as how logos, marks and seals of states, cities, and counties can be incorporated into signage. Logos of contractors are not permitted on the signage. When logos are included in signage, the placement should conform to these brand guidelines.

Variations and Usage

There is one approved mark associated with the Investing In America logo. To preserve the integrity of the Investing In America logo mark, make sure to apply them correctly. Altering, distorting, or recreating the 'marks' in any way weakens the power of the image and what it represents. Layout and design of signs and communication materials will vary, so care must be taken when applying the logo mark.

Primary Logo Mark

INVESTING IN AMERICA

Colors

The colors, graphics, and fonts used should conform to graphic standards.

COLOR	CMYK	RGB	HEX	PMS
Blue	83, 48, 0, 48	22 / 68 / 132	#164484	PMS 7687 C
Red	0, 100, 81, 0	255 / 0 / 49	#FF0031	PMS 185 C
White	2, 2, 0, 3	242 / 244 / 248	#F2F4F8	Bright White

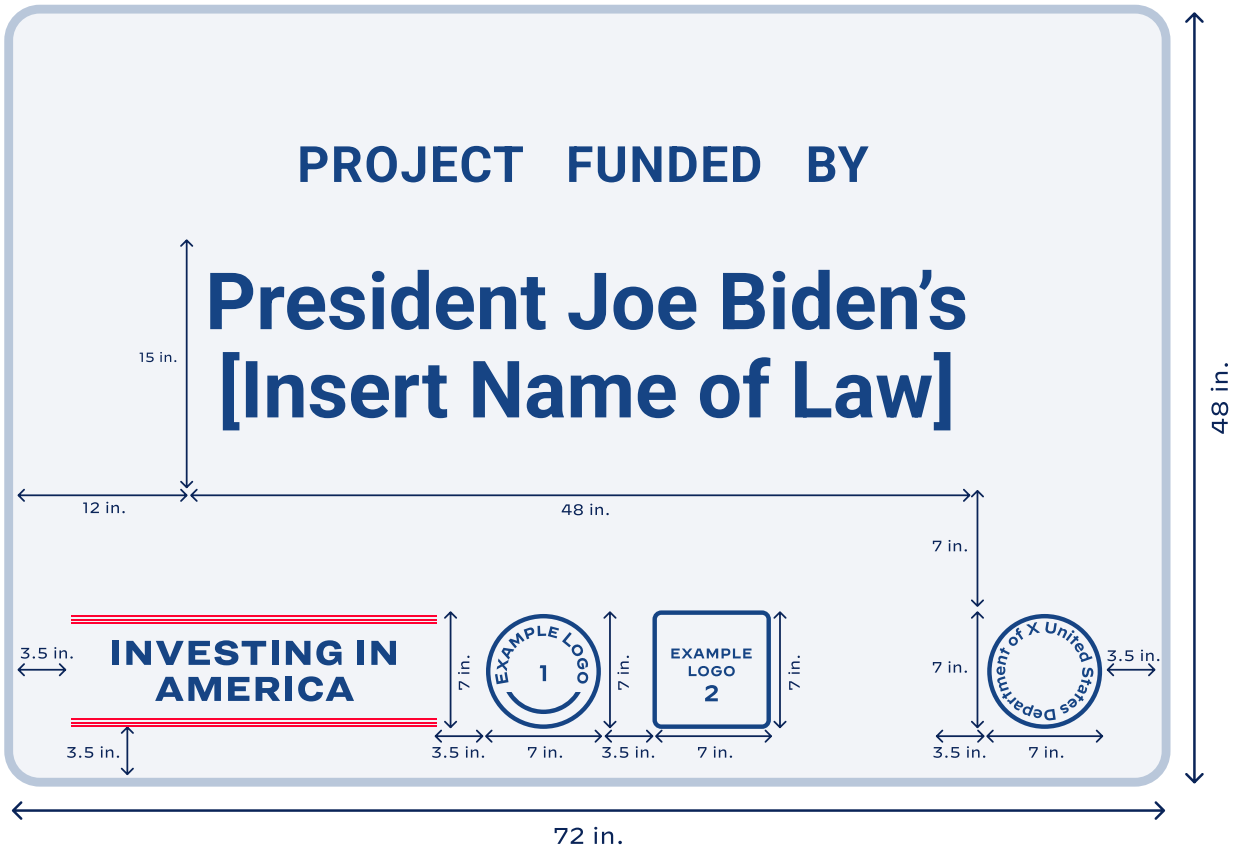
Logos

White background: logo in red and blue

Gray background: logo in red and blue

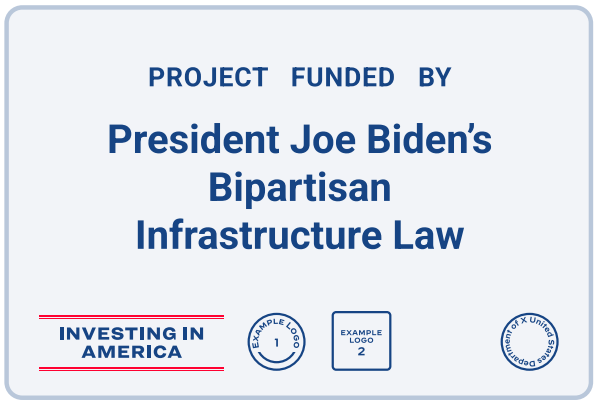
Blue background: logo in all white

Investing In America General Guidelines for Logo Applications

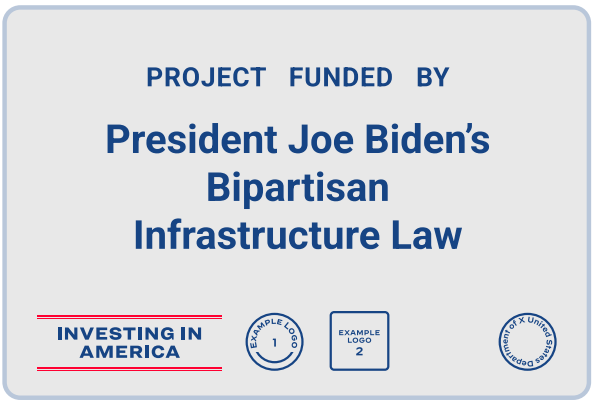


Sign Colors

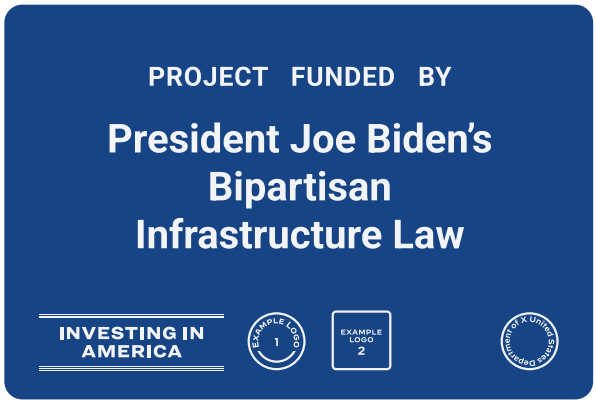
1. The Bipartisan Infrastructure Law



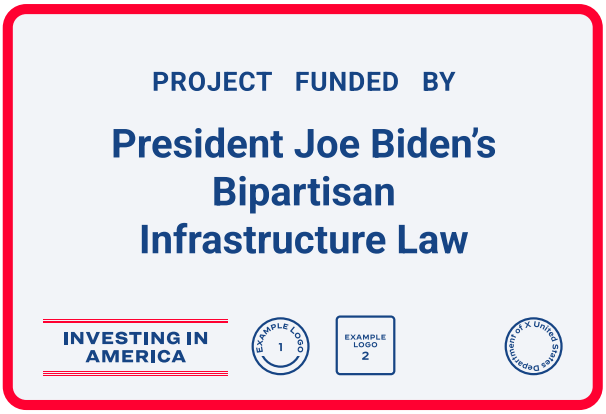
White



Gray



Blue



Red Border

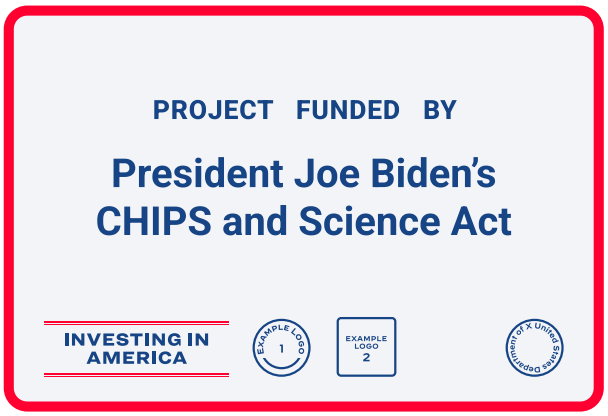
Sign Colors

2. The CHIPS and Science Act

White

Gray

Blue



Red Border

Sign Colors

3. The Inflation Reduction Act

White

Gray

Blue

Red Border

Sign Colors

4. The American Rescue Plan

White

Gray

Blue

Red Border

State, City, and County Logo Variations

Square or Circular State Logo: 7x7 in.

Rectangular or Oval State Logo: **not** to exceed 17.5 x 7 in.

3 Logo Samples

Circular City Logo 7 x 7 in. State rectangular logo should **not** exceed 17.5 x7 in.

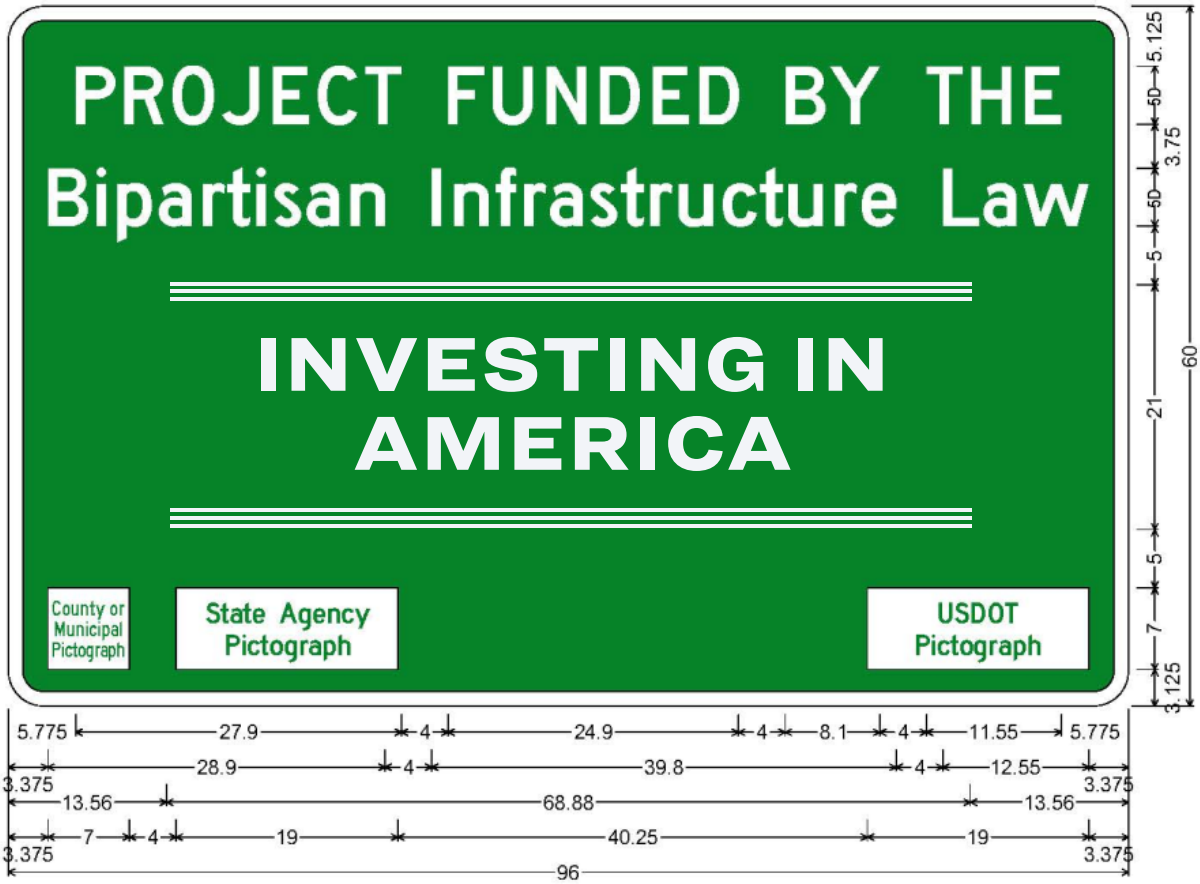
Rectangular State Logo: **not** to exceed 17.5 x 7 in.

2 Logo Samples

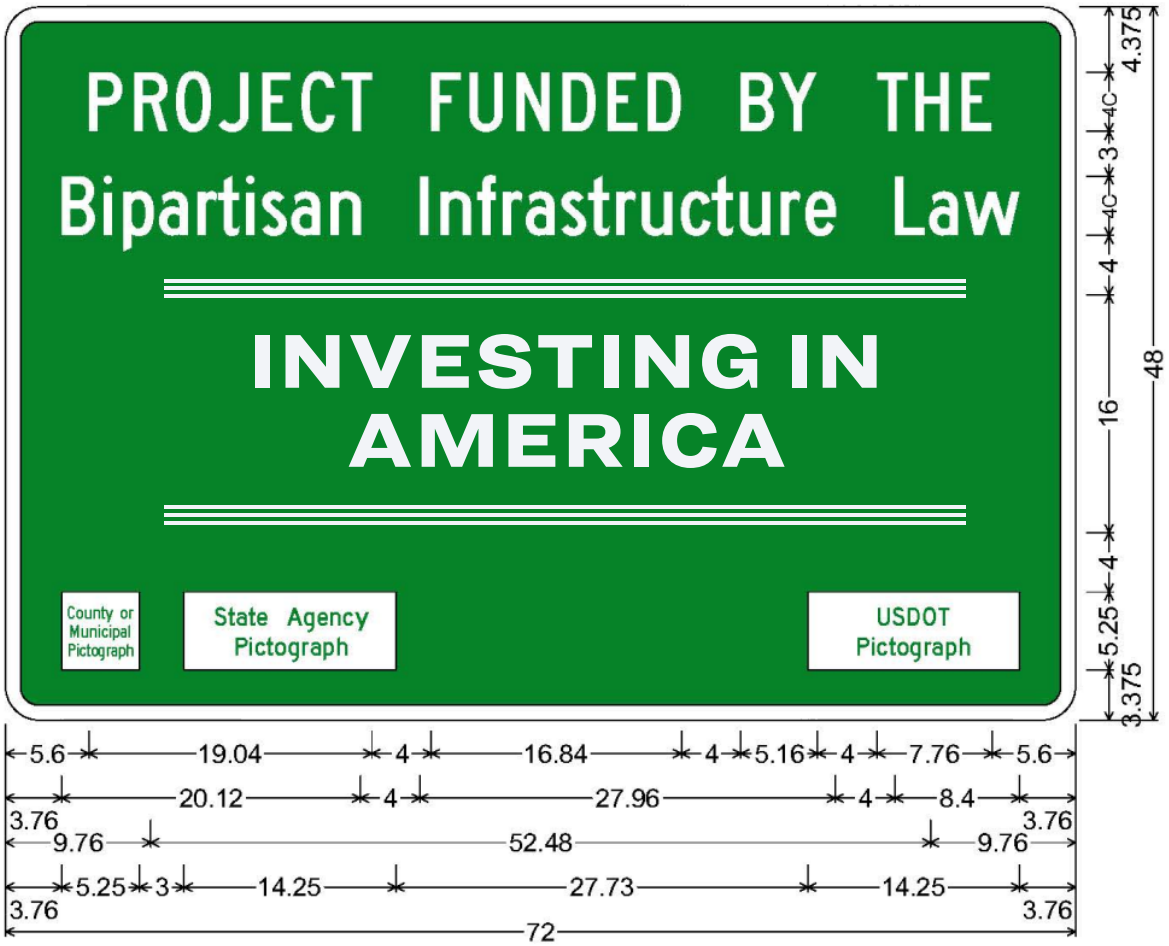
Circular State Logo: 7 x 7 in.

Rectangular State Logo: **not** to exceed 17.5 x 7 in.

Rules for Highway Right of Way Signage 8 Feet



Rules for Highway Right of Way Signage 6 Feet



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DOCUMENT A00873

NORTHERN LONG-EARED BAT (NLEB) PRESENCE/ABSENCE ACOUSTIC SURVEY

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October 30, 2023

Ref: 14394.10

Mr. Dave Paulson
Wildlife and Endangered Species Program Supervisor
Massachusetts Department of Transportation – Highway Division
Ten Park Plaza, Room 7360
Boston, MA 02116-3973
David.J.Paulson.@dot.state.ma.us
(857) 262-3378

Project	Northern Long-eared Bat (NLEB) Presence/Absence Acoustic Survey and Bridge Assessment
MassDOT Project #	608742
MassDOT Project Title	Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge
Town	Dennis and Harwich, Massachusetts
Surveyor Name/Firm	*Kimberley Justham, Casey Bardier, Hannah Rowe, and Chelsea Glinka/VHB*
Detector Operation Dates	July 18-20, 2023
Acoustic Survey Results	**NLEB NOT DETECTED**
Acoustic Survey Results	**MYLE NOT DETECTED**
Acoustic Survey Results	**MYLU NOT DETECTED**
Acoustic Survey Results	**PESU NOT DETECTED**
Bridge Assessment Date	July 20, 2023
Bridge Assessment Results	**Signs of Bats Not Detected at Bridge No. H-10-002 during Partial Survey**

Dear Mr. Paulson:

This report contains the results of the Massachusetts Department of Transportation (MassDOT) northern long-eared bat (*Myotis septentrionalis*, hereafter MYSE) summer presence/absence survey performed at the proposed reconstruction and related work on Main Street (Route 28) from Upper County Road to the Herring River Bridge (H-10-002) (the Project; MassDOT #608742) in Dennis and Harwich, Massachusetts. Acoustic detectors deployed by VHB did not detect the presence of NLEB. There were no calls classified as the state endangered eastern small-footed bat (*Myotis leibeii;* MYLE), the state-endangered little brown bat (*Myotis lucifigus;* MYLU*),* or the state endangered tri-colored bat (*Perimyotis subflavus;* PESU) and subsequent qualitative analysis did not detect any of these species.

This report also contains the results of the MassDOT partial bridge assessment for the Herring River Bridge (H-10-002) performed for MassDOT Project #608742. No bats (dead or alive), staining, bat sounds, or distinct odors were observed for this bridge. This bridge does not appear to provide a cave-like environment. However, as the partial bridge assessment did not include access to all areas of the bridge, this survey cannot definitively conclude that the bridge is not used as a roosting site for bats. However, the acoustic survey results did not detect federal or state-listed species within the vicinity of the bridge so it may be assumed that these species of concern do not use the bridge as a roost site.

Sincerely,

VHB

Chelsea O. Glinka
Project Manager/Senior Environmental Scientist
cglinka@vhb.com

Attachments: NLEB Survey Report for Dennis-Harwich, 608742
Bridge Bat Assessment Form for Dennis-Harwich, 608742

US FISH AND WILDLIFE SERVICE PHASE 2 BAT ACOUSTIC SURVEY REPORT
AND VISUAL BRIDGE ASSESSMENT
MASSDOT PROJECT # 608742

Reconstruction and Related Work on Main Street (Route 28), From Upper County Road to the Herring River Bridge

Dennis and Harwich, Massachusetts

PREPARED FOR

Massachusetts Department of Transportation
10 Park Plaza
Boston, Massachusetts 02116
857.368.4636

PREPARED BY

101 Walnut Street
P.O. Box 9151
Watertown, Massachusetts 02471
617.924.1770

OCTOBER 2023

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1.2 Existing Conditions 2

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2.2 Detector and Microphone Deployment and Placement 3
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Appendix B Field Data Forms and Site Photos
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Appendix E Bridge Bat Assessment Form and Photos
Appendix F Representative Spectrograms
Appendix G Event Logs

1

Introduction

This report summarizes the results of the Phase 2 Presence/Probable Absence Acoustic Monitoring Surveys (acoustic surveys) and Visual Bridge Assessment targeting the northern long-eared bat (*Myotis septentrionalis* or MYSE) performed by VHB on behalf of the Massachusetts Department of Transportation (MassDOT) for the proposed reconstruction and related work on Main Street (Route 28), from Upper County Road to the Herring River Bridge (Bridge H-10-002) in Dennis and Harwich, MA (MassDOT Project #608742, **Figure 1** in **Appendix A**). The MYSE is state-endangered in Massachusetts and has recently been reclassified from federally threatened to federally endangered under the Endangered Species Act (ESA; 16 U.S.C. § 1531 et seq.). The final rule to reclassify MYSE as federally endangered was published in the Federal Register on November 30, 2022, and took effect March 31, 2023 (Federal Register, Vol. 87 No. 229). This survey was performed as a due diligence effort because the Project is within the range of MYSE and contains potentially suitable bat habitat. The survey was conducted in accordance with the MYSE Phase 2 Study Plan for the Project which was approved by USFWS in June 2023.

The acoustic surveys targeted the following Massachusetts state-endangered species in addition to MYSE: tricolored bat (*Perimyotis subflavus*; PESU), little brown bat (*Myotis lucifugus*, MYLU), and eastern small-footed bat (*Myotis leibii*, MYLE). Two of these species are under consideration for federal protections: on September 14, 2022, the USFWS published their proposal to list the PESU as endangered under the ESA (Federal Register, Vol. 87, No. 177) and they are conducting a discretionary review on the status of MYLU (USFWS, 2021) expected to be completed in 2023. In 2013 the USFWS issued a 12-Month Finding on a petition to list the MYLE as endangered or threatened under the ESA and determined that listing MYLE was not warranted (Federal Register, Vol. 78, No. 191).

1.1 Project Overview

The Project includes the reconstruction and related work on Main Street (Route 28) from where Route 28 merges with Upper County Road in Dennis to the Herring River Bridge (Bridge H-10-002) in Harwich (the Project Area). Proposed work for the Project includes roadway rehabilitation, box cut widening, mill and overlay, sidewalk construction and reconstruction, installation of new ADA compliant curb ramps, drainage upgrades, and the reapplication and installation of pavement markings and signs on Route 28. Additionally, the traffic signals at the Route 28 and Upper County Road intersection will be upgraded to meet

current standards with associated geometric improvements. The proposed work will improve accommodations and accessibility for both bicyclists and pedestrians.

1.2 Existing Conditions

Land use within the Project Area is composed mostly of residential and commercial development along Route 28 between the merge with Upper County Road and the Herring River Bridge. The western end of the Project Area includes densely settled small commercial buildings. The eastern portion of the Project Area transitions to residential neighborhoods until it reaches the Herring River Bridge which carries Route 28 over the Herring River. Bridge H-10-002 is a cast-in-place concrete slab structure supported on timber pilings. Salt marsh, undeveloped forest, and residential properties are present north of the bridge. South of the bridge is salt marsh and residential and commercial properties along the banks of the Herring River. Suitable summer bat habitat exists north and south of the Herring River Bridge and along portions of the Project Area on Route 28.

2

Methods

VHB biologists with bat acoustic survey and bridge assessment experience conducted the acoustic survey and visual bridge assessment in accordance with the Phase 2 Study Plan approved by the USFWS in June 2023. The Study Plan was developed in accordance with the *USFWS 2023 Range-wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines (2023 Guidelines)*.

2.1 Habitat Assessment and Site Selection

Per the USFWS *2023 Guidelines*, sites were selected through a desktop analysis (i.e., aerial photo interpretation) during the development of the Study Plan by VHB biologists to ensure sufficient coverage of the linear Project. Although the total length of the Project is approximately 1.2 kilometers (km), the survey effort was based on approximately 1 km of suitable summer habitat due to the dense commercial development at the western limits of the Project Area which preclude suitable bat habitat. The survey was planned for two detector locations over two calendar nights to target the minimum survey effort of four detector nights. Each detector location was micro-sited in the field to ensure that suitable site conditions were present, and that optimal microphone placement was achieved.

The acoustic detector at Site 1 was deployed on the northern shoulder of Route 28 and west of the intersection with Depot Road West. The detector microphone was oriented facing west with the flow of traffic and parallel to the adjacent tree line bordering the roadway. Dominant vegetation at Site 1 consisted of northern red oak (*Quercus rubra*), black walnut (*Salix nigra*), Norway maple (*Acer platanoides*), bayberry (*Morella pensylvanica*), and an assortment of tall grasses.

The acoustic detector at Site 2 was deployed on the northern shoulder of Main Street (Route 28) on the west side of the Herring River Bridge. The detector microphone was oriented north towards a forested island in the Herring River. Dominant vegetation at Site 2 consisted of eastern red cedar (*Juniperus virginiana*), bayberry, butterfly bush (*Buddleia davidii*), and black oak (*Quercus velutina*).

2.2 Detector and Microphone Deployment and Placement

Two Pettersson D500x ultrasonic full spectrum acoustic detectors (detector) with Pettersson external, directional microphones were deployed within the Project Area (**Figure 1**) for

two consecutive calendar nights from July 18-20, 2023. Photographs of the survey sites and field data forms are included in **Appendix B**. A concise summary of the survey effort for this project is detailed in **Tables 1** and **2** provided in **Appendix C**. A total of four detector nights were recorded during the survey effort.

Detector locations were micro-sited in the field to meet the USFWS survey protocols for detector and microphone placement, as described in the approved Study Plan. This includes raising the microphone to a height of at least three meters above the ground level vegetation and orienting the microphone toward potential flight corridors such as forest canopy openings, near water sources, parallel to woodland edges, or other suitable survey locations with minimal to no vegetation obstruction in front of the microphone within the detection cone (which is 100 feet in front of highly directional microphones). Due to the nature of the Project Area, it was not always possible to find a location where the cone of detection was absent of vegetation within 100 feet in front of the microphone. However, detectors were placed in vegetative clearings parallel to woodland edges in areas that were either clear of vegetation or contained minimal distant vegetation (i.e., overhanging branches) in the detection cones; these areas were determined suitable for the acoustic survey based on VHB's professional judgement and past survey experience, as applicable. When practical and within reach, any overhanging branches within the 100-foot detection cones were broken and removed to further reduce clutter. The detectors were set up at a minimum of 10 feet away from the mature forest vegetation line to the extent practical based on the site constraints.

Site descriptions are included on the field data forms provided in **Appendix B**. Detector equipment function was verified prior to deployment and at retrieval with a clap and/or finger rub test at the microphone, along with verification of the detector settings and review of the event logs. Refer to **Table 1** provided in **Appendix C** for additional equipment details. Information for each survey location is listed in **Table 2**, also provided in **Appendix C**.

2.3 Weather Criteria

The survey included two calendar nights and both of them (the nights of July 18 and July 19, 2023) met the following survey weather criteria per the USFWS 2023 *Guidelines*: temperatures did not fall below 50°F during the first five hours of the survey period; no precipitation (rain and/or fog) that exceeded 30 minutes continuously or continued intermittently during the first five hours of the survey period; and no sustained wind speeds greater than nine miles per hour for 30 minutes continuously during the first five hours of the survey period. Hourly weather conditions were monitored from the nearest active Weather Underground Stations: KMADENNI57- Ellis Drive. The two detectors were retrieved after the second calendar night and a total of four-detector nights were recorded to fulfill the minimum survey effort for a one-km linear project. Refer to **Table 1** provided in **Appendix C** for an abbreviated weather summary for each detector night.

2.4 Call Analysis

VHB biologists trained in conducting acoustic analyses (principally Chelsea Glinka and Kim Justham resumes provided in **Appendix D**) were responsible for automated call analysis and the qualitative review of call files. Sound files were processed through SonoBat Data Wizard Version 4.4.5 to attribute metadata to each file and then calls were scrubbed with the SonoBat Data Wizard Batch File Scrubber to remove sound files that registered below 20 kilohertz (kHz). This step removes obvious non-bat files to reduce the file processing time. Full spectrum files were auto classified with Kaleidoscope Pro Version 5.4.7. Total call counts by species and the MLE ("maximum likelihood estimator" or p-values) assigned by Kaleidoscope Pro are included in **Table 3** provided in **Appendix C**. Species that have been qualitatively reviewed are also denoted in **Table 3**. The bat species abbreviations are listed in **Table 4** in **Appendix C.**

Qualitative analysis (manual vetting) was conducted by VHB (principally by Chelsea Glinka) for all calls that were auto-identified as high frequency (i.e., *Myotis* sp., PESU, and eastern red bat (*Lasiurus borealis* or LABO) regardless of MLE value) and any unknown calls which have a characteristic frequency (Fc) of 35 kHz or greater. The suite of species evaluated in the manual vetting process includes the federally and state endangered MYSE and the state endangered MYLU, MYLE, and PESU. Select calls that were auto classified as low frequency species were also manually reviewed to confirm presence. Qualitative analysis was performed on a total of 19 calls that met the qualitative review criteria, along with low frequency species to confirm presence, as detailed in **Table 5** provided in **Appendix C.** VHB conducted qualitative analysis in full spectrum format using SonoBat Version 4.4.5

All qualitatively reviewed calls were provided to Janet Tyburec of Bat Survey Solutions for secondary qualitative review as part of the QA/QC process. Ms. Tyburec provides over 30 years of acoustic surveying experience including field deployment, teaching, and qualitative call analysis using zero cross and full spectrum files. Her resume is provided in **Appendix D**. Secondary qualitative analysis by Ms. Tyburec was performed on all calls that were identified by the Kaleidoscope software as MYSE, UNKN, MYLU, LABO, PESU and select low frequency species calls; refer to **Table 5** provided in **Appendix C** for a summary of these results. Manually confirmed species have been incorporated into the overall call counts in **Table 3** with an asterisk (*) indicating when all or a portion of the call count was qualitatively reviewed.

Decisions on manual identification of calls are made based on a variety of call characteristics, including characteristic slope (Fs), Fc, the length of the sequence, frequency modulation, the type of call (search phase, attack phase, feeding buzz, etc.), the presence of harmonics, among other factors. References consulted during the qualitative analysis process are based on in-person workshops on manual vetting, Echolocation Call Characteristics of Eastern U.S. Bats, and the USGS Guide to Processing Bat Acoustic Data for the North American Bat Program. These sources are included in the **References** section below.

2.5 Visual Bridge Assessment

A partial visual bridge assessment was conducted on July 20, 2023, during daytime hours, following Bridge/Structure Bat Assessment Guidance by the Federal Transportation Agency/State Department of Transportation, last updated in 2020. VHB biologists were able to examine the underside of the bridge deck on the western side of the bridge from the bank of the Herring River using a GoPro camera mounted to a telescoping pole and flashlights. The east bank of the Herring River was not accessible due to steep slopes and lack of water access. The Bridge Inspection Form and Photo Log are provided in **Appendix E** of this report. The findings of the bridge assessment are summarized below.

3

Results

3.1 Acoustic Survey Results

This survey resulted in a probable absence determination for the federally endangered and state endangered MYSE, and the state endangered PESU and MYLE. Automated and qualitative analysis of calls resulted in the detection of the following species: LABO, big brown bat (*Eptesicus fuscus* or EPFU), silver-haired bat (*Lasionycteris noctivagans* or LANO), LABO, hoary bat (*Lasiurus cinereus* or LACI). Additionally, five calls were manually confirmed within the EFPU/LANO guild, meaning that the call characteristics could not be distinguished between these two species. The results of the data analysis efforts are detailed in **Tables 3** through **5** provided in **Appendix C.** Spectrograms of select calls are provided in **Appendix F**. The event logs for each detector night are provided in **Appendix G**.

The completed USFWS Northeast 2023 Reporting Form for Acoustic Surveys will be submitted to USFWS as an electronic Excel spreadsheet following this report submission.

3.2 Bridge Assessment Findings

VHB biologists accessed the underside of the deck of Bridge H-10-002 from the western bank of the Herring River and were able to view portions of the underside of the bridge using a GoPro camera with flashlights. However, access to the entire underside of the bridge deck was not possible due to steep embankments and high water levels. Although the acoustic survey detected bats within the vicinity of the bridge, there was no evidence of bat roosting in the areas observed during the visual assessment (see photos in **Appendix E**). Because the full extent of the underside of the bridge superstructure was not accessed, this survey cannot definitively conclude that the bridge is not used as a roosting site for bats. However, the acoustic survey results did not detect federal or state-listed species within the vicinity of the bridge so it may be assumed that these species of concern do not use the bridge as a roost site.

4

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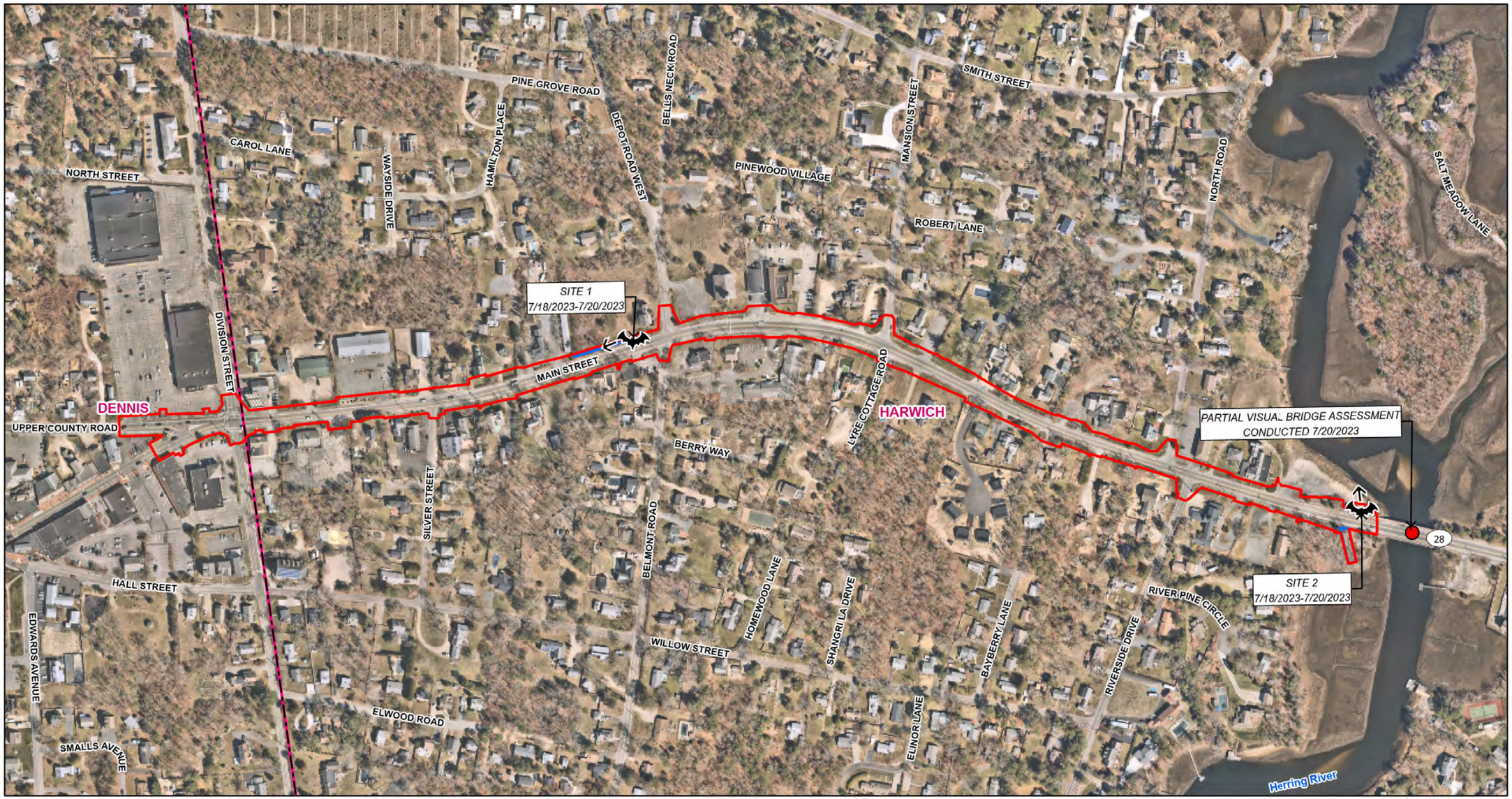
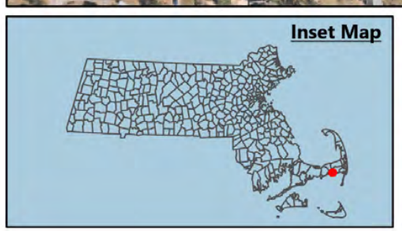
Appendix A: Site Figure





Legend

- Project Limit of Disturbance
- Visual Bridge Assessment
- Tree / Shrub Removal Area
- Town Boundary
- Bat Acoustic Survey Location
- Microphone Orientation

*Survey effort is based on approximate 1-km segment of suitable habitat within total project corridor.

Note:
Project Length: 1.23 KM*
MassDOT Project: 608742
Detector Nights Surveyed: 4

0 200 400 Feet

Figure 1

Northern Long-eared Bat Acoustic Survey
Reconstruction & Related Work on Main Street (Route 28), From Upper County Road to Herring River Bridge
Dennis & Harwich, MA

October 2023

Appendix B: Field Data Forms and Site Photos

Bat Acoustic Monitoring Data Form & Photo Log

Project:	Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge (608742)			**Site#:**	1	**Site Name:**	Depot Road				
Municipality:	Dennis and Harwich	**County:**	Barnstable	**State:**	MA	**Survey Contact:** kjustham@vhb.com					
Latitude:	41.66979031	**Longitude:**	-70.11779976	**Datum:**	WGS84						
Surveyed By:	K. Justham, C. Bardier			**Setup:** 07/18/2023 12:33		**Retrieval:** 07/20/2023 10:44					
Land Use:	Residential, Commercial Services, Herbaceous, Mixed Herbaceous Shrub and Brush, Deciduous, Transitional Areas	**Mic Test**	**Setup** Yes / **Retrieval** Yes	**Battery Capacity (v)**	**Setup** 5 / **Retrieval** 4.5	**CF Card Capacity (GB)**	**Setup** 44.72 / **Retrieval** 43.86				

BD #	Trigger Sensitivity	Mic	Mic Orientation	HT [1]	Clutter	Gain	Trigger	Interval	Recording Start Time	Recording End Time
52504	Medium	External / High Frequency / Directional Horned	W	4.88	EDGE	45	160	0	19:40	05:55

Site Description / Additional Notes

The detector set up on the northern shoulder of Route 28, to the west of Depot Road West, facing west with flow of traffic. Early successional field adjacent to old house and Bat Detector. Vegetation includes northern red oak, black walnut, Norway maple, bayberry, and assorted tall grasses.

Site sketch

[1] *Height of microphone above ground level (in meters)*

MassDOT Project #608742
Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge
Dennis and Harwich, MA

Bat Acoustic Monitoring Data Form & Photo Log

Photo 1: Site 1 – Depot Street – Cone of Detection

Date Taken:
July 18, 2023
Orientation:
W
Description:
Detector is positioned on the northern shoulder of Route 28 and to the west of Depot Road West.

Photo 2: Site 1 – Depot Street

Date Taken:
July 18, 2023
Orientation:
E
Description:
View of detector set up along the northern shoulder of Route 28 showing the intersection with Depot Road West, nearby abandoned house, and the adjacent vegetation.

MassDOT Project #608742
Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge
Dennis and Harwich, MA

Bat Acoustic Monitoring Data Form & Photo Log

Photo 3: Site 1 – Depot Street

Date Taken:

July 18, 2023

Orientation:

N

Description

View of detector set up along the northern shoulder of Route 28 showing a nearby field and tree line.

Photo 4: Site 1 – Depot Street

Date Taken:

July 18, 2023

Orientation:

W

Description:

View of detector set up along the northern shoulder of Route 28 showing the adjacent tree line and field.

MassDOT Project #608742
Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge
Dennis and Harwich, MA

Bat Acoustic Monitoring Data Form & Photo Log

Photo 5: Site 1 – Depot Street

Date Taken:

July 18, 2023

Orientation:

S

Description:

View from the detector set up along the northern shoulder of Route 28 showing the roadway and nearby business.

Bat Acoustic Monitoring Data Form & Photo Log

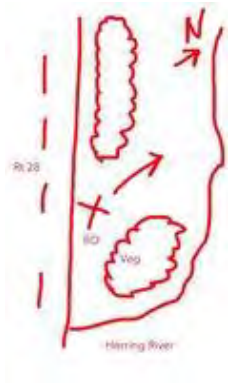
Project:	Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge (608742)			**Site#:**	2	**Site Name:**	Herring River Bridge
Municipality:	Dennis and Harwich	**County:**	Barnstable	**State:**	MA	**Survey Contact:**	kjustham@vhb.com
Latitude:	41.66898445	**Longitude:**	-70.1098907	**Datum:**	WGS84		
Surveyed By:	K. Justham, C. Bardier			**Setup:**	07/18/2023 12:10	**Retrieval:**	07/20/2023 10:56

Land Use:	Commercial Services, Mixed Herbaceous Shrub and Brush, Mixed Deciduous and Evergreen, Streams / Canals, Bays / Estuaries	**Mic Test**	**Setup**	Yes	**Battery Capacity (v)**	**Setup**	5.9	**CF Card Capacity (GB)**	**Setup**	44.72
			Retrieval	Yes		**Retrieval**	5		**Retrieval**	44.14

BD #	Trigger Sensitivity	Mic	Mic Orientation	HT [1]	Clutter	Gain	Trigger	Interval	Recording Start Time	Recording End Time
52507	Medium	External / High Frequency / Directional Horned	N	3.66	MED	45	160	0	19:40	05:55

Site Description / Additional Notes

Detector set up on northern shoulder of Route 28 facing north towards the Herring River and marsh. Vegetation includes eastern red cedar, bayberry, butterfly bush, and turkey oak.



Site sketch

[1] *Height of microphone above ground level (in meters)*

MassDOT Project #608742
Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge
Dennis and Harwich, MA

Bat Acoustic Monitoring Data Form & Photo Log

Photo 1: Site 2 – Herring River Bridge

Date Taken:

July 20, 2023

Orientation:

SE

Description:

A view of the Herring River Bridge. Site 2 was positioned near the northwest bank of the bridge.

Photo 2: Site 2 – Herring River Bridge

Date Taken:

July 18, 2023

Orientation:

SE

Description:

View of detector set up along the northern shoulder of Route 28 showing the bridge over the Herring River.

MassDOT Project #608742
Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge
Dennis and Harwich, MA

Bat Acoustic Monitoring Data Form & Photo Log

Photo 3: Site 1 – Herring River Bridge

Date Taken:

July 18, 2023

Orientation:

NW

Description:

View of detector set up along the northern shoulder of Route 28 showing the roadway and adjacent vegetation.

Appendix C: Data Tables

Table 1: Project and Equipment Overview

Project Name	Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge
MassDOT Project #	608742
Project Location	Dennis and Harwich, Barnstable County, Massachusetts
Weather Summary	7/18/2023-7/19/2023: High Temp: 76.00°F, Low Temp: 74.40°F, Avg Temp: 74.80°F, Avg Wind Speed: 0.53 mph, Precipitation: 0.01 inch* 7/19/2023-7/20/2023: High Temp: 77.40°F, Low Temp: 69.40°F, Avg Temp: 72.82°F, Avg Wind Speed: 0.43 mph, Precipitation: No Weather Underground Station: Ellis Drive (KMADENNI57) *Rain occurred within the sixth hour of recording and therefore survey weather criteria were met for this calendar night
Principal Equipment	Pettersson D500x; D500x external, high frequency, full spectrum microphone with a directional horn and PVC tube
VHB Personnel	Chelsea Glinka, Kimberley Justham, Casey Bardier, Hannah Rowe; Refer to resumes in **Appendix D**
BSS Personnel	Janet Tyburec (provided second opinion on qualitative analysis of calls); Refer to resume in **Appendix D**.
Standard Pettersson D500x Settings	Sampling Frequency = 500 PreTrig = Off Recording Length = 5 seconds HP-Filter = Yes Auto-Record = Yes Input Gain = 45 Trigger Level = 160 Interval = 0 Trigger Sensitivity: Medium
Standard Microphone Setup	Height above ground = 3.66-4.88 meters Vertical orientation = 0 degrees; horizontal plane (assuming 0 degrees is parallel with the ground). Clap sound test performed at deployment and retrieval to determine proper functioning, along with review of event log.
Acoustic Analysis Software	**Program:** Kaleidoscope Pro 5.4.7 for automated analysis; SonoBat, V 4.4.5 for qualitative analysis
	Filters or Parameters: Files were scrubbed and attributed using SonoBat Data Wizard V 4.4.5, set to medium: accepts all but poor-quality calls; accepts some noise with tonal content, include signals from 20 kHz and above.
	Program Settings Signal detection parameters (default parameters) Minimum and Maximum Frequency Range: 8-120 kHz Minimum and Maximum Length of Detected Pulses: 2-500 ms Maximum inter-syllable gap: 500 ms Min. # of pulses for species ID = 2 Other relevant settings affecting ID = Kaleidoscope Pro set to Massachusetts species setting Suite of species included in program analysis: EPFU, LANO, LABO, LACI, MYLE, MYLU, MYSE, PESU Classifier Sensitivity: -1 More Sensitive (Liberal)

Table 2: Detector Details

Site	Detector #	Detector Night Start Dates	Latitude[1]	Longitude[1]	Start Time	End Time	Microphone Orientation	Clutter	Distance to Nearest Vegetation or Obstruction	Habitat Type[2]
1	52504	7/18/2023 7/19/2023	41.66979031	-70.11779976	19:40	05:55	W	Edge	20 feet	Detector set up on the northern shoulder of Main Street (Route 28) west of intersection with Depot Road West. Microphone oriented west along the nearby tree line and with flow of traffic.
2	52507	7/18/2023 7/19/2023	41.66898445	-70.1098907	19:40	05:55	N	Edge	15 feet	Detector set up on northern shoulder of Main Street (Route 28) west of the Herring River Bridge. Microphone oriented north towards the Herring River.

1 Sub-meter accuracy.

2 Refer to the Field Data Forms in Appendix B for more detailed site information.

Table 3: Recorded Bat Calls

Site # & Detector Night		Species Identification[1]											Total # of Significant[3] Calls	Total # of Calls
		EPFU	LABO	LACI	LANO	EPFU/ LANO	MYLE	MYLU	MYSE	PESU	MYsp	UNKN		
Site 1 7/18/2023 – 7/19/2023	Number of Calls	*22**	0*	*6*	*7**	0	0	0	0	0	0	1**	35	36
	MLE (p)[2]	0.00	0.00	0.00	1	-	-	-	-	-	-	-		
Site 1 7/19/2023 – 7/20/2023	Number of Calls	*14**	*5**	*2*	9	*1***	0	0	0	0	0	1**	22	32
	MLE (p)[2]	0.00	0.00	0.03	0.12	-	-	-	-	-	-	-		
Site 2 7/18/2023 – 7/19/2023	Number of Calls	*11**	*1**	*5*	7	*2***	0	0	0	0	0	0	19	26
	MLE (p)[2]	0.00	0.06	0.01	0.18	-	-	-	-	-	-	-		
Site 2 7/19/2023 – 7/20/2023	Number of Calls	*13*	0*	4	*12**	*2***	0	0	0	0	0	0	27	31
	MLE (p)[2]	0.00	0.06	0.11	0.02	-	-	-	-	-	-	-		
TOTAL CALLS FOR ALL SITES													**-**	**125**
TOTAL SIGNIFICANT CALLS FOR ALL SITES[3]													***103***	**-**

1 Refer to species key in Table 4

2 MLE ("maximum likelihood estimator" or p-values) <0.05 indicate a high level of certainty assigned by the auto-classification software and suggest presence; calls with MLE values <0.05 and calls that have been manually vetted have been italicized to indicate a high level of certainty for presence.

3 Significant calls are those that either have an MLE value <0.05 and/or have been manually vetted, in accordance with Electronic Submittal of Bat Survey Data for USFWS; this does not include any calls classified as MYsp, or UNKN.

* All or a portion of the calls were qualitatively reviewed to confirm species presence.

** Note that if an MLE value is missing it's because it was classified via manual vetting and does not include a software generated MLE value.

Table 4: Bat Species Key[1]

Species Abbreviation	Scientific Name	Common Name
EPFU	*Eptesicus fuscus*	Big Brown Bat
LABO	*Lasiurus borealis*	Eastern Red Bat
LACI	*Lasiurus cinereus*	Hoary Bat
LANO	*Lasionycteris noctivagans*	Silver-haired Bat
MYLE	*Myotis leibii*	Eastern Small-footed Bat
EPFU/LANO	*Eptesicus fuscus/ Lasionycteris noctivagans Guild*	Big Brown Bat/Silver-haired Bat Guild
MYLU	*Myotis lucifugus*	Little Brown Bat
MYSE	*Myotis septentrionalis*	Northern Long-eared Bat
PESU	*Perimyotis subflavus*	Tri-colored Bat
MYsp	*Myotis sp.*	Unknown Myotis
UNKN	*Unknown*	Assigned to calls that are too fragmented or poor quality to be classified to species

1 The Massachusetts Natural Heritage Program indicates that the Indiana bat (*Myotis sodalis*) (https://www.mass.gov/doc/indiana-bat/download) is extirpated in Massachusetts. Therefore, this species is not included in the analysis.

Table 5: Qualitative Analysis Summary

Site	Detector Night Start Date	Auto-ID by KPro 5.4.7	QA-QC ID by VHB/BSS	Comments
Site 1	7/18/2023	EPFU	EPFU	Somewhat over-saturated, yet archetypical for EPFU
Site 1	7/18/2023	LANO	LANO	Much diffuse echo, but pulse shape consistent with LANO especially at beginning of sequence.
Site 1	7/18/2023	LABO	Noise	Non-bat anthropogenic mechanical noise
Site 1	7/18/2023	LABO	Unknow High Frequency	Short sequence with few pulses, but pulses toe up at end and Fc[1] is inconsistent along sequence, making it likely for LABO
Site 1	7/18/2023	LACI	Noise	This is a bird
Site 1	7/19/2023	EPFU	EPFU	Low-bandwidth and slightly out-of-range, yet likely for EPFU
Site 1	7/19/2023	LANO	EPFU/LANO	Low-bandwidth and with diffuse echo and slightly out-of-range, many pulses likely for EPFU, others for LANO
Site 1	7/19/2023	LABO	LABO	Odd call shapes, but likely for LABO due to CPS and irregular Fc across this very short sequence
Site 1	7/19/2023	LABO	LABO	First half of recording with ~3 call pulses very typical for LABO, after 800ms pulses may be from same bat or a different individual to ID
Site 1	7/19/2023	LABO	LABO	Archetypical for LABO
Site 2	7/18/2023	EPFU	EPFU+EPFU	Two bats, with approach-phase/feeding-buzzes, both likely for EPFU
Site 2	7/18/2023	LACI	EPFU/LANO	Call shapes and amplitudes consistent with LANO, but some pulses appear more EPFU-like; no characters or metrics consistent with LACI sequence
Site 2	7/18/2023	LABO	LABO	Beings with odd call-shapes, but in general sequence is archetypical for LABO
Site 2	7/18/2023	LANO	EPFU/LANO	Less than half of call pulses are consistent with LANO metrics, entire sequence characteristics are ambiguous for EPFU/LANO
Site 2	7/19/2023	EPFU	EPFU/LANO	Ambiguous for an EPFU/LANO approach/clutter/edge type call sequence
Site 2	7/19/2023	LABO	Noise	Non-bat HiF[2] noise, possible mechanical or anthropogenic sound

Site	Detector Night Start Date	Auto-ID by KPro 5.4.7	QA-QC ID by VHB/BSS	Comments
Site 2	7/19/2023	LACI	EPFU/LANO	Low bandwidth, out-of-range sequence with diffuse echo making disambiguation between EPFU/LANO difficult, too regular and pulse shape not consistent with LACI
Site 2	7/19/2023	LANO	LANO	Initial pulses in sequence consistent in slope, duration, and amplitude characteristics for LANO in open-air search phase
Site 2	7/19/2023	LANO	LANO	Most of sequence consistent in slope, duration, and amplitude characteristics for LANO in open-air search phase

[1]Fc = characteristic frequency; the frequency of a call pulse at its flattest point, where the slope is closest to horizontal; this is usually at the terminal end of a bat call pulse, except in cases where lower intensity, toes are present; many bats put the most power, or intensity (i.e., volume) at or near the characteristic frequency.

[2]HiF =high frequency.

Appendix D: Resumes of Qualified Individuals

Chelsea Glinka

Senior Environmental Scientist

Chelsea Glinka is a Senior Environmental Scientist in VHB's Providence, Rhode Island office. Her experience includes assessing permitting needs and developing environmental permit applications for small and large-scale projects within the private and public sectors. She supports project by leading rare, threatened, and endangered species surveys and facilitating Section 7 consultations under the Endangered Species Act through U.S. Fish and Wildlife Service and NOAA Fisheries.

13 years of professional experience

Education

MS, Natural Resources, University of Connecticut, 2013

BS, Environmental Sciences, University of Rhode Island, 2010

Ct, Bat Acoustic Qualitative Analysis Training (Titley Scientific), 2020

Ct, Acoustic Survey Methods (Bat Survey Solutions) 2021

Presentations

Co-Panelist; Meghan Lout (VTrans), Timothy Dexter (MassDOT), David Paulson (MassDOT); "Transportation Panel Discussion about Bat Surveys" Northeast Bat Working Group Conference; Burlington, VT; Jan. 2023

MassDOT Environmental Services Master Services Agreement

Chelsea Glinka is the Project Manager for bat survey efforts conducted on behalf of the Massachusetts Department of Transportation (MassDOT). Since 2015, Chelsea has conducted passive acoustic surveys targeting the northern long-eared bat (*Myotis septentrionalis;* MYSE) for MassDOT. Her responsibilities include assessing survey effort in accordance with the most recently issued survey guidelines by the U.S. Fish and Wildlife Service (USFWS), developing Phase II Acoustic Study Plan for review and approval by USFWS, conducting acoustic surveys and visual bridge assessments and training VHB staff in survey techniques and equipment operation, acoustic analysis using auto-classification software and manual vetting of high frequency calls, report review and finalization and completion of the USFWS Northeastern US Bat Reporting Spreadsheet for Acoustic Surveys. Chelsea also prepares files for submission to the North American Bat Monitoring Project (NABat) on behalf of MassDOT. Chelsea recently worked with MassDOT to provide a Project Review Package under the Section 7 consultation process for a project location where NLEB presence was detected via acoustic surveys. The package included the description of the action area, potential impacts to MYSE, and proposed conservation measures to mitigate and minimize Project impacts to MYSE. The USFWS issued their concurrence for a determination of "may affect, not likely to adversely affect".

RIDOT Master Price Agreement Visual Bridge Assessments for Bat Presence

Chelsea managed the visual bridge assessment effort of 34 bridges throughout Rhode Island for evidence of bat roosting. The inspections were performed during the active bat season in 2022. VHB confirmed probable absence of roosting bats at most bridge locations slated for the 2023 construction season and detected potential presence of roosting bats based on guano and staining. Chelsea coordinated with RIDOT environmental staff, project management, and RIDOT Construction Supervisors for the design and implementation of traffic control set ups for bridge inspections occurring on Interstate 95 and other high-traffic volume roadways; performed work site hazard assessments and safety tailboard meetings; prepared inspection reports using the USFWS reporting form and consulted with USFWS Endangered Species Biologists at the New England Field Office.

CTDOT Environmental Services Task Orders

Chelsea conducted an acoustic bat survey along the proposed linear route of the I-95 Interchange 74 Improvements at Route 161 and Replacement of Bridge No. 250 in East

Lyme Connecticut in 2022. The survey effort included the development of a Phase II Acoustic Study Plan with proposed survey locations for submission to USFWS, conducting the acoustic survey at five survey locations within the Project limits to target a range of potentially suitable summer habitat, training VHB staff in survey techniques, acoustic analysis, and report development.

NHDOT, Exit 4A Interstate 93 Interchange & Keene-Swanzey Floodplain Compensatory Storage

Chelsea led the acoustic bat survey effort for two NHDOT projects targeting the NLEB in 2021 and 2022. Survey tasks included development and review of the Phase II Acoustic Study Plan, conducting the survey in accordance with USFWS survey guidelines, acoustic analysis, and report development. Chelsea trained VHB team members in survey techniques and worked closely with the client to ensure that all reporting requirements were met for these surveys.

Confidential Solar Project, VT

Chelsea assisted in the natural resource assessment in support of a 20 MW solar development in central Vermont by leading the acoustic bat survey effort to detect the probable absence or presence of Indiana bat (*Myotis sodalis*) and MYSE. Chelsea assisted in the development of the Phase II Acoustic Study Plan and coordinated with Vermont Fish and Wildlife Department for plan approval. Chelsea conducted the acoustic survey and trained VHB staff in survey techniques and performed acoustic analysis and determined the presence of six species. The findings of this work will be incorporated into project reporting, permitting, and design to ensure compliance with state and federal regulations.

NJDMAVA, NABat Acoustic Survey Reporting, RI

Chelsea is the Project Manager of an acoustic data management project with the New Jersey Department of Military and Veterans Affairs (NJDMAVA). Chelsea is leading efforts to analyze acoustic bat data collected during surveys at various NJDMAVA facilities from 2009 through 2021 and standardize the metadata and call files for upload to the North American Bat Monitoring Program (NABat). The Project has compiled and formatted the metadata to NABat standards for survey efforts dating back to 2009 and analyzed files via auto-classification software approved by USFWS. VHB has also collaborated with NABat to develop a methodology to manually vet a subset of data from each survey due to the large volume of data. VHB is working with a subconsultant to complete the manual vetting and verify the presence or probable absence of bat species recorded during the survey efforts. VHB has also consolidated NABat protocols and tailored them to the specificities of the NJDAMVA datasets to develop a standard operating procedure that can be used for future data analysis and upload efforts. This project will consolidate several years of bat survey data and make it more readily usable as a reference source by the New Jersey Army National Guard when new activities must consider potential impacts on state and federally-listed bat species.

Kimberley M. Justham

Ecologist

Kimberley is an Ecologist in the Environmental Permitting and Natural Sciences Group in VHB's Worcester, Massachusetts, office. Her background includes environmental compliance monitoring, wetland delineation and restoration oversight, federally and state-listed rare species surveys and monitoring (bats, turtles, birds, plants), invasive species management, and habitat restoration.

16 years of professional experience

Education

MS, Environmental Science, University of Rhode Island, 2016

BS, Conservation Biology, University of Rhode Island, 2005

MassDOT Acoustic Bat Surveys and Visual Bridge Surveys, Massachusetts

Kim has led the VHB field team conducting northern long-eared bat acoustic surveys and visual bridge assessments over multiple locations in a variety of habitat types for the Massachusetts Department of Transportation (MassDOT). Her responsibilities have included assisting with the development of Phase II Acoustic Study Plans for review and approval by USFWS, conducting habitat assessments, acoustic surveys and visual bridge assessments, training VHB staff in these survey techniques and equipment operation, acoustic analysis using auto-classification software, compiling and reviewing year-end reporting, and completion of the USFWS Northeastern US Bat Reporting Spreadsheet for Acoustic Surveys. Kim also prepares files for submission to the North American Bat Monitoring Project (NABat) on behalf of MassDOT.

Interstate 93 Exit 4A Interchange Project Bat Acoustic Monitoring – Londonderry and Derry, NH (2021)

As a consultant for the NHDOT, Kim assisted with the field work for the Phase 2 Presence/Probable Absence Acoustic Monitoring Surveys targeting the northern long-eared bat (*Myotis septentrionalis* or NLEB) and other NH state-listed bat species in accordance with the procedures and standards outlined in the United States Fish and Wildlife Service (USFWS) *Range-Wide Indiana Bat Survey Guidelines* (dated March 2020) and USFWS-approved Study Plan for the project.

New Jersey Department of Military and Veterans Affairs, North American Bat Monitoring Program Acoustic Survey Results Reporting, NJ

VHB provided acoustic call and metadata processing and file upload services to NJDMAVA. Kim assisted in creating a process to extract, organize, process, and post over ten years' of bat monitoring data to the North American Bat Monitoring Program data clearinghouse site. Her responsibilities have included extraction of data from acoustic survey and mistnet survey reports, compilation of metadata for bulk upload processing in NABat, and processing bat call files for AutoID using SonoBat and Kaleidoscope Pro. Kim has compiled the metadata documents into the NABat bulk metadata template and uploaded the processed metadata and ZC (call) files to the NABat website.

CTDOT Environmental Services Task Orders

VHB conducted an acoustic bat survey along the proposed linear route of the the I-95 Interchange 74 Improvements at Route 161 and Replacement of Bridge No. 250 in East Lyme Connecticut in 2022. The survey effort included the development of a Phase II Acoustic Study Plan with proposed survey locations for submission to USFWS, conducting the acoustic survey at five survey locations within the Project limits to target a range of potentially suitable summer habitat, training VHB staff in survey techniques, acoustic analysis, and report development. Kim assisted in the preparation of the final report submitted to USFWS.

MA Division of Fisheries and Wildlife, Westborough, MA

Prior to joining VHB, Kim was a Conservation Biologist for the Natural Heritage and Endangered Species Program. She wrote habitat management plans and secured wetland permits for rare plant species habitat restoration projects and monitored several federally listed plant species annually. Kim designed sampling protocols and conducted and supervised vegetation sampling, data entry and data clean-up for a sandplain grassland restoration monitoring project and led a large-scale, multi-year habitat restoration project on a remote, 75-acre island in Buzzards Bay. Restoration activities included a prescribed burn of the entire island, herbicide applications to control for invasive and woody plants, and site prep and seeding with locally sourced warm season grasses. She interpreted aerial photographs, topographic maps, and site plans to accurately map rare species observations. Kim used ArcGIS Desktop to delineate regulated and non-regulated habitat areas for state and federally listed bats, mammals, and vernal pool invertebrates. She worked with the database team to input, manage, and distribute rare species data. She conducted control of invasive and aggressive vegetation through application of herbicides and mechanical removal. Kim monitored and mapped Natural Communities over 4 years; managed habitat for terns and censused and banded terns over 8 years; conducted avian monitoring, including nightjar, marsh bird, and shorebird surveys over 5 years; and conducted salamander surveys and trapping, mussel surveys, and vernal pool surveys over 4 years. She also conducted active searches by foot, nesting surveys, trapping surveys and radio-telemetry surveys of MESA-listed turtle species, including the federally listed bog turtle over 5 years.

RI Department of Environmental Management, Providence, RI

Prior to joining VHB, Kim was an Environmental Scientist on the Wetlands Enforcement team where she performed DEM Wetland Permit and RIPDES compliance inspections, identified wetland violations, supervised the installation and maintenance of ESC measures, and supervised wetland restorations. ACOE methodology included identification of wetland plant communities, hydric soils, and other hydrologic indicators. Kim interpreted aerial photographs, topographic maps, and site plans to help determine the extent of wetlands violations and areas to be restored. She coordinated with Rhode Island state and town officials, farmers, landowners, contractors, and consultants to resolve wetland violations. She supervised restorations and served as the point of contact for landowners throughout the inspection and restoration process.

Casey Bardier

Environmental Scientist

Casey is an Environmental Scientist in the Environmental Permitting and Natural Sciences Group in VHB's Watertown, Massachusetts, office. Her background includes federally and state-listed rare species surveys and monitoring (bats, turtles, birds, plants), environmental compliance monitoring, wetland delineation, and environmental permitting.

2 years of professional experience

Education

BS, Fisheries, Wildlife & Conservation Biology, North Carolina State University, 2021

MassDOT Acoustic Bat Surveys and Visual Bridge Surveys, MA

Casey has assisted the VHB team conducting northern long-eared bat acoustic surveys and visual bridge assessments over multiple locations in a variety of habitat types for the Massachusetts Department of Transportation (MassDOT). Her responsibilities have included acoustic surveys and visual bridge assessments, data compilation for reporting, and assisting with compilation of year-end reporting.

Confidential Client, Biological Inventories, Southeastern, US

VHB was contracted by a private land holding company to conduct natural resource inventories and prepare detailed reports for a total of 53 properties throughout the southeastern United States. As a Natural Resource Investigator, Casey conducted seasonal amphibian, reptile, and bird surveys on site, processed all collected data, and assisted with the production of the natural resources inventory reports for all of the projects.

NCDOT Endangered Species Surveys, NC

VHB was contracted by the North Carolina Department of Transportation (NCDOT) to conduct a variety of endangered species surveys throughout the state of North Carolina. Casey assisted with multiple plant (Schweinitz's sunflower, Dwarf-flower heartleaf, and Michaux's sumac) and visual bat assessments in bridges and culverts. Her responsibilities included conducting surveys in the field, reporting the presence or absence of species of interest, and coordinating with state officials for reporting.

National Development, The District Burlington Modified Master Plan, Burlington, MA

In her role as an Environmental Scientist, Casey helped the environmental permitting for a redevelopment project to create two new life science/laboratory buildings, a new parking garage, and utility and stormwater management improvements for National Development. She contributed to the preparation and submittal of the Notice of Intent (NOI) and an additional amendment for submittal to the Burlington Conservation Commission and the Massachusetts Department of Environmental Protection.

National Grid, Footer Inspection Delineation, Southern NH & Northern MA
In her role as an Environmental Scientist, Casey assisted with the delineation of an extensive study area covering hundreds of acres in contract with Southfield Redevelopment Authority. In addition to her field work duties, she also helped with the field data processing and submittals of Abbreviated Notices of Resource Area Delineations (ANRADs) for the four towns in which the project lies.

Eversource, Kingston Reliability Project, Carver/Plympton/Kingston, MA
In her role as an Environmental Scientist, Casey conducted Stormwater Pollution Prevention Plan (SWPPP) inspections, generated the weekly reports, and coordinated with the client team. Additionally, Casey also assisted with telemetry surveys of a large population of over 40 eastern box turtles located in areas of priority habitat as established by the MassWildlife's Natural Heritage and Endangered Species Program (NHESP) within the limits of the 8-mile long project area.

North Carolina State University, Raleigh, NC
Prior to joining VHB, Casey was an Aquatic Plant Management Technician for the North Carolina State University Extension Office. Within her role, she worked alongside laboratory staff and graduate students to establish and maintain numerous research projects involving the management of invasive aquatic plants in reservoirs, lakes, and rivers across the state of North Carolina. The research projects involved the effects of herbicide treatments in controlled greenhouse and field trials. She also contributed to the revegetation of native aquatic plants in various lakes across the state in partnership with the North Carolina Wildlife Resources Commission.

North Carolina Wildlife Resources Commission, Raleigh, NC
Prior to joining VHB, Casey was an intern with the North Carolian Wildlife Resources Commission working on the Box Turtle Connection Project. As part of her duties, Casey conducted mark-recapture surveys of Eastern Box Turtles over a 105-acre study area. She also operated radio telemetry equipment to track a population of turtles, their movements, and perform weekly health assessments.

Hannah Rowe

Project Scientist

Hannah is a Project Scientist in VHB's Orlando office. She is an ESA Certified Ecologist, an ISA Certified Arborist (FL – 9204A), an FFWCC Authorized Gopher Tortoise Agent (GTA-15-00084C) and is trained in prescribed fire as a land management technique. She is proficient in protected species surveys, tree inventories and health assessments, state and federal permit regulations, Phase I Environmental Site Assessments, and GIS mapping and analysis. Hannah has completed the appropriate certification courses to be qualified to conduct bat acoustic studies.

11 years of professional experience

Education

MS, Environmental Management, University of Manchester (England), 2012

BSc, Ecology, Manchester Metropolitan Univ (England), 2010

Registrations/Certifications

Certified Arborist, FL

Ct, Fundamentals of Environmental Justice, National Highway Institute, 2017

Authorized Gopher Tortoise Agent, Florida Fish & Wildlife Conservation Commission, FL

Certified Ecologist (The Ecological Society of America)

Affiliations/Memberships

Ecological Society of America, 2016

Florida Association of Environmental Professionals, Central Florida, 2015

International Society of Arboriculture, 2016

MassDOT Acoustic Bat Surveys and Visual Bridge Surveys, Massachusetts

Hannah assisted with northern long-eared bat acoustic surveys for the Massachusetts Department of Transportation (MassDOT). Her responsibilities have included acoustic analysis using auto-classification software and completing year-end reporting. Hannah also prepares files for submission to the North American Bat Monitoring Project (NABat) on behalf of MassDOT.

SR 528 Extension, Florida Bonneted Bat Acoustic Survey

Hannah conducted an acoustic bat survey for Florida bonneted bat (*Eumops floridanus*) along the proposed route of the SR 538 Extension, in April 2023. The survey effort included the development of an Acoustic Study Plan with proposed survey locations for submission to USFWS, conducting the acoustic survey at eight survey locations within the Project limits to target a range of potentially suitable habitat, training VHB staff in survey techniques, acoustic analysis, and final survey report development.

Bat Acoustic Survey Methods (March 2023)

Hannah attended the five-day in-person training course specializing in bat acoustic survey methods provided by Bat Survey Solutions. The training focused on acoustic bat data analysis, use of autoclassification software, interpreting results, and manual vetting for all southeastern species, including the Florida bonneted bat and tricolored bat (*Perimyotis subflavus*).

Bat Acoustic Survey Methods (December 2021)

Hannah participated in the in-person training course specializing in bat acoustic survey methods provided by Bat Survey Solutions. The training focused on acoustic bat data management, use of autoclassification software, interpreting results, and manual vetting.

Bat Acoustic Qualitative Analysis Training, Virtual (July 2020)

Hannah participated in the online training course specializing in acoustic analysis of bat calls provided by Titley Scientific. The training focused on the qualitative analysis of bat call sonograms to visually identify bat calls to species.

FDOT D5, US 17-92 PD&E from Ivy Mist Lane to Avenue A, Osceola County, FL

Hannah serves as an Enviromental Scientist for this PD&E study from Ivy Mist Lane to Intercession City. The project is surrounded by wetlands associated with Reedy Creek

and includes the need for an additional bridge structure. Hannah was responsible for wetland delineation and species-specific protected species surveys including as Florida Bonneted Bats, Audubon's crested caracara, gopher tortoise, and sand skinks. She assisted with the existing site conditions report, preparation of the alternatives analysis, and wildlife agency coordination. Hannah also assisted with the Natural Resource Evaluation Report to ensure compliance with NEPA.

Confidential Client, Large Scale Solar Ecological Services, Polk County, FL

VHB provided ecological services for a proposed solar site in Putnam County. The services provided for the 500+ acre property included ecological due diligence, wetland delineation, and FDEP formal jurisdictional determination. Species specific protected species surveys were conducted for Florida bonneted bat, Southeastern American kestrel, Audubon's crested caracara, gopher tortoise, and sand skinks.

Barwood Land and Estates, Residential Development, Bodelwyddan, Wales, UK

Prior to VHB, Hannah served as an ecologist as part of a team undertaking bat surveys, acoustic analysis, and assessments at a proposed housing site in Bodelwyddan, Wales. Input was provided into the masterplan for the project, to ensure consideration of several notable bat populations.

Industrial Demolition, SCA, Oughtibridge, England, UK

Prior to VHB, Hannah conducted dusk emergence / dawn re-entry building bat surveys at a paper mill prior to its demolition, confirming no bats were roosting in the structure. Demolition inspections, conditioned by a Natural England bat license, were conducted during demolition prior to sections of soft demolition, to confirm that no bats were present.

UK Ministry of Defense, Residential Development, Bicester, England, UK

Prior to VHB, Hannah served as an ecologist as part of a team undertaking a suite of ecological assessments and protected species surveys at Bicester, a UK Ministry of Defense site. The site is due to be redeveloped (in-part) for a large self-build residential project. Specifically, great crested newt, reptile and bat survey and assessment.

London Heathrow Airport Expansion, London, England, UK

Prior to VHB, Hannah served as an ecologist as part of a team undertaking a suite of ecological assessments and protected species surveys at the potential London Heathrow Airport expansion site. Specifically, great crested newt, reptile, bat and botanical survey and assessment.

FDOT District 5, Districtwide Environmental Permitting Services, FL

Prior to VHB, Hannah served as an environmental scientist for districtwide as-needed environmental permitting services. Hannah performed tasks including arboricultural assessments, protected species surveys, osprey nest monitoring and migratory bird nest removal permitting, bat exclusion and permitting requirements, GIS mapping and analysis, and other miscellaneous tasks as assigned to assure design projects met critical production schedules.

JANET DEBELAK TYBUREC

PROFESSIONAL PROFILE

Experienced author, educator, photographer, presenter, and wildlife biologist specializing in environmental and nature studies, especially addressing bat conservation and research. Works in various settings: lecture halls, classrooms, and outdoor field locations. Professional development, coordination, and management of multi-day trainings, workshops, and field surveys. Since 1992 has organized, conducted, and instructed at over 175 workshop venues, personally training over 2,500 students on research skills, including bat capture, handling, identification, and echolocation call recording and analysis. Has been the primary investigator on projects for studying and managing bat populations and conducting field research across North America.

RELEVANT EXPERIENCE

Author, Educator, Photographer, Wildlife Biologist (September 2012 to present)

Bat Survey Solutions, LLC owned by Janet Tyburec Consulting, Tucson AZ

Duties: Provide training and instruction on bat research, inventory, and monitoring, including physical capture techniques, radio-tracking, and acoustic surveys for private, federal and state agencies, including the USDA Forest Service, USDI Bureau of Land Management, National Park Service, Fish and Wildlife Service, and the Department of Defense and Army Corps of Engineers. Perform professional bat surveys for agency directors, staff, wildlife biologists, resource managers, seasonal employees, and volunteers.

Contract Instructor (September 2002 to September 2012)

Bat Conservation International (BCI), Austin TX

Job Duties: Design and teach summer field workshops for BCI and its partner agencies and organizations about bat research and conservation, advanced capture techniques, acoustic monitoring, *Myotis sodalis* survey techniques, and inventory and management techniques; using field study techniques including mist netting, harp trapping, acoustic monitoring equipment and software; radio-tracking, banding, light-tagging, species identification, habitat assessment and management, status determination, and data management tools.

Director of Education Programs (June 1996-September 2002); Assistant Dir. (September 1989-June 1996)

Bat Conservation International (BCI), Austin TX

Administrative Duties: Prepare annual departmental budget for three program activities; contribute to semi-annual departmental reports and provide organizational and donor annual reports.

Job Duties: Organize, schedule, promote, and instruct at BCI's educational workshops. Develop and edit educational materials, posters, books, audio/visual programs.

EDUCATION

Trinity University, San Antonio TX. May 1989

B.A., Biology and English: Undergraduate Science Studies: Botany, Plant Physiology, Vertebrate Zoology, Ecology, Oceanography, Genetics, General Biology, Chemistry, Physics, Statistics
Undergraduate English Studies: Elizabethan Playwrights, Complete Works of Shakespeare, American Novelists, Complete Works of Faulkner, Language Arts, Magazine Writing

University of Colorado, Boulder CO. August 1988

Course work in Comparative Ecology of Alpine and Desert Ecosystems

Pima Community College, Tucson AZ. August 1984 - May 1985

Course work in Creative Writing

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JANET DEBELAK TYBUREC

SELECT PUBLICATIONS

Tyburec, J.D. 1998. Memoirs from bat camp. *BATS* 16(3): 8-9.
Tyburec, J.D. 1998. (Ed.) *Discover Bats*! Bat Conservation International, Austin. 228 pages.
Tyburec, J.D. 1999. Vacation bat watching in the tropics. *BATS* 17(4): 10-13.
Tyburec, J.D 2003. "A Gallery of Workshop Wildlife" (photo essay) *BATS* 21(3): 10.
Tyburec, J.D., C. Weise, A. McIntire, and S. Richardson. 2011. Bat Conservation: Priorities and Initiatives in the Sonoran Desert Region. *Sonorensis* 31 (1): 20-25.
Tyburec, J.D. 2014. "Bats." In: *Cave Creek Canyon: Revealing the Heart of Arizona's Chiricahua Mountains*. ECO Wear & Publishing, Rodeo NM 274 pages.
Tyburec, J.D. 2015 (2nd Ed.). "Bats." In: *A Natural History of the Sonoran Desert*. S.J. Phillips and P.W. Comus (Eds.) University of California Press, Berkeley. Pages 401-410.
Robbins, L.W., J.D. Tyburec, J.C. Timpone, and V. Brack, Jr. 2021. *Bats of Oklahoma*, Center for Bat Research, Outreach, and Conservation, Indiana State University, Terre Haute. 100 pages.

SELECT PRESENTATIONS

Tyburec, J.D. 2012. *Acoustic Monitoring: A Silver-bullet or a Sticky-wicket?* Presentation at the Northeast Bat Working Group Meeting, Carlisle PA, January 2012.
Tyburec, J.D. 2012. *Harp trap effectiveness for the Capture of* Myotis leibii*, small-footed myotis*. Presentation at the Northeast Bat Working Group Meeting, Carlisle PA, January 2012
Tyburec, J.D. and J.D. Chenger. 2013. *Using Auto-classifiers for Acoustic Surveys: Do Results Reflect Reality?* Presentation at the Northeast Bat Working Group Meeting, Albany NY, January 2013.
Tyburec, J.D. and J.D. Chenger. 2013. *Auto-classifiers for Acoustic Surveys: A Bat in the Hand is Worth how Many Detectors in the Bush?* Presentation at the Southeast Bat Diversity Network Meeting, Pikeville TN. February 2013.
Chenger, J.D. and J.D. Tyburec. 2014. Comparing bat detector deployments at different heights, in different orientations, and using different microphone types. Presentation (poster) at the Southeast Bat Diversity Network Meeting, Nacogdoches TX. February 2014.
Tyburec, J.D., J.D Chenger and J.M. Szewczak. 2014. Comparing four acoustic analysis software packages and the accuracies of their auto-classification results for determining bat occupancy in a habitat. Presentation at the Southeast Bat Diversity Network Meeting, Nacogdoches TX. February 2014.
Tyburec, J.D., and J.D. Chenger. 2019. Improving Bat Survey Efficiency and Probable Presence Results by Combining Physical Capture and Acoustic Recording Methods. Oral presentation at the American Fisheries Society and The Wildlife Society's 2019 Join Conference in Reno NV. October 2019.
Tyburec, J.D., and J.D. Chenger. 2021. Stationary Point (Passive) Acoustic Surveys for Bats: Using Auto-classification Software Results to Infer Relative Bat Activity - The Problem of Multiple Bat Passes in a Recording. Oral presentation at the Northeast Bat Working Group 2021 Virtual Meeting, 10-11 March.

SELECT BAT-SURVEY & ACOUSTIC-MONITORING PROJECTS

2009 - Acoustic Identification Summary for 2005-2008 Bat Surveys conducted by the ***USDA-Forest Service, Region 1*** (Idaho/Montana), involving reviewing, vetting and reporting results for over 6,500 full-spectrum echolocation recordings.
2009 - Acoustic Identification Summary for a 2009 Bat Survey conducted by ***Sanders Environmental***, involving reviewing, vetting and reporting results for over 33,000 full-spectrum echolocation call recordings from the Northeastern U.S. to identify federally listed T&E species and state-sensitive species.

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JANET DEBELAK TYBUREC

2010 - Acoustic Identification Summary for a 2010 Bat Survey conducted by ***Sanders Environmental***, involving reviewing, vetting and reporting results for over 380,000 full-spectrum echolocation call recordings from the Northeastern U.S.

2011 - Acoustic Analysis provided for a 2011 Bat Survey conducted by ***Sanders Environmental***, involving reviewing, vetting and reporting results from over 60,000 full-spectrum echolocation call recordings from the Northeastern U.S. using SonoBat software.

2012 - Capture and Acoustic Field Survey for the ***US Army Corps of Engineers*** (Illinois/Missouri), involving site selection for capture and concurrent acoustic surveys designed to assess management needs for T&E bats, data collection, and reviewing, vetting and reporting results from over 120 bats captured and 12,000 full-spectrum echolocation call recordings collected, with 100% manual vetting of the acoustic files.

2014 - Acoustic Field survey for ***URS Corporation*** to assess *Myotis leibii* habitat along a proposed Pennsylvania Power and Light, right-of-way development in the Pocono Mountains (Wilkes-Barre PA), deploying over 190 bat-detectors, collecting and analyzing over 90,000 recordings from nearly 6,000 hours of full-spectrum monitoring, with 100% of the acoustic files manually vetted.

2016 - Acoustic Analysis of nearly 600 full-spectrum echolocation call recordings from 17 passive monitoring deployments and 2 mobile transects for the ***Environmental Research Group, LLC*** of Bainbridge GA. The analysis included auto-classification outputs from SonoBat4 (NE) and KaliedoscopePRO with manual vetting of both results to document 6 eastern U.S. bat species according to current USF&WS Indiana Bat Summer Survey Guidelines.

2016 - Manual Vetting to provide a second opinion on nearly 1,000 full-spectrum echolocation call recordings, representing nearly 1,200 distinct bat passes, from select locations monitoring from the years of 2011 thru 2016 for the ***U.S. Fish and Wildlife Service, Sheldon-Hart Mountain National Wildlife Refuge Complex***, in Lakeview OR. Analysis included auto-classification outputs from SonoBat4 (NW) with manual vetting to confirm the presence of 13 bat species, including 5 northwestern *Myotis* species.

2016 - Capture and Acoustic Survey, Morphological Identification, Manual Acoustic Vetting, and Acoustic Survey Report Comparing and Summarizing a 2-week Survey Effort in each of 3 locations: in Southeastern Arizona, Northern California and Western Kentucky, which together comprised over 1,000 capture records, 20,000 acoustic recordings, and documented 12 - 20 bat species per location. (100% of the acoustic files were manually vetted with results presented in Tyburec et al. Poster Presentation at the 2016 North American Symposium on Bat Research in San Antonio TX.)

2017 - Capture and Acoustic Field Survey for the ***Sky Island Alliance*** and Appletton-Whitell Audubon Research Ranch to survey bat occurrence at managed wetlands designed for mitigation to aid recovery of the Chiricahua Leopard Frog (Santa Cruz County, Arizona); site selection for capture and acoustic inventories of a 4-site; 7-night period with over 12 capture survey hours and 272 acoustic survey hours, where 12 individual bats of three species were captured and nearly 4,000 individual bat passes were recorded and almost 2,800 were confidently identified to 14 different species.

2017 - Manual Vetting of nearly 400 full-spectrum echolocation call recordings, representing almost 500 individual bat passes, from select monitoring locations during the years of 2014 thru 2016 for the ***Canadian Wildlife Service, Northern Conservation Division, Whitehorse YT***. Analysis included auto-classification outputs from SonoBat4 (WY) with manual vetting to confirm the presence of four (4) bat species including 3 common northwestern *Myotis* species.

2018 - Passive Acoustic Survey, Manual Vetting, and Acoustic Survey Report for a 17-night passive acoustic survey conducted at a southern Arizona grassland community near Elgin, summarizing 5 detector locations, totaling over 19,000 recordings (60GB), from 614 acoustic survey hours, and 66 detector-survey nights, that yielded almost 29,000 bat-passes (that were 100% manually vetted) and confirmed the presence of 19 southwestern bat species: *Antrozous pallidus, Choeronycteris mexicana Eptesicus fuscus, Lasionycteris noctivagans, Lasiurus blossevillii, Lasiurus cinereus, Lasiurus xanthinus, Leptonycteris yerbabuenae, Myotis auriculus, Myotis californicus, Myotis ciliolabrum, Myotis occultus, Myotis thysanodes, Myotis velifer, Myotis volans, Myotis yumanensis, Nyctinomops* spp. *Pipistrellus hesperus*, and *Tadarida brasiliensis*.

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JANET DEBELAK TYBUREC

2018 - Manual Vetting to provide a second opinion of over 100 full-spectrum echolocation call recordings, representing 130 distinct bat passes, from select monitoring stations deployed in 2017 by the ***Maryland Department of Natural Resources***. Analysis included auto-classification outputs from SonoBat4 (NE, NNE, and PA-VA-NY) with manual vetting to confirm the presence of nearly 50 confidently identified passes from 5 bat species, including *Myotis lucifugus*.

2016-2018 - Passive and Mobile Acoustic Surveys, Manual Vetting, and Acoustic Survey Report summarizing 3 years of acoustic survey work conducted near Punta Gorda FL in association with the Bat Survey Solutions, LLC, Acoustic Survey Methods trainings, summarizing efforts at 35 detector locations, totaling 12,000 recordings (45GB) that were 100% manually vetted, and confirmed the presence of 8 southeastern bat species: *Eptesicus fuscus, Eumops floridanus, Lasiurus borealis/seminolus, Lasiurus intermedius, Nycticeius humeralis, Pipistrellus subflavus*, and *Tadarida brasiliensis*.

2019 - Bat Survey Efforts (including physical captures with single-high mist nets, triple-high mist nets, twin-bank harp traps, and triple-bank harp traps; and full-spectrum active and passive acoustic recording using full-spectrum Wildlife Acoustics SongMeter detectors, Pettersson M500 microphones, and SonoBat LIVE recorders) for ***Merlin Tuttle's Bat Consrvation*** "Experience Texas Bats" Natrual History Tour in Big Bend National Park, TX during April 2019. Presented a bat survey summary presentation at the end of the week analyzing over 4,000 acoustic records and over 200 capture records, documenting 18 of the 24 suspected species found in the park, with breakdown of species only captured physically, only acoustically, and both via capture and acoustic methods, with 100% of the acoustic collection manually vetted to species or species-guild.

2019 - Manual Vetting to provide a second opinion/species identification confirmation of 1,200 zero-cross recordings collected during an ***Office of Surface Mining*** acoustic survey in Pennsylvania. Analysis and manual vetting performed with KaleidoscopePRO software, using USF&WS Indiana Bat Summer Survey Guidelines.

2019 - Manual Vetting to provide a second opinion/species identification confirmation of 50 suspected Myotis species recordings collected in Pennsylvania by ***Bat Conservation and Managment***. Analysis performed with Kaleidoscope PRO software and manual vetting performed with SonoBat software.

2019 - Manual Vetting to provide species occupancy report on 350 zero-cross recordings collected from 10 survey locations in Alaska for the ***Alaska Center for Conservation Science***. Analysis and manual vetting performed using KaleidoscopePRO software.

2020 - Manual Vetting to provide a second opinion and species identification confirmation of 100 recordings suspected to be of *Myotis* species bats collected by the ***Maryland Department of Conservation***.

2020 - Manual Vetting to provide species occupancy report on 7,000 full-spectrum files collected by ***Sanders Environmental*** to identify T&E species (*M. septentrionalis* and *M. sodalis*) in Pennsylvania using current USF&WS Indiana Bat Summer Survey Guidelines. Analysis and vetting performed using MLE results from KaleidoscopePRO software and full-spectrum qualitative analysis using the SonoBat viewer.

2020 - Manual Vetting to provide a second opinion/species identification confirmation on 4,000 full-spectrum recordings collected in Pennsylvania by ***Sanders Environmental*** to provide species occupancy report from fall swarming habitats near mine features, using current USF&WS Indiana Bat Summer Survey Guidelines.

2021 - Manual Vetting to provide second opinions and species identification confirmation on 300 full-spectrum recordings for ***Bat Consrvation and Management*** from a proposed development in Pennsylvania to determine *Myotis sodalis* and/or *M. septentrionalis* presence at the site, using current USF&WS Indiana Bat Summer Survey Guidelines.

2021 - Acoustic survey report to identify true-positive, false-positive, and false-negative auto-classifier decisions to provide a site-level species occupancy report at a four-site, three-night survey in southern Arizona performed by ***Copperhead Consulting***. Analysis and manual vetting of over 8,000 zero-cross recordings using KaleidoscopePRO software.

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JANET DEBELAK TYBUREC

BAT SURVEY TRAINING CLASSES DEVELOPED & TAUGHT

From 1992-2012 Janet Debelak Tyburec worked for Bat Conservation International (Austin TX) to develop their "Bat Conservation and Management" workshops, "Educator" workshops and "Decision Makers" workshops which were conducted at venues in Arizona, California, Kentucky, Montana, Pennsylvania, Texas, Virginia and Toronto, Ontario CANADA, working with founder Merlin D. Tuttle and Director of Eduction, Patricia A. Morton to manage and direct all training efforts. In 2001 BCI began offering "Acoustic Monitoring for Bats" workshops at the "flagship" venues in the Chiricahua Mountains of Arizona (May/June), Lava Beds National Monument in California (July), Mammoth Cave National Park in Kentucky (July/August), and at Canoe Creek State Park in Central Pennsylvania (August/September). Beginning in 2008 Janet became a private contractor and federal agency contractor, and worked with Bat Conservation and Management (BCM, Carlisle PA) to offer "Bat Study and Survey Techniques" workshops at venues in Arizona, California, Indiana, Kentucky, Maryland, New Jersey, New York, Pennsylvania, Tennessee, Texas and West Virginia. In 2012 she formed her own company to take over all bat-survey training after BCM and BCI dropped educational outreach from their respective missions. Below is a select list of notable training courses.

2008 "Forest Bat Conservation and Inventory Techniques" workshop for the United States Forest Service, Coronado National Forest in Tucson AZ, 18-19 September.
2009 "Acoustic Monitoring as a Non-contact Bat Survey Method" workshop for Cleveland MetroParks in Akron OH, 25 August.
2009 "Bat Survey Techniques for Caves, Mines, Buildings, and Bridges" workshop for the United States Forest Service, Doublehead Ranger District, in Dillon MT, 14-17 September.
2009 "Forest Bat Conservation and Inventory Techniques" workshop for the United States Forest Service, Coronado National Forest and local partner agencies, in Tucson AZ, 12-13 November.
2010 "Introduction to Bat Conservation, Survey Methods, and Management" workshop for the United States Forest Service, Guadalupe National Forest, Carlsbad Ranger District, in Carlsbad NM, 6-8 July.
2010 "Forest Bat Conservation: Water, Mines, and Man-made Structures" workshop for the United States Forest Service, Lincoln National Forest, Smokey Bear Ranger District in Ruidoso NM, 15-17 July.
2010 "AnaBat Acoustic Survey Training" workshop for the Department of Defense, Nellis Air Force Base in Las Vegas NV, 22-24 October.
2011 "Bat Inventory and Monitoring" workshop for the United States Forest Service, Guadalupe National Forest and the Bureau of Land Management, in Carlsbad NM, 10-13 August.
2011"White-nose Syndrome in Bats, History, Prevention, and Prognosis" class for the Department of Defense, in Sierra Vista AZ, 30 August-1 September.
2012 "Bat Capture and Acoustic Survey Techniques" class for the United States Forest Service, North Central Research Station, in Portal AZ, 19-21 May.
2012 "Bat Inventory and Monitoring" workshop for the Utah Bat Conservation Cooperative, joint agency: Bureau of Land Management, National Park Service and United States Forest Service in Escalante UT, 30 July-2August.
2012 "AnaBat Acoustic Inventory Methods" workshop for the United States Fish and Wildlife Service, in McBee SC, 23-24 April.
2013 "SonoBat Acoustic Analysis Techniques" class for Pima County Parks Department, Tucson AZ, 22 April.
2013 "Acoustic Survey Field Techniques for Bat Studies" workshop for the United States Fish and Wildlife Service, in State College PA, 20-21 October
2014 "Pettersson Detector and SonoBat Software Acoustic Survey Techniques" workshop for Sanders Environmental Clients and Sub-contractors, in Somerset PA, 7-9 April.
2014 "Bat Detectors and Acoustic Survey Protocols" workshop for the United States Fish and Wildlife Service, in Dixon IA, 3-5 June.
2015 "Acoustic Data Management" training workshops in Alton, IL (7-9 March); Hollidaysburg PA (28-29 April); Harrisburg, PA (12-14 October); and Fairfield ME (14-16 June).

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JANET DEBELAK TYBUREC

2015 "Combined Field Survey Techniques" training workshops in Portal AZ (20-26 May); Tulelake CA (10-17 July); and Mammoth Cave, KY (19-25 September).
2015 "Field Survey Techniques" training for National Park Service, Mammoth Cave, KY, 14-17 September.
2016 "Acoustic Data Management" training workshops in Duluth MN (7-9 March), Wells ME (7-9 April), and Harrisburg PA (17-19 October).
2016 "Acoustic Survey Methods" training workshop in Punta Gorda FL, 1-5 February.
2016 "Combined Field Survey Techniques for Bats" training workshops in Portal AZ (22-29 May), Tulelake CA (10-17 July), and Mammoth Cave KY (28 August - 4 September).
2016 "Field Survey Techniques for Bats" training workshop for California Department of Fish and Game, Tulelake CA, 18-22 July.
2017 "Acoustic Survey Methods" training course in Punta Gorda FL (23-27 January) and Tucson AZ (3-7 April)
2017 "Combined Field Survey Techniques" training workshops in Portal AZ (13-20 May), Tulelake CA (14-21 July), and Mammoth Cave KY (22-30 August).
2017 "Field Survey Techniques" training workshop for National Park Service staff in Tulelake CA, 24-28 July.
2017 "Acoustic Data Management" training class in Harrisburg PA, 11-13 October.
2018 "Acoustic Survey Methods" training course in Punta Gorda FL, 21-26 January.
2018 "Combined Field Survey Techniques for Bats" training workshop in Portal AZ (8-15 May), Tulelake CA (29 July - 5 August), and Mammoth Cave KY (4-12 September).
2018 "Combined Field Survey Techniques for Bats" training workshop for National Park Service staff at Santa Monica Mountains National Recreation Area, Los Angeles County CA, 18-20 September.
2018 "Acoustic Data Management" training class in Harrisburg PA, 16-18 October.
2019 "Acoustic Survey Methods" training course in Punta Gorda FL, 8-13 January.
2019 "Acoustic Survey Methods" training course for the Seminole Tribe in Big Cypress FL, 11-13 March.
2019 Bat Survey for Merlin Tuttle's Bat Conservation "Discover Texas Bats," Big Bend TX, 27 March - 4 April.
2019 "Acoustic Survey Methods" training course in Tucson AZ, 8-13 April.
2019 "Acoustic Data Management" training class in Tulsa OK, 26-28 April.
2019 "Cave Conservation and Management for Bats" field training workshop in San Marcos TX, 7-9 May
2019 "Combined Field Survey Techniques for Bats" field training workshop in Portal AZ, 20-27 May.
2019 "Acoustic Data Management using KaleidoscopePRO Software" custom training class for Environmental Science Associates consultants in Tampa FL, 24-25 July.
2019 "Bat Survey Techniques for Agency Biologists" training workshop in Great Basin (Baker) NV, 15-19 July.
2019 "Combined Field Survey Techniques for Bats" training workshop in Great Basin (Baker) NV, 21-28 July.
2019 "Combined Field Survey Techniques for Bats" training workshop in Mammoth Cave KY, 4-12 September.
2019 "Acoustic Data Management" training class in Harrisburg PA, 22-24 October.
2020 "Acoustic Survey Methods" training course in Punta Gorda FL, 10-16 January.
2020 "Acoustic Survey Methods for Conducting North American Bat Conservation Program Surveys" for the Southwest Bat HUB, on-line training workshop, 14-18 September.
2020 "Acoustic Survey Methods for Conducting Florida Bonneted Bat Surveys using KaleidoscopePRO" for KCA Environmental Consultants (Tampa FL), on-line training workshop (24-26 August) and follow-up mock-survey consultation (29 September - 1 October).
2021 "Acoustic Survey Methods/NABat Survey Methods" field training course in Tucson AZ, 21-25 June.
2021 "Acoustic Survey Methods/NABat Survey Methods" field training course in Elgin AZ, 5-9 July.

SKILLS

Writing (non-fiction, fiction, and creative), Photography (outdoor and nature; digital and film), Design/Layout (computer assisted), Drawing, drafting, painting, Cycling (recreational road biking; racing), Sea Kayaking, Running Exercise/Health/Nutrition/Fitness, Hiking, Nature Study and Travel

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Appendix E: Bridge Bat Assessment Form and Photos

Bridge/Structure Bat Assessment Form

Date & Time of Assessment: 7/20/2023 11:00	DOT Project Number: 608742	Route/Facility Carried: Route 28	County: Barnstable
Federal Structure ID: H-10-00	Structure Coordinates (latitude and longitude): 41.668842 -70.109321	Structure Height (approximate): 8'	Structure Length: 180'

Structure Type (check one)

Bridge Construction Style

- [X] Cast-in-place
- [ ] Flat Slab/Box
- [ ] Truss (Side View)
- [ ] Parallel Box Beam
- [ ] Pre-stressed Girder
- [ ] Steel I-beam
- [ ] Covered
- [ ] Other:

Culvert Type

- [ ] Box
- [ ] Pipe/Round
- [ ] Other:

Other Structure

- [ ]

Structure Material (check all that apply)

Deck Material	*Beam Material*	*End/Back Wall Material*
[ ] Metal	[ ] None	[X] Concrete
[X] Concrete	[X] Concrete	[ ] Timber
[ ] Timber	[ ] Steel	[ ] Stone/Masonry
[ ] Open grid	[ ] Timber	[ ] Other:
[ ] Other:	[ ] Other:	

Creosote Evidence

- [ ] Yes [ ] No
- [ ] Unknown

Culvert Material

- [ ] Metal
- [ ] Concrete
- [ ] Plastic
- [ ] Stone/Masonry
- [ ] Other:

Notes:

Crossings Traversed (check all that apply)

[ ] Bare ground	[ ] Open vegetation	[ ] Other:
[X] Rip-rap	[ ] Closed vegetation	
[X] Flowing water	[ ] Railroad	
[ ] Standing water	[ ] Road/trail - Type:	
[ ] Seasonal water		

Surrounding Habitat (check all that apply)

[ ] Agricultural	[ ] Grassland	
[X] Commercial	[ ] Ranching	
[X] Residential-urban	[X] Riparian/wetland	
[ ] Residential-rural	[ ] Mixed use	
[ ] Woodland/forested	[ ] Other:	

Areas Assessed (check all that apply)

Check all areas that apply. If an area is not present in the structure, check the "not present" box.
Document all bat indicators observed during the assessment. Include the species present, if known, and provide photo documentation as indicated.

Area (check if assessed)	Assessment Notes	Evidence of Bats (include photos if present)
[ ] All crevices and cracks: **Bridges/culverts:** rough surfaces or imperfections in concrete **Other structures:** soffits, rafters, attic areas	[ ] Not present; Inspected SW quadrant only	[ ] Visual - live # dead # [ ] Guano [ ] Staining [ ] Audible [ ] Odor [ ] Photos [ ] Species; No Bat evidence observed (partial survey)
[X] Concrete surfaces (open roosting on concrete)	[ ] Not present	[ ] Visual - live # dead # [ ] Guano [ ] Staining [ ] Audible [ ] Odor [ ] Photos [ ] Species
[X] Spaces between concrete end walls and the bridge deck	[ ] Not present	[ ] Visual - live # dead # [ ] Guano [ ] Staining [ ] Audible [ ] Odor [ ] Photos [ ] Species
[ ] Crack between concrete railings on top of the bridge deck (Gap, Railing)	[X] Not present	[ ] Visual - live # dead # [ ] Guano [ ] Staining [ ] Audible [ ] Odor [ ] Photos [ ] Species
[X] Vertical surfaces on concrete I-beams	[ ] Not present	[ ] Visual - live # dead # [ ] Guano [ ] Staining [ ] Audible [ ] Odor [ ] Photos [ ] Species
[X] Spaces between walls, ceiling joists	[ ] Not present	[ ] Visual - live # dead # [ ] Guano [ ] Staining [ ] Audible [ ] Odor [ ] Photos [ ] Species
[ ] Weep holes, scupper drains, and inlets/pipes	[ ] Not present ✓	[ ] Visual - live # dead # [ ] Guano [ ] Staining [ ] Audible [ ] Odor [ ] Photos [ ] Species
[ ] All guiderails	[ ] Not present; Guiderail type not conducive to roosting	[ ] Visual - live # dead # [ ] Guano [ ] Staining [ ] Audible [ ] Odor [ ] Photos [ ] Species
[ ] All expansion joints	[X] Not present	[ ] Visual - live # dead # [ ] Guano [ ] Staining [ ] Audible [ ] Odor [ ] Photos [ ] Species ✓

Name: Kim Justham & Casey Bardier

Signature:

Last revised April 2020

Assessment Form

VISUAL BRIDGE ASSESSMENT PROJECT 608742 – HERRING RIVER BRIDGE

Bridge Assessment Photos

Photo 1: A southeasterly view of the northern railings, deck, and pilings of Herring River Bridge (Bridge H-10-002) carrying Main Street (Route 28) over the Herring River.

VISUAL BRIDGE ASSESSMENT PROJECT 608742 – HERRING RIVER BRIDGE

Photo 2: A southerly view of the underside of Bridge H-10-002 showing the concrete beams/decking and timber pilings supporting the bridge over the Herring River.

VISUAL BRIDGE ASSESSMENT PROJECT 608742 – HERRING RIVER BRIDGE

Photo 3: A southernly view of the underside of Bridge H-10-002 near the western abutment from the northwestern bank of the Herring River.

VISUAL BRIDGE ASSESSMENT PROJECT 608742 – HERRING RIVER BRIDGE

Photo 4: An easterly view of the north girder of Bridge H-10-002 from the northwestern abutment.

VISUAL BRIDGE ASSESSMENT PROJECT 608742 – HERRING RIVER BRIDGE

Photo 5: A westerly view of the north girder and concrete backwall of Bridge H-10-002 from the northwestern abutment.

VISUAL BRIDGE ASSESSMENT PROJECT 608742 – HERRING RIVER BRIDGE

Photo 5: A westerly view of the underside of Bridge H-10-002 over the Herring River showing the concrete backwall abutment.

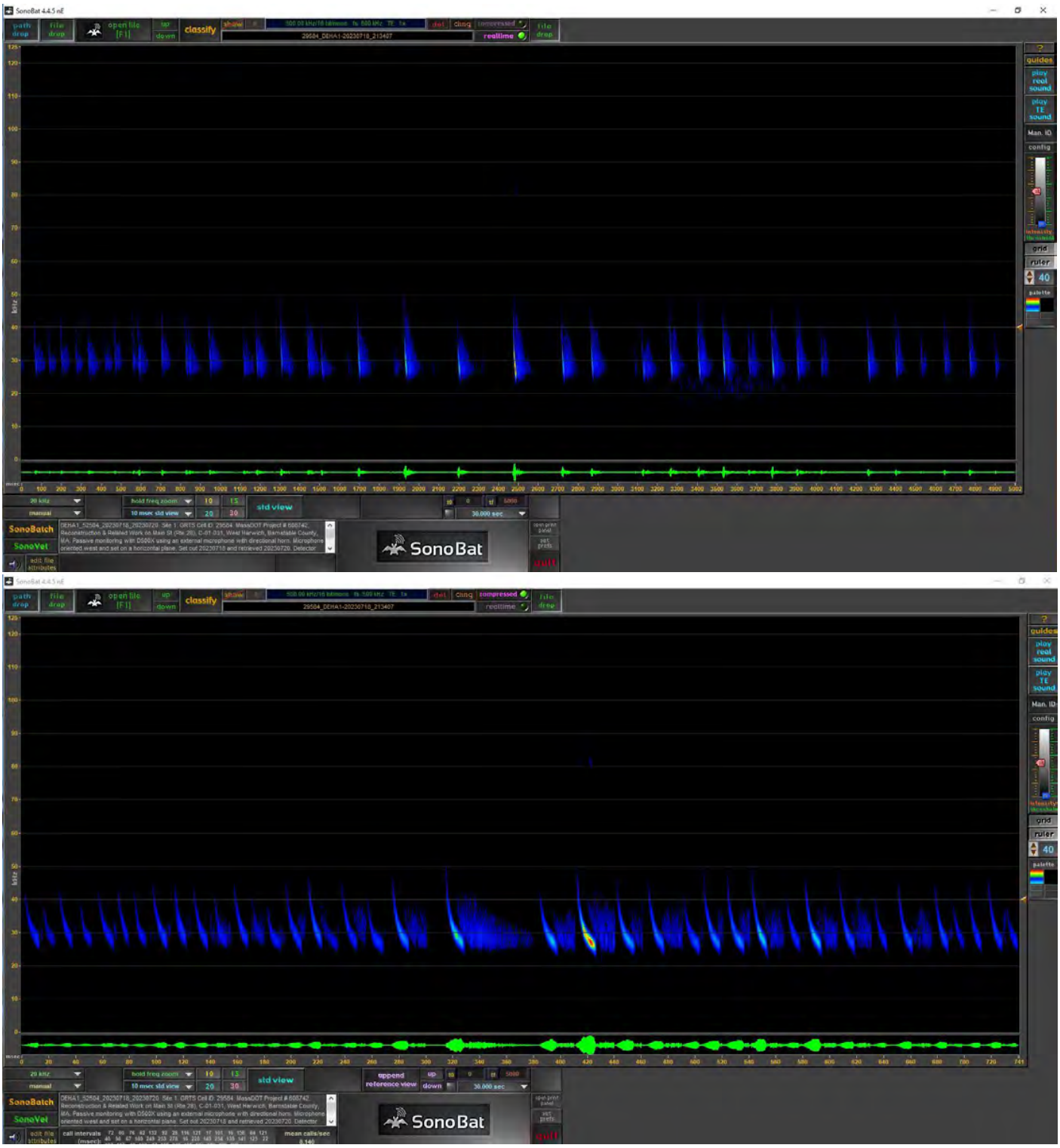
VISUAL BRIDGE ASSESSMENT PROJECT 608742 – HERRING RIVER BRIDGE

Photo 6: A southerly view of crevices on the underside of the concrete decking between steel pipes. No evidence of bats was observed.

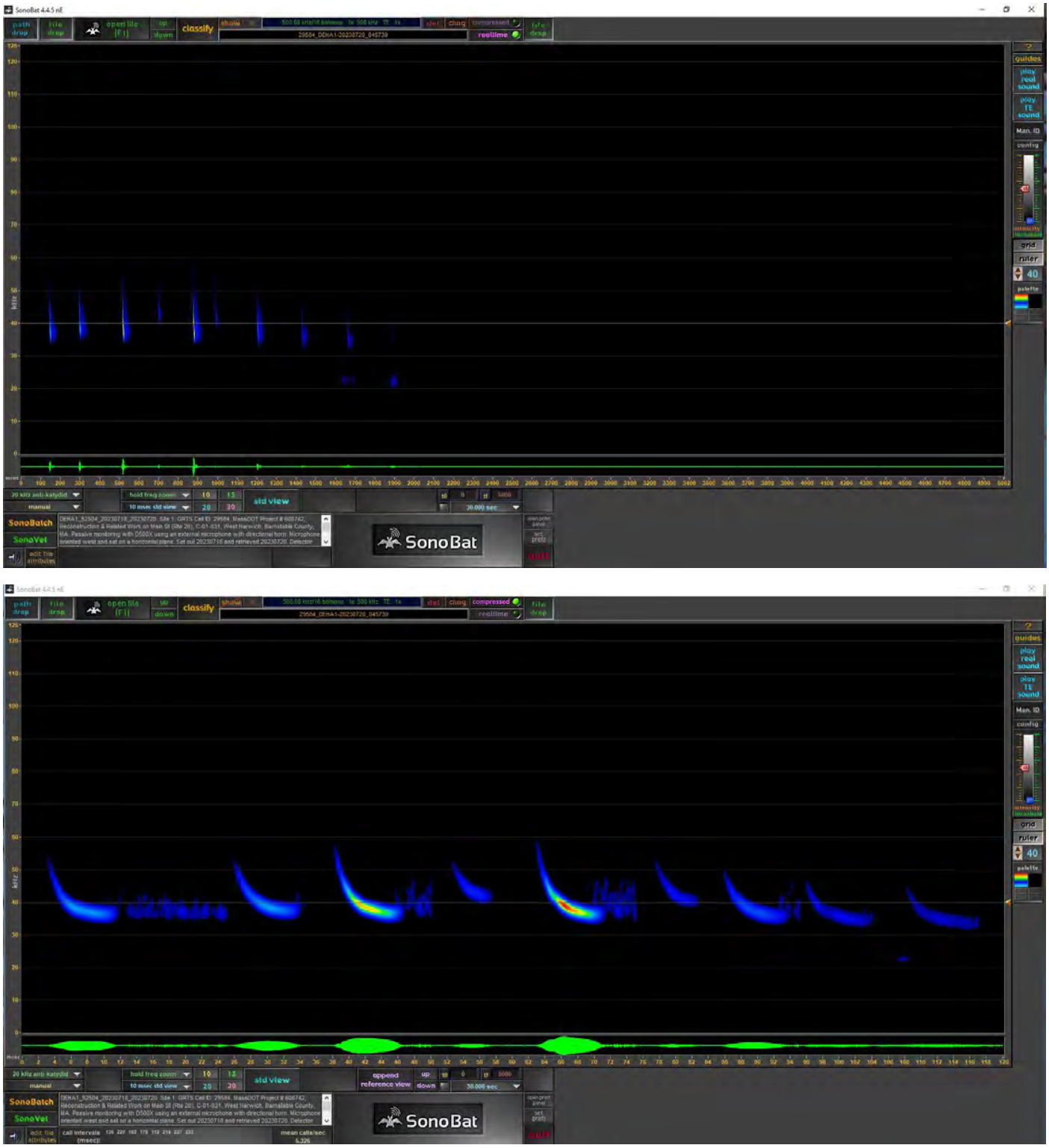
VISUAL BRIDGE ASSESSMENT PROJECT 608742 – HERRING RIVER BRIDGE

Photo 7: A view looking up from under Bridge H-10-002 at a drainage pipe from the bridge deck.

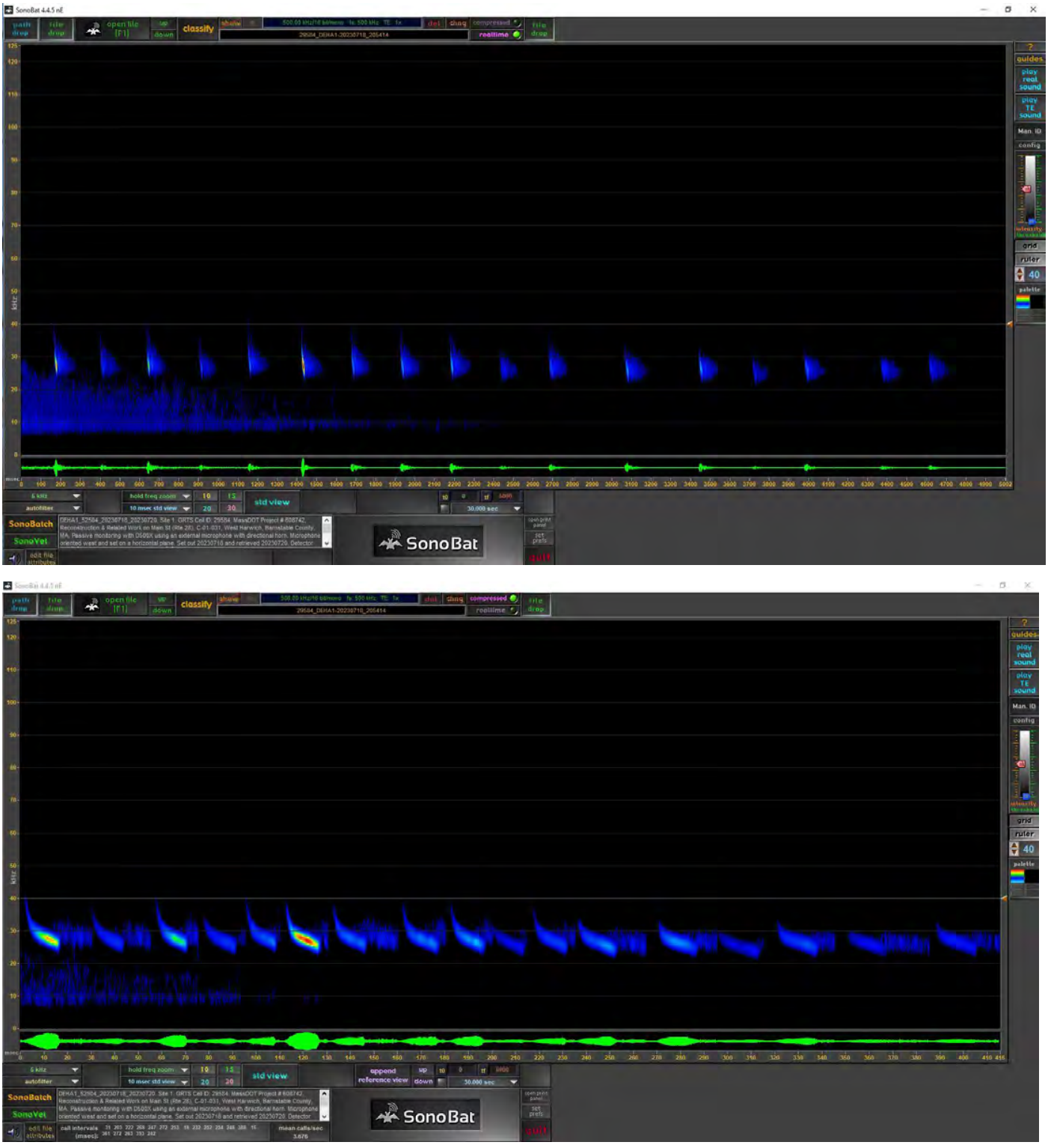
Appendix F: Representative Spectrograms



Spectrogram 1: A confirmed big brown bat (*Eptesicus fuscus;* EPFU) recorded at Site 1 on the night of July 18, 2023, as shown in full-spectrum format via Sonobat 4.4.5 in true-time format (top) and compressed format (bottom). This call is somewhat over-saturated, yet archetypical for EPFU.



Spectrogram 2: A confirmed eastern red bat (*Lasiurus borealis;* LABO) recorded at Site 1 on the night of July 19, 2023, as shown in full-spectrum format via Sonobat 4.4.5 in true-time format (top) and compressed format (bottom). This call is archetypical for LABO.



Spectrogram 3: A confirmed silver-haired bat (*Lasionycteris noctivagans;* LANO) recorded at Site 1 on the night of July 18, 2023, as shown in full-spectrum format via Sonobat 4.4.5 in true-time format (top) and compressed format (bottom). This call has a lot of diffuse echo, but the pulse shape is consistent with LANO especially at the beginning of the sequence.

Appendix G: Event Logs

Detector 52504_20230718_20230720_Event Log
MODEL NO: TS32GCF133
FW REV: 20171204
SERIAL: 9G17976020351AC60038
LABEL: D500X
2023-07-18 12:34:14 $$SYSTEM START, FW VERSION: D500X V2.4.5 201211, 12:06:56, S/N: 52504, TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 5.0V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 12:42:00 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.9V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 13:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 5.0V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 14:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 5.0V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 15:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 5.0V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 16:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 5.0V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 17:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 5.0V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 18:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 5.0V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 19:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 5.0V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 19:40:02 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 5.0V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 20:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.8V, FILE: M000008.WAV, TOTAL FREE: 44.67G
2023-07-18 21:00:08 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.7V, FILE: M000016.WAV, TOTAL FREE: 44.64G
2023-07-18 22:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.7V, FILE: M000035.WAV, TOTAL FREE: 44.55G
2023-07-18 23:00:05 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.7V, FILE: M000047.WAV, TOTAL FREE: 44.49G
2023-07-19 00:00:01 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.7V, FILE: M000056.WAV, TOTAL FREE: 44.45G
2023-07-19 01:00:03 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.6V, FILE: M000060.WAV, TOTAL FREE: 44.43G
2023-07-19 02:00:03 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.6V, FILE: M000065.WAV, TOTAL FREE: 44.40G
2023-07-19 03:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.6V, FILE: M000073.WAV, TOTAL FREE: 44.37G
2023-07-19 04:00:01 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.6V, FILE: M000077.WAV, TOTAL FREE: 44.35G
2023-07-19 05:00:05 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.5V, FILE: M000080.WAV, TOTAL FREE: 44.33G
2023-07-19 05:55:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.5V, FILE: M000095.WAV, TOTAL FREE: 44.26G

2023-07-19 06:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.5V, FILE: M000095.WAV, TOTAL FREE: 44.26G
2023-07-19 07:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.6V, FILE: M000095.WAV, TOTAL FREE: 44.26G
2023-07-19 08:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.6V, FILE: M000095.WAV, TOTAL FREE: 44.26G
2023-07-19 09:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.6V, FILE: M000095.WAV, TOTAL FREE: 44.26G
2023-07-19 10:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.6V, FILE: M000095.WAV, TOTAL FREE: 44.26G
2023-07-19 11:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.7V, FILE: M000095.WAV, TOTAL FREE: 44.26G
2023-07-19 12:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.7V, FILE: M000095.WAV, TOTAL FREE: 44.26G
2023-07-19 13:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.7V, FILE: M000095.WAV, TOTAL FREE: 44.26G
2023-07-19 14:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.7V, FILE: M000095.WAV, TOTAL FREE: 44.26G
2023-07-19 15:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.7V, FILE: M000095.WAV, TOTAL FREE: 44.26G
2023-07-19 16:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.7V, FILE: M000095.WAV, TOTAL FREE: 44.26G
2023-07-19 17:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.7V, FILE: M000095.WAV, TOTAL FREE: 44.26G
2023-07-19 18:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.7V, FILE: M000095.WAV, TOTAL FREE: 44.26G
2023-07-19 19:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.7V, FILE: M000095.WAV, TOTAL FREE: 44.26G
2023-07-19 19:40:02 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.7V, FILE: M000095.WAV, TOTAL FREE: 44.26G
2023-07-19 20:00:05 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.5V, FILE: M000098.WAV, TOTAL FREE: 44.25G
2023-07-19 21:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.5V, FILE: M000114.WAV, TOTAL FREE: 44.17G
2023-07-19 22:00:03 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.4V, FILE: M000134.WAV, TOTAL FREE: 44.08G
2023-07-19 23:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.4V, FILE: M000145.WAV, TOTAL FREE: 44.02G
2023-07-20 00:00:04 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.4V, FILE: M000149.WAV, TOTAL FREE: 44.00G
2023-07-20 01:00:05 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.4V, FILE: M000153.WAV, TOTAL FREE: 43.98G
2023-07-20 02:00:04 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.4V, FILE: M000159.WAV, TOTAL FREE: 43.96G
2023-07-20 03:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.4V, FILE: M000160.WAV, TOTAL FREE: 43.95G
2023-07-20 04:00:05 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.4V, FILE: M000163.WAV, TOTAL FREE: 43.94G
2023-07-20 05:00:04 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.4V, FILE: M000173.WAV, TOTAL FREE: 43.89G

2023-07-20 05:55:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.4V, FILE: M000179.WAV, TOTAL FREE: 43.86G
2023-07-20 06:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.4V, FILE: M000179.WAV, TOTAL FREE: 43.86G
2023-07-20 07:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.4V, FILE: M000179.WAV, TOTAL FREE: 43.86G
2023-07-20 08:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.4V, FILE: M000179.WAV, TOTAL FREE: 43.86G
2023-07-20 09:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.5V, FILE: M000179.WAV, TOTAL FREE: 43.86G
2023-07-20 10:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.5V, FILE: M000179.WAV, TOTAL FREE: 43.86G
2023-07-20 10:45:05 $$KEYBOARD WAKEUP --- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.6V, FILE: M000179.WAV, TOTAL FREE: 43.86G
2023-07-20 10:46:16 $$KEYBOARD SLEEP ---- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:22/05:29, DST=DIS, BATTERY: 4.5V, FILE: M000179.WAV, TOTAL FREE: 43.86G

Detector 52507_20230718_20230720_Event Log
MODEL NO: TS32GCF133
FW REV: 20170420
SERIAL: 0H277720803877140091
LABEL: D500X
2023-07-18 12:10:52 $$SYSTEM START, FW VERSION: D500X V2.4.5 201211, 12:06:56, S/N: 52507, TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.8V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 12:17:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.8V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 13:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.8V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 14:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.8V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 15:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.8V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 16:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.8V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 17:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.8V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 18:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.9V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 19:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.9V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 19:40:02 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.8V, FILE: -, TOTAL FREE: 44.71G
2023-07-18 20:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.5V, FILE: M000005.WAV, TOTAL FREE: 44.69G
2023-07-18 21:00:03 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.4V, FILE: M000013.WAV, TOTAL FREE: 44.65G
2023-07-18 22:00:04 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.3V, FILE: M000023.WAV, TOTAL FREE: 44.60G
2023-07-18 23:00:03 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.2V, FILE: M000030.WAV, TOTAL FREE: 44.57G
2023-07-19 00:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.2V, FILE: M000034.WAV, TOTAL FREE: 44.55G
2023-07-19 01:00:01 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.1V, FILE: M000036.WAV, TOTAL FREE: 44.54G
2023-07-19 02:00:03 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.0V, FILE: M000038.WAV, TOTAL FREE: 44.53G
2023-07-19 03:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.0V, FILE: M000039.WAV, TOTAL FREE: 44.53G
2023-07-19 04:00:04 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 4.9V, FILE: M000042.WAV, TOTAL FREE: 44.51G
2023-07-19 05:00:04 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 4.9V, FILE: M000048.WAV, TOTAL FREE: 44.48G
2023-07-19 05:55:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 4.9V, FILE: M000052.WAV, TOTAL FREE: 44.47G

2023-07-19 06:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 4.9V, FILE: M000052.WAV, TOTAL FREE: 44.47G
2023-07-19 07:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.0V, FILE: M000052.WAV, TOTAL FREE: 44.47G
2023-07-19 08:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.0V, FILE: M000052.WAV, TOTAL FREE: 44.47G
2023-07-19 09:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.1V, FILE: M000052.WAV, TOTAL FREE: 44.47G
2023-07-19 10:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.1V, FILE: M000052.WAV, TOTAL FREE: 44.47G
2023-07-19 11:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.2V, FILE: M000052.WAV, TOTAL FREE: 44.47G
2023-07-19 12:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.2V, FILE: M000052.WAV, TOTAL FREE: 44.47G
2023-07-19 13:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.3V, FILE: M000052.WAV, TOTAL FREE: 44.47G
2023-07-19 14:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.3V, FILE: M000052.WAV, TOTAL FREE: 44.47G
2023-07-19 15:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.3V, FILE: M000052.WAV, TOTAL FREE: 44.47G
2023-07-19 16:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.3V, FILE: M000052.WAV, TOTAL FREE: 44.47G
2023-07-19 17:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.3V, FILE: M000052.WAV, TOTAL FREE: 44.47G
2023-07-19 18:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.4V, FILE: M000052.WAV, TOTAL FREE: 44.47G
2023-07-19 19:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.4V, FILE: M000052.WAV, TOTAL FREE: 44.47G
2023-07-19 19:40:02 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.3V, FILE: M000052.WAV, TOTAL FREE: 44.47G
2023-07-19 20:00:03 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.0V, FILE: M000059.WAV, TOTAL FREE: 44.46G
2023-07-19 21:00:01 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 4.9V, FILE: M000070.WAV, TOTAL FREE: 44.41G
2023-07-19 22:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 4.8V, FILE: M000091.WAV, TOTAL FREE: 44.31G
2023-07-19 23:00:01 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 4.8V, FILE: M000102.WAV, TOTAL FREE: 44.25G
2023-07-20 00:00:04 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 4.8V, FILE: M000105.WAV, TOTAL FREE: 44.24G
2023-07-20 01:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 4.8V, FILE: M000105.WAV, TOTAL FREE: 44.24G
2023-07-20 02:00:04 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 4.7V, FILE: M000108.WAV, TOTAL FREE: 44.23G
2023-07-20 03:00:03 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 4.7V, FILE: M000111.WAV, TOTAL FREE: 44.21G
2023-07-20 04:00:02 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 4.7V, FILE: M000115.WAV, TOTAL FREE: 44.19G
2023-07-20 05:00:01 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 4.6V, FILE: M000123.WAV, TOTAL FREE: 44.15G

2023-07-20 05:55:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 4.7V, FILE: M000126.WAV, TOTAL FREE: 44.14G
2023-07-20 06:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 4.7V, FILE: M000126.WAV, TOTAL FREE: 44.14G
2023-07-20 07:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 4.7V, FILE: M000126.WAV, TOTAL FREE: 44.14G
2023-07-20 08:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 4.8V, FILE: M000126.WAV, TOTAL FREE: 44.14G
2023-07-20 09:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 4.9V, FILE: M000126.WAV, TOTAL FREE: 44.14G
2023-07-20 10:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 4.9V, FILE: M000126.WAV, TOTAL FREE: 44.14G
2023-07-20 10:53:35 $$KEYBOARD WAKEUP --- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.1V, FILE: M000126.WAV, TOTAL FREE: 44.14G
2023-07-20 10:56:00 $$KEYBOARD SLEEP ---- TIMER OFF, INPUT GAIN=45, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 21:22/06:29, DST=ON, BATTERY: 5.0V, FILE: M000126.WAV, TOTAL FREE: 44.14G

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 B00420

PROPOSAL

DENNIS-HARWICH

For: **Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge**

COMMONWEALTH OF MASSACHUSETTS

LOCATION

The work referred to herein is in the Towns of **DENNIS** and **HARWICH** in Barnstable 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:

Main Street (Route 28)

Begin – Station 09+32.06 +/-

End –Station 47+26.84 +/-

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 **2017 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. Also, there is a Summer Shut Down Period: No work shall be allowed on any roadway between Memorial Day and Labor Day without prior written approval of the Engineer and the Town.

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 # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
101.	0.2	CLEARING AND GRUBBING AT _____ PER ACRE		
102.2	1	TREE TRIMMING AT _____ LUMP SUM		
102.511	31	TREE PROTECTION - ARMORING AND PRUNING AT _____ EACH		
102.521	100	TREE AND PLANT PROTECTION FENCE AT _____ PER FOOT		
102.55	16	ARBORIST AT _____ PER HOUR		
103.	17	TREE REMOVED - DIAMETER UNDER 24 INCHES AT _____ EACH		
104.	1	TREE REMOVED - DIAMETER 24 INCHES AND OVER AT _____ EACH		
120.1	6,000	UNCLASSIFIED EXCAVATION AT _____ PER CUBIC YARD		
141.1	580	TEST PIT FOR EXPLORATION AT _____ PER CUBIC YARD		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
142.	4,390	CLASS B TRENCH EXCAVATION AT _____ PER CUBIC YARD		
144.	50	CLASS B ROCK EXCAVATION AT _____ PER CUBIC YARD		
146.	47	DRAINAGE STRUCTURE REMOVED AT _____ EACH		
151.	1,370	GRAVEL BORROW AT _____ PER CUBIC YARD		
151.01	1,150	GRAVEL BORROW - TYPE C AT _____ PER CUBIC YARD		
156.	260	CRUSHED STONE AT _____ PER TON		
156.3	7,027	CRUSHED STONE FOR BACKING AT _____ PER TON		
170.	23,000	FINE GRADING AND COMPACTING - SUBGRADE AREA AT _____ PER SQUARE YARD		
180.01	1	ENVIRONMENTAL HEALTH AND SAFETY PROGRAM AT _____ LUMP SUM		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
180.02	40	PERSONAL PROTECTION LEVEL C UPGRADE AT _____ PER HOUR		
180.03	100	LICENSED SITE PROFESSIONAL SERVICES AT _____ PER HOUR		
181.11	1,960	DISPOSAL OF UNREGULATED SOIL AT _____ PER TON		
181.12	1,180	DISPOSAL OF REGULATED SOIL - IN-STATE FACILITY AT _____ PER TON		
181.13	590	DISPOSAL OF REGULATED SOIL - OUT-OF-STATE FACILITY AT _____ PER TON		
181.14	200	DISPOSAL OF HAZARDOUS WASTE AT _____ PER TON		
182.1	1	INSPECTION AND TESTING FOR ASBESTOS AT _____ LUMP SUM		
182.2	200	REMOVAL OF ASBESTOS AT _____ PER FOOT		
183.1	100,000	TREATMENT OF CONTAMINATED GROUNDWATER AT _____ PER GALLON		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
183.2	1,000	DISPOSAL OF GRANULAR ACTIVATED CARBON AT _____ PER POUND		
184.1	4	DISPOSAL OF TREATED WOOD PRODUCTS AT _____ PER TON		
192.6	20	MONITORING WELL ADJUSTED AT _____ EACH		
201.	49	CATCH BASIN AT _____ EACH		
202.	22	MANHOLE AT _____ EACH		
202.2	4	MANHOLE (9 TO 14 FOOT DEPTH) AT _____ EACH		
202.5	3	MANHOLE - 5 FOOT DIAMETER AT _____ EACH		
202.52	10	MANHOLE - 5 FOOT DIAMETER (9 TO 14 FOOT DEPTH) AT _____ EACH		
202.6	1	MANHOLE - 6 FOOT DIAMETER AT _____ EACH		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
220.	90	DRAINAGE STRUCTURE ADJUSTED AT _____ EACH		
220.5	80	DRAINAGE STRUCTURE REMODELED AT _____ EACH		
221.	34	FRAME AND COVER AT _____ EACH		
222.1	51	FRAME AND GRATE - MASSDOT CASCADE TYPE AT _____ EACH		
223.2	53	FRAME AND GRATE (OR COVER) REMOVED AND DISCARDED AT _____ EACH		
227.3	150	REMOVAL OF DRAINAGE STRUCTURE SEDIMENT AT _____ PER CUBIC YARD		
227.31	1,000	REMOVAL OF DRAINAGE PIPE SEDIMENT AT _____ PER FOOT		
227.4	130	MASONRY PLUG AT _____ PER SQUARE FOOT		
238.10	80	10 INCH DUCTILE IRON PIPE AT _____ PER FOOT		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
238.12	35	12 INCH DUCTILE IRON PIPE AT _____ PER FOOT		
241.12	1,075	12 INCH REINFORCED CONCRETE PIPE CLASS III AT _____ PER FOOT		
241.15	420	15 INCH REINFORCED CONCRETE PIPE CLASS III AT _____ PER FOOT		
241.18	395	18 INCH REINFORCED CONCRETE PIPE CLASS III AT _____ PER FOOT		
241.24	1,280	24 INCH REINFORCED CONCRETE PIPE CLASS III AT _____ PER FOOT		
243.12	205	12 INCH REINFORCED CONCRETE PIPE CLASS IV AT _____ PER FOOT		
243.18	380	18 INCH REINFORCED CONCRETE PIPE CLASS IV AT _____ PER FOOT		
244.12	320	12 INCH REINFORCED CONCRETE PIPE CLASS V AT _____ PER FOOT		
251.0125	1,087	1.25 INCH HDPE LOW PRESSURE SEWER SERVICE AT _____ PER FOOT		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
251.03	3,950	3 INCH HDPE FORCEMAIN AT _____ PER FOOT		
256.	2	FORCEMAIN MANUAL AIR RELEASE VALVE - COMPLETE AT _____ EACH		
257.	2	FORCEMAIN FLUSHING ASSEMBLY - COMPLETE AT _____ EACH		
303.06	395	6 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT) AT _____ PER FOOT		
303.08	230	8 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT) AT _____ PER FOOT		
303.12	3,282	12 INCH DUCTILE IRON WATER PIPE (MECHANICAL JOINT) AT _____ PER FOOT		
309.	6,670	DUCTILE IRON FITTINGS FOR WATER PIPE AT _____ PER POUND		
347.2	30	2 INCH COPPER TUBING TYPE K AT _____ PER FOOT		
348.075	90	3/4 INCH SEWER PIPE REMOVE AND RESET AT _____ PER FOOT		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
348.1	720	1 INCH SEWER PIPE REMOVE AND RESET AT _____ PER FOOT		
348.15	170	1-1/2 INCH SEWER PIPE REMOVE AND RESET AT _____ PER FOOT		
348.2	120	2 INCH SEWER PIPE REMOVE AND RESET AT _____ PER FOOT		
349.03	36	3 INCH GATE VALVE AT _____ EACH		
349.06	14	6 INCH GATE VALVE AT _____ EACH		
349.08	4	8 INCH GATE VALVE AT _____ EACH		
349.12	16	12 INCH GATE VALVE AT _____ EACH		
357.03	36	3 INCH GATE BOX AT _____ EACH		
357.06	14	6 INCH GATE BOX AT _____ EACH		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
357.08	4	8 INCH GATE BOX AT _____ EACH		
357.12	16	12 INCH GATE BOX AT _____ EACH		
358.	6	GATE BOX ADJUSTED AT _____ EACH		
363.075	3	3/4 INCH CORPORATION COCK AT _____ EACH		
363.1	32	1 INCH CORPORATION COCK AT _____ EACH		
363.15	5	1-1/2 INCH CORPORATION COCK AT _____ EACH		
363.2	3	2 INCH CORPORATION COCK AT _____ EACH		
371.06	3	6 INCH COUPLING AT _____ EACH		
371.08	4	8 INCH COUPLING AT _____ EACH		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
371.12	1	12 INCH COUPLING AT _____ EACH		
372.02	2	2 INCH TAPPING ASSEMBLY TO BLIND FLANGE AT _____ EACH		
375.06	2	6 INCH INSERTION VALVE AND BOX AT _____ EACH		
375.08	2	8 INCH INSERTION VALVE AND BOX AT _____ EACH		
376.	10	HYDRANT AT _____ EACH		
376.2	2	HYDRANT - REMOVED AND RESET AT _____ EACH		
376.3	6	HYDRANT - REMOVED AND STACKED AT _____ EACH		
381.	87	SERVICE BOX AT _____ EACH		
384.	87	CURB STOP AT _____ EACH		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
390.	1	REMOVE AND RESET IRRIGATION AT _____ LUMP SUM		
403.1	295	CRUSHED STONE FOR BLENDING AT _____ PER TON		
403.2	13,900	FULL DEPTH RECLAMATION WITH EMULSIFIED ASPHALT STABILIZATION AT _____ PER SQUARE YARD		
403.21	13,900	EMULSIFIED ASPHALT FOR FULL DEPTH RECLAMATION AT _____ PER GALLON		
415.2	725	PAVEMENT FINE MILLING AT _____ PER SQUARE YARD		
440.	18,500	CALCIUM CHLORIDE FOR ROADWAY DUST CONTROL AT _____ PER POUND		
443.	15	WATER FOR ROADWAY DUST CONTROL AT _____ PER 1000 GALLONS		
450.231	1,850	SUPERPAVE SURFACE COURSE - 12.5 POLYMER (SSC - 12.5 - P) AT _____ PER TON		
450.32	2,210	SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0) AT _____ PER TON		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
450.42	4,420	SUPERPAVE BASE COURSE - 37.5 (SBC - 37.5) AT _____ PER TON		
451.	70	HMA FOR PATCHING AT _____ PER TON		
452.	2,750	ASPHALT EMULSION FOR TACK COAT AT _____ PER GALLON		
453.	17,840	HMA JOINT ADHESIVE AT _____ PER FOOT		
470.2	220	HMA BERM, TYPE A - MODIFIED AT _____ PER FOOT		
472.	940	TEMPORARY ASPHALT PATCHING AT _____ PER TON		
504.2	2	GRANITE CURB TYPE VA4 - SPLAYED END AT _____ EACH		
506.	4,700	GRANITE CURB TYPE VB - STRAIGHT AT _____ PER FOOT		
506.1	375	GRANITE CURB TYPE VB - CURVED AT _____ PER FOOT		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
509.	730	GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - STRAIGHT AT _____ PER FOOT		
509.1	360	GRANITE TRANSITION CURB FOR PEDESTRIAN CURB RAMPS - CURVED AT _____ PER FOOT		
514.	34	GRANITE CURB INLET - STRAIGHT AT _____ EACH		
515.	2	GRANITE CURB INLET - CURVED AT _____ EACH		
580.	700	CURB REMOVED AND RESET AT _____ PER FOOT		
581.	3	CURB INLET REMOVED AND RESET AT _____ EACH		
590.	700	CURB REMOVED AND STACKED AT _____ PER FOOT		
594.	2,000	CURB REMOVED AND DISCARDED AT _____ PER FOOT		
595.	3	CURB INLET REMOVED AND DISCARDED AT _____ EACH		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
620.12	340	GUARDRAIL, TL-2 (SINGLE FACED) AT _____ PER FOOT		
627.1	1	TRAILING ANCHORAGE AT _____ EACH		
627.82	1	GUARDRAIL TANGENT END TREATMENT, TL-2 AT _____ EACH		
628.21	2	TRANSITION TO NCHRP 350 GUARDRAIL AT _____ EACH		
628.304	2	TEMPORARY IMPACT ATTENUATOR, NON-REDIRECTIVE, TL-2 AT _____ EACH		
628.4	2	TEMPORARY IMPACT ATTENUATOR, REMOVED AND RESET AT _____ EACH		
630.2	440	HIGHWAY GUARD REMOVED AND DISCARDED AT _____ PER FOOT		
669.	800	FENCE REMOVED AND STACKED AT _____ PER FOOT		
697.1	100	SILT SACK AT _____ EACH		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
701.	40	CEMENT CONCRETE SIDEWALK AT _____ PER SQUARE YARD		
701.1	440	CEMENT CONCRETE SIDEWALK AT DRIVEWAYS AT _____ PER SQUARE YARD		
701.2	335	CEMENT CONCRETE PEDESTRIAN CURB RAMP AT _____ PER SQUARE YARD		
702.	835	HOT MIX ASPHALT SIDEWALK OR DRIVEWAY AT _____ PER TON		
706.5	6	FIELD STONE WALK REMOVED AND RESET AT _____ PER SQUARE YARD		
706.7	1,700	BRICK WALK WITH CONCRETE BASE AT _____ PER SQUARE YARD		
707.1	2	PARK BENCH AT _____ EACH		
710.4	34	BOUND - PLAIN GRANITE AT _____ EACH		
711.	4	BOUND REMOVED AND RESET AT _____ EACH		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
712.2	10	BOUND REMOVED AT _____ EACH		
715.	22	RURAL MAIL BOX REMOVED AND RESET AT _____ EACH		
722.2	1	SCHEDULE OF OPERATIONS (TYPE B) - FIXED PRICE $87500 AT Eighty Seven Thousand Five Hundred Dollars LUMP SUM	$87,500.00	$87,500.00
740.	67	ENGINEER'S FIELD OFFICE AND EQUIPMENT (TYPE A) AT _____ PER MONTH		
748.	1	MOBILIZATION AT _____ LUMP SUM		
751.1	640	LOAM FOR LAWNS AT _____ PER CUBIC YARD		
756.	1	NPDES STORMWATER POLLUTION PREVENTION PLAN AT _____ LUMP SUM		
765.	4,400	SEEDING AT _____ PER SQUARE YARD		
765.411	220	SHORT GRASSLAND MIX AT _____ PER SQUARE YARD		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
765.635	220	SEEDING & ESTABLISHMENT AT _____ PER SQUARE YARD		
767.121	750	SEDIMENT CONTROL BARRIER AT _____ PER FOOT		
769.	350	PAVEMENT MILLING MULCH UNDER GUARD RAIL AT _____ PER FOOT		
772.336	5	CEDAR - RED 5-6 FEET AT _____ EACH		
777.328	2	OAK - WHITE 2-2.5 INCH CALIPER AT _____ EACH		
786.501	105	JUNIPER-LOW #3 AT _____ EACH		
788.301	225	BEARBERRY #1 AT _____ EACH		
789.433	14	BEACH PLUM SHRUB 2-3 FEET / #3 AT _____ EACH		
794.345	99	SUMAC - FRAGRANT 'GRO LOW' 18-24 INCH AT _____ EACH		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
796.762	162	DAYLILY - 'ROSY RETURNS' 1 GAL AT _____ EACH		
802.408	1,900	4 INCH TELEPHONE CONDUIT - TYPE NM (8 BANK) AT _____ PER FOOT		
804.3	6,090	3 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC -(UL) AT _____ PER FOOT		
804.333	2,120	3 INCH ELECTRICAL CONDUIT TYPE NM - PLASTIC -(UL) IN ROADWAY AT _____ PER FOOT		
811.121	3	TELEPHONE MANHOLE AT _____ EACH		
811.22	61	ELECTRIC HANDHOLE - SD2.022 AT _____ EACH		
811.28	2	ELECTRICAL HAND HOLE 24 INCH X 24 INCH AT _____ EACH		
811.31	15	PULL BOX 12 X 12 INCHES - SD2.031 AT _____ EACH		
812.09	59	LIGHT STANDARD FOUNDATION PRECAST AT _____ EACH		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
813.42	1,900	WIRE TYPE 8 NO. 6 DIRECT BURIAL AT _____ PER FOOT		
813.43	36,100	WIRE TYPE 8 NO. 4 DIRECT BURIAL AT _____ PER FOOT		
813.526	6,700	WIRE TYPE 10 NO. 6 GROUNDING AT _____ PER FOOT		
813.60	1	EQUIPMENT GROUNDING AT _____ LUMP SUM		
813.80	1	SERVICE CONNECTION (OVERHEAD) AT _____ LUMP SUM		
816.01	1	TRAFFIC SIGNAL RECONSTRUCTION LOCATION NO. 1 AT _____ LUMP SUM		
821.913	5	ORNAMENTAL LIGHT POLE-POST TOP (DENNIS) AT _____ EACH		
821.914	54	ORNAMENTAL LIGHT POLE-POST TOP (HARWICH) AT _____ EACH		
823.04	4	HIGHWAY LIGHTING LUMINAIRE - LED TYPE B AT _____ EACH		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
823.61	1	HIGHWAY LIGHTING LOAD CENTER NO.1 AT _____ LUMP SUM		
823.62	1	HIGHWAY LIGHTING LOAD CENTER NO.2 AT _____ LUMP SUM		
823.72	2	HIGHWAY LIGHTING ARM AND LUMINAIRE REMOVE AND RESET AT _____ EACH		
823.911	5	ORNAMENTAL POST TOP LANTERN LUMINAIRE MUNICIPAL STANDARD (DENNIS TYPE A) AT _____ EACH		
823.913	54	ORNAMENTAL POST TOP LANTERN LUMINAIRE MUNICIPAL STANDARD (HARWICH TYPE C) AT _____ EACH		
826.7	13	ELECTRIC SERVICE RISER RELOCATION AT _____ EACH		
831.	100	ROADSIDE GUIDE SIGN (D6/D8) - ALUMINUM PANEL (TYPE A) AT _____ PER SQUARE FOOT		
832.	250	WARNING-REGULATORY AND ROUTE MARKER - ALUMINUM PANEL (TYPE A) AT _____ PER SQUARE FOOT		
841.1	3	SUPPORTS FOR GUIDE SIGN (D6 W/ D8-5 INCH TUBULAR POST) STEEL AT _____ EACH		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
847.1	50	SIGN SUP (N/GUIDE)+RTE MKR W/1 BRKWAY POST ASSEMBLY - STEEL AT _____ EACH		
848.1	10	SIGN SUP (N/GUIDE)+RTE MKR W/2 BRKWAY POST ASSEMBLIES-STEEL AT _____ EACH		
850.41	350	ROADWAY FLAGGER AT _____ PER HOUR		
851.1	40	TRAFFIC CONES FOR TRAFFIC MANAGEMENT AT _____ PER DAY		
852.	1,700	SAFETY SIGNING FOR TRAFFIC MANAGEMENT AT _____ PER SQUARE FOOT		
852.11	20	TEMPORARY PEDESTRIAN BARRICADE AT _____ PER FOOT		
852.12	4	TEMPORARY PEDESTRIAN CURB RAMP AT _____ EACH		
853.1	6	PORTABLE BREAKAWAY BARRICADE TYPE III AT _____ EACH		
853.2	370	TEMPORARY BARRIER (TL-2) AT _____ PER FOOT		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
853.21	370	TEMPORARY BARRIER REMOVED AND RESET AT _____ PER FOOT		
854.016	10,000	TEMPORARY PAVING MARKINGS - 6 INCH (PAINTED) AT _____ PER FOOT		
854.036	12,000	TEMPORARY PAVING MARKINGS - 6 INCH (TAPE) AT _____ PER FOOT		
854.6	800	TEMPORARY PORTABLE RUMBLE STRIP AT _____ PER DAY		
856.12	900	PORTABLE CHANGEABLE MESSAGE SIGN AT _____ PER DAY		
859.	8,000	REFLECTORIZED DRUM AT _____ PER DAY		
859.1	780	REFLECTORIZED DRUMS WITH SEQUENTIAL FLASHING WARNING LIGHTS AT _____ PER DAY		
864.04	55	PAVEMENT ARROWS AND LEGENDS REFLECTORIZED WHITE (THERMOPLASTIC) AT _____ PER SQUARE FOOT		
864.22	40	SYMBOLS FOR BICYCLE FACILITIES (PF) AT _____ EACH		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
864.23	35	ARROWS FOR BICYCLE FACILITIES (PF) AT _____ EACH		
864.41	1,300	GREEN COLORIZED PAVEMENT MARKINGS AT _____ PER SQUARE FOOT		
866.106	7,500	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC) AT _____ PER FOOT		
866.112	2,800	12 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC) AT _____ PER FOOT		
867.106	8,000	6 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC) AT _____ PER FOOT		
867.112	25	12 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC) AT _____ PER FOOT		
874.	34	STREET NAME SIGN AT _____ EACH		
874.2	25	TRAFFIC SIGN REMOVED AND RESET AT _____ EACH		
874.4	45	TRAFFIC SIGN REMOVED AND STACKED AT _____ EACH		

Project # 608742	Contract # 132267			
Location : DENNIS - HARWICH				
Description : Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge				
ITEM #	**QUANTITY**	**ITEM WITH UNIT BID PRICE WRITTEN IN WORDS**	**UNIT PRICE**	**AMOUNT**
903.	32	3000 PSI, 1.5 INCH, 470 CEMENT CONCRETE AT _____ PER CUBIC YARD		
Total Qty:	382,705.2			

DOCUMENT B00853

SCHEDULE OF PARTICIPATION
BY DISADVANTAGED BUSINESS ENTERPRISES (DBEs)

PRIME BIDDER: _____

DATE OF BID OPENING: _____ MassDOT PROJECT NO.: 608742

FEDERAL AID PROJECT NUMBER: STP/CMQ/TAP/CRP-0035(066)X

PROJECT LOCATION: DENNIS-HARWICH

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:		$		$
	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.:	STP/CMQ/TAP/CRP-0035(066)X	Bid Opening or Due Date:	
Project Name:	Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge	Project Location:	DENNIS-HARWICH

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.: STP/CMQ/TAP/CRP-0035(066)X

Bid Opening or Due Date: _____

Project Name: Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge

Project Location: DENNIS – HARWICH

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: 132267 **Project No.** 608742 **Federal Aid No.:** STP/CMQ/TAP/CRP-0035(066)X

Location: DENNIS-HARWICH **Bid Opening Date:** _____

Project Description: Reconstruction & Related Work on Main Street (Route 28), from Upper County Road to the Herring River Bridge

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

*** END OF DOCUMENT ***

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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 ***