TABLE OF CONTENTS OF SPECIAL PROVISIONS

Note: This Table of Contents has been prepared for the convenience of those using this contract with the sole express purpose of locating quickly the information contained herein; and no claims shall arise due to omissions, additions, deletions, etc., as this Table of Contents shall not be considered part of the contract.

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JULY 30, 2025
FEDERAL AID PROJECT NO. N/A
STATE PROJECT NO. 087-148

REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK

Town of Naugatuck

The State of Connecticut, Department of Transportation, Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 819, dated 2024, as revised by the Supplemental Specifications dated January 2025 (otherwise referred to collectively as "ConnDOT Form 819") is hereby made part of this contract, as modified by the Special Provisions contained herein. The current edition of the State of Connecticut Department of Transportation's "Construction Contract Bidding and Award Manual" ("Manual"), is hereby made part of this contract. If the provisions of this Manual conflict with provisions of other Department documents (not including statutes or regulations), the provisions of the Manual will govern. The Special Provisions relate in particular to the Rehabilitation of Bridge No. 06772 Carrying Route 63 Over Straitsville Brook in the Town of Naugatuck.

CONTRACT TIME AND LIQUIDATED DAMAGES

Four Hundred Twenty-eight (428) calendar days will be allowed for completion of the work on this Contract and the liquidated damages charge to apply will be Nine Hundred Dollars ($900) per calendar day.

NOTICE TO CONTRACTOR - PRE-BID QUESTIONS AND ANSWERS

Questions pertaining to DOT advertised construction projects must be presented through the CTDOT Pre-Bid Q and A Website. The Department cannot guarantee that all questions will be answered prior to the bid date. **PLEASE NOTE - at 9:00 am Monday (i.e. typical Wednesday Bid Opening) the project(s) being bid will be closed for questions, at which time questions can no longer be submitted through the Q and A Website.**

Answers may be provided by the Department up to 12:00 noon, the day before the bid. At this time, the Q and A for those projects will be considered final, unless otherwise stated and/or the bid is postponed to a future date and time to allow for further questions and answers to be posted.

If a question needs to be asked the day before the bid date, please contact the Contracts Unit staff and email your question to dotcontracts@ct.gov immediately.

Contractors must identify their company name, contact person, contact email address and phone number when asking a question. The email address and phone number will not be made public.

The questions and answers (if any) located on the Q and A Website are hereby made part of the bid/contract solicitation documents (located on the State Contracting Portal), and resulting contract for the subject project(s). It is the bidder's responsibility to monitor, review, and become familiar with the questions and answers, as with all bid requirements and contract documents, prior to bidding. By signing the bid proposal and resulting contract, the bidder acknowledges receipt of, and agrees to the incorporation of the final list of Q and A, into the contract document.

Contractors will not be permitted to file a future claim based on lack of receipt, or knowledge of the questions and answers associated with a project. All bidding requirements and project information, including but not limited to contract plans, specifications, addenda, Q and A, Notice to Contractors, etc., are made public on the State Contracting Portal and/or the CTDOT website.

NOTICE TO CONTRACTOR – EVERSOURCE GAS COORDINATION

The contractor shall coordinate with Eversource Gas prior to TERS or MBR post/anchor installation at the outlet. A representative from Eversource Gas shall be present on-site during TERS installation at the outlet. A representative from Eversource Gas shall also be present during hand-digging holes for guiderail posts and anchors.

NOTICE TO CONTRACTOR – MANAGEMENT OF REUSABLE AND SURPLUS SOIL

The following provides guidance regarding the management and placement of surplus soils generated during Project 0087-0148. An estimated 582 cubic yards (CY) of soil have been designated as surplus for the Project. All excavated soils shall be reused to the maximum extent possible unless deemed unsuitable by the Engineer due to physical indications of contamination or the geotechnical characteristics of the material. Material deemed unsuitable by the Engineer shall be brought to the designated placement location referenced below, or to a Department-approved treatment, recycling, or disposal facility if deemed necessary by the Engineer. Management and placement of surplus soils generated during construction will be covered under the Standard Specifications for earthwork and handled in accordance with Form 819.

Excavated material that is suitable for reuse shall be managed at the point of origin for use as backfill. In instances where such soil cannot be reused directly at the point of origin or within several days of excavation, the surplus material, excluding existing pavement structure (asphalt and subbase), rock, ledge, and concrete, shall be brought to the Department-designated placement location. The designated location for placement of surplus soils is located within the CT Route 8 Exit 21 Southbound gore area and shown in the following image:



In the event groundwater is encountered during construction, any dewatering associated with the construction shall be performed in accordance with the CTDEEP's "*General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities"* unless evidence of contamination (oily sheen, etc.) is observed by the Engineer.

NOTICE TO CONTRACTOR – CONSTRUCTION SIGNS

The Contractor shall furnish, install, and maintain Bipartisan Infrastructure Law project signs for the duration of the Contract. The Contractor shall also remove the signs upon completion of the work under the project. A special provision for these signs has been added to the Contract for Item No. 1220027A - Construction Signs.

NOTICE TO CONTRACTOR - CDMS SUBMITTALS

Upon execution of the Contract, the Contractor acknowledges and agrees that contractual submittals for this Project shall be submitted and handled through the Department's Construction Document Management System (CDMS). The CDMS that the Department is currently using is COMPASS.

Contractor submittals including Shop Drawings, Working Drawings, Product Data, RFIs, and RFCs shall be generated and delivered by the Contractor in accordance with the Department's Contractor's User Manual. The administering District office will inform the Contractor of other deliverables required to be similarly submitted.

Access credentials will be provided free of charge to the Contractor.

The Department shall not be held responsible for delays, lack of processing or responses to submittals that do not follow the specified guidelines in the Contractor's User Manual.

NOTICE TO CONTRACTOR - ELECTRONIC ENGINEERING DATA (EED)

The EED is an assembly of engineering data files that were used to produce the Contract plans.

Electronic Engineering Data (EED) is provided for information purposes only. In case of conflict between the EED and the Contract plans and specifications, the contract plans and specifications shall govern. The EED has been reviewed by the Department for quality control purposes, but it is the Contractor's responsibility to build the Project per the contract plans and specifications.

The EED is being provided to the Engineer for GPS/RTS inspection. The Contractor may use the EED to assist in bidding, layout, and Automated Machine Control/Guidance.

The EED includes geospatially correct 2D CAD files and may include horizontal and vertical alignment data files, 3D surface model files (break-line features and triangles) and a preference file. The data is being provided in one of the MicroStation versions, consisting of native and converted formats:

MicroStation V8i (InRoads)

- Native Format
  - Bentley MicroStation CAD files (dgn)
  - Bentley SS2 InRoads Alignment Files (alg)
  - Bentley SS2 InRoads Digital Terrain Models (dtm)
  - Bentley SS2 InRoads Preference File (xin)
- Converted Format (for use in GPS/RTS Site equipment)
  - AutoCAD CAD files (dxf)
  - Alignment files (xml)
  - Surface Models (xml)

MicroStation CONNECT (OpenRoads)

- Native Format
  - Bentley CONNECT MicroStation CAD files (dgn – contains CAD graphics, OpenRoads alignments and terrain models)
- Converted Format (for use in GPS/RTS Site equipment)
  - AutoCAD CAD files (dxf)
  - Alignment files (xml – exported from CONNECT MicroStation CAD file)
  - Surface Models (xml – exported from CONNECT MicroStation CAD file)

For a complete list of EED files, see the EED file manifest (PDF) located in the EED_0087-0148.zip file (0087-0148 is the project number) which is posted with the contract PS&E's on the State Contracting portal. The EED zip file can also be found in the project COMPASS page in the *Contract Documents/100_Contract_Plans (PDF)* folder.

NOTICE TO CONTRACTOR – UTILITY GENERATED SCHEDULE

The attached project specific utility work schedule was provided to the Connecticut Department of Transportation (Department) by the utility companies regarding their identified work on this project.

The utility scheduling information is provided to assist the Contractor in scheduling its activities. However, the Department does not ensure its accuracy and Section 1.05.06 of the Standard Specifications still is in force.

The utility scheduling information shall be incorporated into the Contractor's pre-award schedule in accordance with the Department's Bidding and Award Manual and Section 1.05.08 of the Contract.

After award, the Contractor shall conduct a utility coordination meeting or meetings to obtain contemporaneous scheduling information from the utilities prior to submitting its baseline schedule to the Department in accordance with Section (***1.05.08 – Schedules and Reports***) of the Contract.

The Contractor shall incorporate the contemporaneous utility scheduling information into its baseline schedule submittal. The baseline schedule shall include Contractor predecessor and successor activities to the utility work in such detail as acceptable to the Engineer.

UTILITY WORK SCHEDULE Rev 07/2024	
CTDOT Project Number: 0087-0148	Town: NAUGATUCK
Project Description: Rehabilitation of Bridge No. 06772 On Route 63 over Straitsville Brook	
CTDOT Utilities Engineer: DEREK BROWN	
Phone: NA	Email: Derek.Brown@ct.gov
Utility Company: EVERSOURCE ELECTRIC	
Prepared By: MARK BOVAT	Date Prepared: 7/15/2024
Phone: 860-496-5234	Email: mark.bovat@eversource.com

Scope of Work

The following is a description of all utility work planned to be completed in conjunction with the CTDOT project. The narrative describes all work to be carried out by the utility or its contractor, including temporary and permanent work required by the project as well as any additional utility infrastructure work the utility intends on performing within the project limits during the construction of the project.

Eversource Electric to shift conductors and equipment temorarily on poles set by Frontier. Poles# 28252, #28253, & #28254, set by Frontier to make room for bridge work. Wires, & equipment are being temporarily moved on temporary poles for bidge work. Overhead facilities will return back to original poles when bridge work is complete

Special Considerations and Constraints

The following describes the limiting factors that must be planned for in the scheduling and performance of the utility work. For example, restrictions on cut-overs, outages, limitations on customer service interruptions (e.g. nights, weekends, holidays), seasonal and environmental shutdown periods, long lead material procurements, etc..

Inclement weather may cause a change to this schedule. Customer outages could cause a delay in this schedule. All permits to be obtained by CDOT. State must mark out all property lines, curb and sidewalks. Drainage locations will need to be marked out by State where drain is with in a 10' proximity to the utility relocation. State to make area ready to relocation prior to the utlities starting work, including all clearing and access to poles. State to ensure proper R.O.W for relocated poles. Frontier will need to set p#982 & p#982s back in original location to perform work.

UTILITY WORK SCHEDULE Rev 07/2024

CTDOT Project Number: State Project No. 0087

Utility Company: EVERSOURCE ELECTRIC

Prepared By: MARK BOVAT Total Working Days: 179

Schedule

The following schedule identifies each major activity of utility work in sequential order to be performed by the utility or its contractor. The location of each activity of work is identified by the baseline stationing on the CTDOT plans. All activities identify the predecessor activity which must be completed before a utility work activity may progress. The duration provided is the number of working days required to complete the utility work activity based on historical information and production rates.

Location (Station to Station)	Description of Utility Work Activity	Predecessor Activity	Duration (working days)
project	Order Material (lead time)	Formal notification from DOT to Eversource to order material	60
project	Schedule work, road opening permits,,bid out work	Formal notification from DOT to Eversource to order material	30
project	request switching / reclosing thru our S.O.C.	When Frontier sets temporary poles	21
project	Frame poles, shift and / or reconductor overhead conductors & equipment	Bid work/schedule mork. All mark outs by state. Frontier pole sets	15
project	set up (pon's), outage notification for cutover	When Eversource has pre-build inplace & ready for cutover	4
project	Remove facilities in conflict with bridge work	complete shift of facilities to Temporary poles	7
p#981-p#983	request switching / reclosing thru our S.O.C.	Frontier re-setting poles #982, & p#982s	21
p#981-p#983	prebuild poles 981, 982, & 983 for permanent position	when switching is approved by our S.O.C. & Frontier poles are set	10
p#981-p#983	complete cut-over to permanent locations	when pre-build is complete	3
p#981-p#983	strip conductors & equipment off temporary p#25282, p#25283, & p25284	when cutover is complete	8

UTILITY WORK SCHEDULE Rev 10/2022	
CTDOT Project Number: 87-148	Town: Naugatuck
Project Description: New Haven Rd (RT #63) near Candee Rd	
CTDOT Utilities Engineer:	
Phone:	Email:
Utility Company: Frontier Communications	
Prepared By: Don Bialecki	Date Prepared: 10/28/2022
Phone: 203-575-6114	Email: donald.s.bialecki@ftr.com

Scope of Work

The following is a description of all utility work planned to be completed in conjunction with the CTDOT project. The narrative describes all work to be carried out by the utility or its contractor, including temporary and permanent work required by the project as well as any additional utility infrastructure work the utility intends on performing within the project limits during the construction of the project.

This project involves the rehabilitation of bridge #06772 carrying Route 63 over Straitsville Brook. The existing utilities going between Frontier poles #982 to #983 (on RT #63) are currently in the way of construction. Frontier will place (3) temporary poles at STA 102+90L, 103+90L and 104+25 to divert facilities around construction. New cables will be placed along temporary pole line between pole #981 to #983 on New Haven Rd. After completion of construction the temporary poles will be removed and the facilities will be relocated back to original location.

Special Considerations and Constraints

The following describes the limiting factors that must be planned for in the scheduling and performance of the utility work. For example, restrictions on cut-overs, outages, limitations on customer service interruptions (e.g. nights, weekends, holidays), seasonal and environmental shutdown periods, long lead material procurements, etc..

UTILITY WORK SCHEDULE Rev 10/2022

CTDOT Project Number: 87-148

Utility Company: Frontier Communications

Prepared By: Don Bialecki Total Working Days: 155

Schedule

The following schedule identifies each major activity of utility work in sequential order to be performed by the utility or its contractor. The location of each activity of work is identified by the baseline stationing on the CTDOT plans. All activities identify the predecessor activity which must be completed before a utility work activity may progress. The duration provided is the number of working days required to complete the utility work activity based on historical information and production rates.

Location (Station to Station)	Description of Utility Work Activity	Predecessor Activity	Duration (working days)
Entire project	Attend preconstruction meeting, order materials and schedule construction crew.	Receive NTP	30
102+90L & 104+25L	Place 3 temporary Frontier poles	Precon meeting. Tree clearing. Grade at pole locations brought to within 1' finish	5
102+00 - 105+00	Replace and reroute copper cables	Poles are placed and the other utilities have shifted to the new poles.	30
Entire project	Replace and reroute fiber cables	Poles are placed and the other utilities have shifted to the new poles.	45
102+00 - 105+00	Remove existing cables	Existing facilities cut over to new cables	5
Entire project	Relocate Frontier facilities back to permanent location	Other utilities involved have shifted their facilities back to permanent loc.	35
Entire project	Remove temporary poles	Other utilities involved have shifted their facilities back to permanent loc.	5

UTILITY WORK SCHEDULE Rev 08/2024

CTDOT Project Number: 0087-0148	Town: NAUGATUCK
Project Description: BRIDGE REHAB-RT63 OVER STRAITSVILLE BROOK	
CTDOT Utilities Engineer: DEREK BROWN	
Phone: (860)594-2555	Email: Derek.Brown@ct.gov
Utility Company: CROWN CASTLE FIBER	
Prepared By: TERENCE J SHEA	Date Prepared: 08/09/2024
Phone: (203)649-3905	Email: terence.shea@crowncastle.com

Scope of Work

The following is a description of all utility work planned to be completed in conjunction with the CTDOT project. The narrative describes all work to be carried out by the utility or its contractor, including temporary and permanent work required by the project as well as any additional utility infrastructure work the utility intends on performing within the project limits during the construction of the project.

Delash cables, move slack, place new strand, place new cable, relash cables, splice new cable, remove old cables and strand, shift back to permanent poles upon completion of project.

Special Considerations and Constraints

The following describes the limiting factors that must be planned for in the scheduling and performance of the utility work. For example, restrictions on cut-overs, outages, limitations on customer service interruptions (e.g. nights, weekends, holidays), seasonal and environmental shutdown periods, long lead material procurements, etc..

PLEASE NOTE THAT ANY TIME FRAME GIVEN AS A START TIME OR DURATION OF WORK CAN BE AFFECTED BY MANY FACTORS INCLUDING, BUT NOT LIMITED TO, MAKE READY WORK, OTHER UTILITIES, PERMIT APPLICATIONS, CHANGES IN SCOPE, INCLEMENT WEATHER, HOLIDAYS AND EMERGENCY SITUATIONS.

UTILITY WORK SCHEDULE Rev 08/2024

CTDOT Project Number: 0087-0148

Utility Company: CROWN CASTLE FIBER

Prepared By: TERENCE J SHEA Total Working Days: 5

Schedule

The following schedule identifies each major activity of utility work in sequential order to be performed by the utility or its contractor. The location of each activity of work is identified by the baseline stationing on the CTDOT plans. All activities identify the predecessor activity which must be completed before a utility work activity may progress. The duration provided is the number of working days required to complete the utility work activity based on historical information and production rates.

Location (Station to Station)	Description of Utility Work Activity	Predecessor Activity	Duration (working days)
LIMITS	DELASH, MOVE SLACK, PLACE STRAND AND CABLE, SPLICE NEW CABLE, REMOVE OLD CABLE.PHASE 1	POLES IN, POWER AND CATV OVER	5
LIMITS	PLACE STRAND, DELASH AND MOVE CABLE, RELASH AND CREATE SLACK COIL. PHASE 2.	POLES IN, POWER AND CATV OVER	2

UTILITY WORK SCHEDULE Rev 02/2024	
CTDOT Project Number: 0087-0148	Town: Naugatuck
Project Description: Utility Relocation Plan Rehabilitation of Bridge 06772 carrying Route 63 over	
CTDOT Utilities Engineer: Derek J. Brown	
Phone:	Email: Derek.Brown@ct.gov
Utility Company: Comcast	
Prepared By: George Heisch	Date Prepared: 2/2/2024
Phone: 716-517-6153	Email: George_heisch@comcast.com

Scope of Work

The following is a description of all utility work planned to be completed in conjunction with the CTDOT project. The narrative describes all work to be carried out by the utility or its contractor, including temporary and permanent work required by the project as well as any additional utility infrastructure work the utility intends on performing within the project limits during the construction of the project.

Bridge being renovated and need to shift strand over to temp poles. Delash 106' of 750J and 500J cable from pole 981 to pole 982 and relash 106' to temp pole. Delash 168' of 500J cable from pole 982 to pole 983 and relash to temp pole.

Special Considerations and Constraints

The following describes the limiting factors that must be planned for in the scheduling and performance of the utility work. For example, restrictions on cut-overs, outages, limitations on customer service interruptions (e.g. nights, weekends, holidays), seasonal and environmental shutdown periods, long lead material procurements, etc..

UTILITY WORK SCHEDULE Rev 02/2024

CTDOT Project Number: 0087-0148

Utility Company: Comcast

Prepared By: George Heisch Total Working Days: 2

Schedule

The following schedule identifies each major activity of utility work in sequential order to be performed by the utility or its contractor. The location of each activity of work is identified by the baseline stationing on the CTDOT plans. All activities identify the predecessor activity which must be completed before a utility work activity may progress. The duration provided is the number of working days required to complete the utility work activity based on historical information and production rates.

Location (Station to Station)	Description of Utility Work Activity	Predecessor Activity	Duration (working days)
102-105	Remove existing Coax and Fiber cable strands from pole 981 to pole 983.		0.5
102-105	Install new cable and fiber to temp poles from pole 981 to pole 983	Temp poles need to be placed by utility and power needs to be transferred	0.5
102-105	Remove cable and fiber from temp poles, from poles 981 to pole 983		0.5
102-105	Install cable and fiber to new permanent poles, from poles 981 to 983	Permanent poles need to be installed by utilies and power transferred	0.5

NOTICE TO CONTRACTOR–HAZARDOUS MATERIALS INVESTIGATIONS

A limited hazardous materials site investigation has been conducted for the rehabilitation of Bridge No. 06772, Route 63 (New Haven Rd) over Straitsville Brook in Naugatuck, Connecticut. The scope of inspection was limited to the representative components projected for impact.

No painted surfaces were identified at Bridge No. 06772; therefore, no lead paint was identified.

The existing abandoned 20" and 24" water mains were unable to be located and sampled during initial test pit excavations at Bridge No. 06772; therefore, they are presently presumed to be asbestos-containing cement "Transite" pipes. Suspect asbestos black asphalt tar coating on the ACCMP and a grey grout material were sampled and found to contain no detectable amounts of asbestos.

No other hazmat/regulated items were identified at Bridge No. 06772.

The Contractor is hereby notified that these hazardous materials requiring special management or disposal procedures will be encountered during various construction activities conducted within the project limits. The Contractor will be required to implement appropriate health and safety measures for all construction activities impacting these materials. These measures shall include, but are not limited to, air monitoring, engineering controls, personal protective equipment and decontamination, equipment decontamination and personnel training. WORKER HEALTH AND SAFETY PROTOCOLS WHICH ADDRESS POTENTIAL AND/OR ACTUAL RISK OF EXPOSURE TO SITE SPECIFIC HAZARDS ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.

The Department, as Generator, will provide an authorized representative to sign all manifests and waste profile documentation required by disposal facilities for disposal of hazardous materials.

The Sections which shall be reviewed by the Contractor include, but are not limited to, the following:

- Item No. 0020801A – Asbestos Abatement

The Contractor is alerted to the fact that a Department environmental consultant may be on site for abatement and related activities, to collect environmental samples (if necessary), and to observe site conditions for the State.

Information pertaining to the results of the limited hazardous materials investigation discussed can be found in the document listed below. This document shall be available for review electronically.

- HazMat Inspection Letter, Rehabilitation of Bridge No. 06772, Route 63 (New Haven Rd) over Straitsville Brook, Naugatuck, CT, TRC Environmental Corporation, October 18, 2023.

NOTICE TO CONTRACTOR – MANDATED USE OF AASHTOWARE PROJECT CONSTRUCTION MANAGEMENT SOFTWARE (CONSTRUCTION)

The Contractor shall use ***AASHTOWare Project***® software as outlined in the specifications noted below. This will require that the Contractor and all subcontractor(s) designate and dedicate staff within 10 days after the execution of the Contract or approval to sublet as appropriate. It will also require the Contractor and all subcontractors to provide internet access, computing devices suitable for this work, training, and other related work as outlined in the specifications noted below.

All costs for these requirements shall be included in the general cost of the work.

The following special provisions are pertinent to, and detail the requirements for, this work:

SECTION 1.05 - CONTROL OF THE WORK

Article 1.05.12 – Payrolls

This Article outlines the requirements for submission of payrolls.

Article 1.05.25 –Use of AASHTOWare Project® Software

This Article outlines the overall requirements for the use of the AASHTOWare Project® Software.

SECTION 1.08 – PROSECUTION AND PROGRESS

Article 1.08.01—Transfer of Work or Contract

This Article outlines the requirements for subcontractor payment and payment verifications.

NOTICE TO CONTRACTOR – MANDATED USE OF AASHTOWARE PROJECT CONSTRUCTION MANAGEMENT SOFTWARE (CONSTRUCTION)

The Contractor shall use ***AASHTOWare Project***® software as outlined in the specifications noted below. This will require that the Contractor and all subcontractor(s) designate and dedicate staff within 10 days after the execution of the Contract or approval to sublet as appropriate. It will also require the Contractor and all subcontractors to provide internet access, computing devices suitable for this work, training, and other related work as outlined in the specifications noted below.

All costs for these requirements shall be included in the general cost of the work.

The following special provisions are pertinent to, and detail the requirements for, this work:

SECTION 1.05 - CONTROL OF THE WORK

Article 1.05.12 – Payrolls

This Article outlines the requirements for submission of payrolls.

Article 1.05.25 –Use of AASHTOWare Project® Software

This Article outlines the overall requirements for the use of the AASHTOWare Project® Software.

SECTION 1.08 – PROSECUTION AND PROGRESS

Article 1.08.01—Transfer of Work or Contract

This Article outlines the requirements for subcontractor payment and payment verifications.

NOTICE TO CONTRACTOR – GLOBAL POSITIONING SYSTEM (GPS) COORDINATES FOR SIGNS

The Contractor shall obtain and provide to the Engineer sign installation data, including Global Positioning System (GPS) latitude and longitude coordinates, for all new State owned and maintained signs. The Engineer shall forward the sign data to the Division of Traffic Engineering for upload into the Highway Sign Inventory and Maintenance Management Program (SIMS). Sign data submissions or questions relating to SIMS or GPS shall be sent to DOT-SignInventory@ct.gov. Refer to the special provision for Section 12.00 General Clauses For Highway Signing.

NOTICE TO CONTRACTOR - 9.49 – FURNISHING, PLANTING AND MULCHING TREES, SHRUBS, VINES AND GROUND COVER PLANTS

The Contractor is hereby notified that Section 9.49 of the *Standard Specifications* in Form 819 has been revised as follows:

1. The Contractor must secure an Encroachment Permit to work in the plantings area to satisfy the one year warranty requirements.
2. The Encroachment Permit requires a Permit Bond.
3. The Contractor is responsible for the One-Year Establishment Period, 1 year from the date of final acceptance to the satisfactory completion of the planting activities.
4. The Contractor shall secure a Permit Bond in the amount of $10,000 or 20% of the sum of all plant items, whichever is greater, along with an Encroachment Permit from the Department in order to guarantee the One-Year Establishment Period.

See Article 9.49.03-15 for more information.

SECTION 1.02 - PROPOSAL REQUIREMENTS AND CONDITIONS

1.02.01—Contract Bidding and Award:

After the first sentence of the third paragraph, add the Following:

In accordance with the provisions of the Construction Contract Bidding and Award Manual, bidders must be prequalified for **Group No. 8B – Pipe Culverts/Culvert Linings**, to be eligible to bid on this project. Bidders that are not prequalified for this work classification will not be approved to bid on this project.

SECTION 1.05 - CONTROL OF THE WORK

Add the following to the beginning of the first paragraph of Article 1.05.12:

1.05.12—Payrolls: The Contractor and all subcontractors shall use ***AASHTOWare Project®*** software in accordance with Article 1.05.25, with a Department-provided template, or by other means previously accepted by the Department, to electronically upload all Project payrolls, as directed herein.

Add the following to the end of Article 1.05.12:

These requirements shall be included in all subcontracts for this Project.

All costs for these requirements shall be included in the general cost of the work.

Add the following new Article 1.05.25:

1.05.25—Use of *AASHTOWare Project*® Software: The Contractor and all subcontractor(s) shall use the ***AASHTOWare Project®*** software for electronic submittal of all payrolls as outlined in the Department's AASHTOWare Contractor's User Manual, found at the Department's AASHTOWare Training webpage, and as stated in the specifications.

The Contractor and all subcontractor(s) shall use the ***AASHTOWare Project®*** software for monthly verification of project payments at all tiers, as outlined in the Department's AASHTOWare Contractor's User Manual, found at the Department's AASHTOWare Training webpage, and as stated in the specifications. The Department will inform the Contractor of other deliverables to be similarly submitted, as required.

Within 10 days of execution of the Contract, the Contractor shall submit the name(s) of the ***AASHTOWare Software Project Liaison*** and required staff that will be using the Department's software for this work. Similarly, within 10 days after the Contractor (or a subcontractor) enters into a subcontractor agreement to sublet any work, they shall submit the name(s) of their ***AASHTOWare Software Project Liaison*** and required staff that will be using the Department's software for this work. The Contractor and subcontractors shall immediately notify the Department of any change in Project staff authorized to access the AASHTOWare system or of a need to revise the Project Liaison.

Training materials, such as videos and written guides are available on the Department website for Contractor use. The Contractor and all subcontractors shall be responsible to train their staff.

This ***AASHTOWare Project®*** software will require that the Contractor and all subcontractor(s) provide their staff with access to the internet, using devices suitable for this work, at their own expense, throughout the duration of the Project. The Department has obtained licensing that allows the Contractor and subcontractors to access (from the internet) and use of the ***AASHTOWare Project®*** software. The Department will provide the Contractor and subcontractors with usernames and passwords to access the ***AASHTOWare Project®*** software, at no cost.

The Department shall not be held responsible for delays, lack of processing, or responses to submittals that do not follow the specified guidelines in the Department's AASHTOWare Contractor's User Manual, found at the Department's AASHTOWare Training webpage.

These requirements shall be included in all subcontracts for this Project.

All costs for these requirements shall be included in the general cost of the work.

SECTION 1.08 - PROSECUTION AND PROGRESS

Add the following to the beginning of the first paragraph of Article 1.08.01:

Article 1.08.01—Transfer of Work or Contract: The Contractor and all subcontractors shall use the *AASHTOWare Project*® software in accordance with Article 1.05.25, for monthly verification of project payments at all tiers, in accordance with the Department's AASHTOWare Contractor's User Manual, found at the Department's AASHTOWare Training webpage, and as stated in the specifications.

Add the following to the end of Article 1.08.01:

All costs for the requirements of this Article shall be included in the general cost of the work.

Article 1.08.04 - Limitation of Operations - Add the following:

In order to provide for traffic operations as outlined in the Special Provision "Maintenance and Protection of Traffic," the Contractor will not be permitted to perform any work which will interfere with the described traffic operations on all project roadways as follows:

Route 63 (New Haven Road)

The Contractor will not be permitted to interfere with the existing lanes of traffic:
Monday through Friday between 6:00 a.m. and 9:00 a.m. & between 3:00 p.m. and 7:00 p.m.

The Contractor will not be permitted to interfere with one lane of through traffic in each direction:
Monday through Friday between 9:00 a.m. and 3:00 p.m.

Beacon Valley Road, Candee Road, and All Other Roadways

Monday through Friday between 6:00 a.m. and 9:00 a.m. & between 3:00 p.m. and 6:00 p.m.

Night Work Restriction

The Contractor shall submit a request to the Engineer for the Town of Naugatuck's approval at least 14 days in advance of performing any night work. Night work is considered to be between the hours of 9:00 p.m. and 6:00 a.m.

Additional Lane Closure Restrictions

It is anticipated that work on adjacent projects will be ongoing simultaneously with this project. The Contractor shall be aware of those projects and anticipate that coordination will be required to maintain proper traffic flow at all times on all project roadways, in a manner consistent with these specifications and acceptable to the Engineer.

The Contractor will not be allowed to perform any work that will interfere with traffic operations on a roadway when traffic operations are being restricted on that same roadway, unless there is at least a one mile clear area length where the entire roadway is open to traffic or the closures have been coordinated and are acceptable to the Engineer. The one mile clear area length shall be measured from the end of the first work area to the beginning of the signing pattern for the next work area.

SECTION 1.10–ENVIRONMENTAL COMPLIANCE

In Article 1.10.03-Water Pollution Control:
REQUIRED BEST MANAGEMENT PRACTICES

Add the following after Required Best Management Practices Number 13:

14. The Contractor is hereby notified that one or more State and/or federally listed species of bat has been documented within the Project limits. In Connecticut, the Eastern small-footed bat (*Myotis leibii*), tri-colored bat (*Perimyotis subflavus*), little brown bat (*Myotis lucifugus*), Northern long-eared bat (*Myotis septentrionalis*) and the Indiana bat (*Myotis sodalis*) are listed as State endangered; while the silver-haired bat (*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus*) and the red bat (*Lasiurus borealis*) are listed as State species of special concern. The Northern long-eared bat, tri-colored bat, and the Indiana bat are also federally listed endangered species. Bats are the only mammals capable of actual flight and are primarily nocturnal. During the daylight, bats roost in trees and caves, but many have now adapted to roost in or on buildings including barns, houses, tunnels, and bridges. Within the Project limits, bats will use the snags, cavities, and underside of bark to roost and raise young. **This Project will have a Time of Year restriction for tree clearing, trimming and removal to protect the bat species listed.**

The Contractor shall, through the Engineer and at least 10 days prior to the commencement of any construction activities, arrange a meeting with the District Environmental Coordinator (DEC) and Office of Environmental Planning (OEP) (or their authorized delegate) to discuss proper protocol for maintaining environmental commitments made for the protection of these bat species and their habitat. OEP will provide oversight through the DEC and Engineer to ensure that the following protocols are followed and maintained during the Project:

a. The Contractor, through the Engineer, shall arrange a pre-construction tree-clearing Site walk to review all trees proposed to be removed for the Project.
b. Clearing, trimming or removal of any tree three (3) inches diameter at breast height (DBH) or greater will be prohibited between April 15 and October 31.
c. This restriction shall also apply to invasive species removal work and shall be reflected in the Contractor's Invasive Vegetation Removal Plan, if applicable.

These practices will be applied to the entire Project unless a specified location is identified within the Project plans, which denotes specific areas of concern.

If any bats are observed in or around the Project area, the Engineer will notify the DEC to facilitate further coordination with OEP's Environmental Resource Compliance Unit. If the DEC is unable to be reached, notify OEP at Andrew.Piraneo@ct.gov or at Marilyn.Gould@ct.gov.

The OEP will be responsible for completing and submitting the Natural Diversity Data Base (NDDB) Vertebrate Sheet (https://portal.ct.gov/DEEP/Endangered-Species/Contributing-Data). This completed document allows CTDEEP to update their database.

All listed bat species are protected by federal and/or State laws which prohibit killing, harming, taking, harassing, or keeping them in your possession. A CTDEEP fact sheet(s) for the listed bats noted above shall be posted in the Contractor's and Inspection field offices and can be downloaded at the link below.

CTDEEP's Fact Sheet for Bats:
https://portal.ct.gov/-/media/DEEP/wildlife/pdf_files/outreach/fact_sheets/Bats.pdf

SECTION 12.00 – GENERAL CLAUSES FOR HIGHWAY SIGNING

Description:

Work under this item shall conform to the requirements of Section 12.00 supplemented as follows:

12.00.07 – Global Positioning System (GPS) coordinates for signs:

The Contractor shall obtain and provide to the Engineer sign installation data, including Global Positioning System (GPS) latitude and longitude coordinates, for all new permanent State owned and maintained signs (temporary and construction signs are not to be included) installed in the project. The Engineer shall forward the sign data to the Division of Traffic Engineering for upload into the Highway Sign Inventory and Maintenance Management Program (SIMS). Sign data submissions or questions relating to SIMS or GPS shall be sent to DOT-SignInventory@ct.gov.

The horizontal datum is to be set to the State Plane Coordinate System, North American Datum of 1983 (NAD83) in feet. The minimum tolerance must be within 10 feet. The format of the GPS information shall be provided in a Microsoft Office compatible spreadsheet (Excel) file with data for each sign. The record for each sign installed is to be compatible with the anticipated CTDOT Sign Inventory and Management System (CTSIMS). The following format shall be used. However, the data fields noted by "#" are not required for the project submission. These entries will be completed as part of the Traffic Engineering CTSIMS data upload.

The cost of this work shall be included in the cost of the respective sign face – sheet aluminum and sign face – extruded aluminum items. The receipt of this electronic database must be received and accepted by the Engineer prior to final payment for items involving permanent highway signing. The electronic database information shall detail information regarding the sign actually installed by the project.

Field Number	Type	size	Description
1	text	20	Record Number (starting at 1…)
2	text	20	Sign Catalog Number
3	text	10	Size Height
4	text	10	Size Width
5	text	25	Legend
6	text	10	Background Color
7	text	10	Copy Color
8	Link	25	Material (see acceptable categories)
9	text	30	Comments if any
10	text	20	MUTCD Type
11	text	15	Town

12	text	5	Route
13	text	5	Route direction
14	text	10	Highway Log Mileage
15	text	15	Latitude
16	text	15	Longitude
17	text	25	Mounting Type
18	text	25	Reflective Sheeting Type
19	date	25	Date Installed
20	text	10	Number of Posts
21	text	255	Sheeting Manufacturer name and address
22	text	15	State Project Number (or)
23	text	15	Encroachment Permit number.
24	Graphic	*	Sign Picture Graphic.

* Graphics provided shall be representative of the sign supplied and be in color. Graphic formats shall be either JPG or TIFF and provided with a recommended pixel density of 800 x 600. The graphic shall be inserted in the supplied media in field 24 for each sign.

SMALL CONTRACTOR AND SMALL CONTRACTOR MINORITY BUSINESS ENTERPRISES

(SET-ASIDE)

October 12, 2022

NOTE: Certain requirements and procedures stated in this "Special Provision" are applicable prior to the execution of the Contract.

I. GENERAL

A. The Contractor shall cooperate with the Connecticut Department of Transportation (CTDOT) in implementing the required contract obligations concerning "Small Contractor" and "Small Contractor Minority Business Enterprise" use on this Contract in accordance with Section 4a-60g of the Connecticut General Statutes as revised. References, throughout this "Special Provision", to "Small Contractors" are also implied references to "Small Contractor Minority Business Enterprises" as both relate to Section IIA of these provisions. The Contractor shall also cooperate with CTDOT in reviewing the Contractor's activities relating to this provision. This "Special Provision" is in addition to all other equal opportunity employment requirements of this Contract.

B. For the purpose of this "Special Provision", the "Small Contractor(s)" and "Minority Business Enterprise(s)" named to satisfy the set-aside requirement must be certified by the Department of Administrative Services, Business Connections/ Set-Aside Unit [(860) 713-5236Small Minority Business Center (ct.gov). As a "Small Contractor" and "Minority Business Enterprises" as defined by Section 4a-60g Subsections (1) and (4) of the Connecticut General Statutes as revised and is subject to approval by CTDOT to do the work for which it is nominated pursuant to the criteria stipulated in Section IIC-3.

C. Contractors who allow work which they have designated for "Small Contractor" participation in the pre-award submission required under Section IIC to be performed by other than the approved "Small Contractor" organization and prior to concurrence by CTDOT, will not be paid for the value of the work performed by organizations other than the "Small Contractor" designated.

D. If the Contractor is unable to achieve the specified contract goals for "Small Contractor" participation, the Contractor shall submit written documentation to CTDOT's Manager of Construction Operations indicating his/her attempts to satisfy goal requirements. Documentation is to include but not be limited to the following:

1. A detailed statement of the efforts made to select additional subcontract opportunities for work to be performed by each "Small Contractor" in order to increase the likelihood of achieving the stated goal.

2. A detailed statement, including documentation of the efforts made to contact and solicit contracts with each "Small Contractor", including the names, addresses, dates and telephone numbers of each "Small Contractor" contacted, and a description of the information provided to each "Small Contractor" regarding the scope of services and anticipated time schedule of items proposed to be subcontracted and the nature of response from firms contacted.

3. For each "Small Contractor" that placed a subcontract quotation which the Contractor considered not to be acceptable, provide a detailed statement of the reasons for this conclusion.

4. Documents to support contacts made with CTDOT requesting assistance in satisfying the contract specified or adjusted "Small Contractor" dollar requirements.

5. Document other special efforts undertaken by the Contractor to meet the defined goal.

E. Failure of the Contractor to have at least the specified dollar amount of this contract performed by "Small Contractor" as required in Section IIA of this "Special Provision" will result in the reduction in contract payment to the Contractor by an amount equivalent to that determined by subtracting from the specific dollar amount required in Section IIA, the dollar payments for the work actually performed by each "Small Contractor". The deficiency in "Small Contractor" achievement, will therefore, be deducted from the final contract payment. However, in instances where the Contractor can adequately document or substantiate its good faith efforts made to meet the specified or adjusted dollar amount to the satisfaction of CTDOT, no reduction in payments will be imposed.

F. All records must be retained for a period of three (3) years following completion of the contract and shall be available at reasonable times and places for inspection by authorized representatives of CTDOT.

G. Nothing contained herein, is intended to relieve any contractor or subcontractor or material supplier or manufacturer from compliance with all applicable Federal and State legislation or provisions concerning equal employment opportunity, affirmative action, nondiscrimination and related subjects during the term of this Contract.

II. SPECIFIC REQUIREMENTS

In order to increase the participation of "Small Contractors", CTDOT requires the following:

A. Not less than **TWELVE (12%) percent** of the **final** value of this Contract shall be subcontracted to and performed by, and/or supplied by, manufactured by and paid to "Small Contractors" and/or "Small Contractors Minority Business Enterprises".

If the above percentage is zero (0%) AND an asterisk (*) has been entered in the adjacent brackets [ ], this Contract is 100% solely set-aside for participation by "Small Contractors" and/or "Small Contractors Minority Business Enterprises".

B. The Contractor shall assure that each "Small Contractor" will have an equitable opportunity to compete under this "Special Provision", particularly by arranging solicitations, time for the preparation of Quotes, Scope of Work, and Delivery Schedules so as to facilitate the participation of each "Small Contractor".

C. The Contractor shall provide to CTDOT's Manager of Contracts within Five (5) days after the bid opening the following items:

1. A certification of work to be subcontracted (Exhibit II) signed by both the Contractor and the "Small Contractor" listing the work items and the dollar value of the items that the nominated "Small Contractor" is to perform on the project to achieve the minimum percentage indicated in Section IIA above.

2. A certification of past experience (Exhibit III) indicating the scope of work the nominated "Small Contractor" has performed on all projects, public and private, for the past five (5) years.

3. In instances where a change from the originally approved named "Small Contractor" (see Section IB) is proposed, the Contractor is required to submit, in a reasonable and expeditious manner, a revised submission, comprised of the documentation required in Section IIC, Paragraphs 1, 2 and 3 and Section E together with documentation to substantiate and justify the change, (i.e., documentation to provide a basis for the change) to CTDOT's Manager of Construction Operations for its review and approval prior to the implementation of the change. The Contractor must demonstrate that the originally named "Small Contractor" is unable to perform in conformity to specifications, or unwilling to perform, or is in default of its contract, or is overextended on other jobs. The Contractor's ability to negotiate a more advantageous contract with another "Small Contractor" is not a valid basis for change. Documentation shall include a letter of release from the originally named "Small Contractor" indicating the reason(s) for the release.

D. After the Contractor signs the Contract, the Contractor will be required to meet with CTDOT's Manager of Construction Operations or his/her designee to review the following:

1. What is expected with respect to the "Small Contractor" set aside requirements.

2. Failure to comply with and meet the requirement can and will result in monetary deductions from payment.

3. Each quarter after the start of the "Small Contractor" the Contractor shall submit a report to CTDOT's Manager of Construction Operations indicating the work done by, and the dollars paid to each "Small Contractor" to date.

4. What is required when a request to sublet to a "Small Contractor" is submitted.

E. The Contractor shall submit to CTDOT's Manager of Construction Operations all requests for subcontractor approvals on standard forms provided by the Department.

If the request for approval is for a "Small Contractor" subcontractor for the purpose of meeting the contract required "Small Contractor" percentage stipulated in Section IIA, a copy of the legal contract between the Contractor and the "Small Contractor" subcontractor must also be submitted at the same time. Any subsequent amendments or modifications of the contract between the Contractor and the "Small Contractor" subcontractor must also be submitted to CTDOT's Manager of Construction Operations with an explanation of the change(s). The contract must show items of work to be performed, unit prices and, if a partial item, the work involved by both parties.

In addition, the following documents are to be attached:

(1) A statement explaining any method or arrangement for renting equipment. If rental is from a Contractor, a copy of Rental Agreement must be submitted.

(2) A statement addressing any special arrangements for manpower.

(3) A statement addressing who will purchase material.

F. Contractors subcontracting with a "Small Contractor" to perform work or services as required by this "Special Provision" shall not terminate such firms without advising CTDOT, in writing, and providing adequate documentation to substantiate the reasons for termination if the designated "Small Contractor" firm has not started or completed the work or the services for which it has been contracted to perform.

G. Material Suppliers or Manufacturers

If the Contractor elects to utilize a "Small Contractor" supplier or manufacturer to satisfy a portion or all of the specified dollar requirements, the Contractor must provide the Department with:

1. An executed Affidavit Small Contractor (Set-Aside) Connecticut Department of Transportation Affidavit Supplier or Manufacturer (sample attached), and

2. Substantiation of payments made to the supplier or manufacturer for materials used on the project.

Brokers and packagers shall not be regarded as material Suppliers or manufacturer.

H. Non-Manufacturing or Non-Supplier "Small Contractor" Credit

Contractors may count towards its "Small Contractor" goals the following expenditures with "Small Contractor" firms that are not manufacturers or suppliers:

1. Reasonable fees or commissions charged for providing a bona fide service such as professional, technical, consultant or managerial services and assistance in the procurement of essential personnel, facilities, equipment, material or supplies necessary for the performance of the contract provided that the fee or commission is determined by the Department of Transportation to be reasonable and consistent with fees customarily allowed for similar services.

2. The fees charged for delivery of materials and supplies required on a job site (but not the cost of the materials and supplies themselves) when the hauler, trucker, or delivery service is not also the manufacturer of or a regular dealer in the materials and supplies, provided that the fee is determined by the Department of Transportation to be reasonable and not excessive as compared with fees customarily allowed for similar services.

3. The fees or commissions charged for providing any bonds or insurance specifically required for the performance of the Contract, provided that the fee or commission is determined by the Department of Transportation to be reasonable and not excessive as compared with fees customarily allowed for similar services.

III. BROKERING

For the purpose of this "Special Provision", a "Broker" is one who acts as an agent for others in negotiating contracts, purchases, sales, etc., in return for a fee or commission. Brokering of work by a "Small Contractor" is not allowed and is a contract violation.

IV. PRE-AWARD WAIVERS:

If the Contractor's submission of the "Small Contractor" listing, as required by Section IIC indicates that it is unable, by subcontracting to obtain commitments which at least equal the amount required by Section IIA, it may request, in writing, a waiver of up to 50% of the amount required by Section IIA. To obtain such a waiver, the Contractor must submit a completed "Application for Waiver of Small Contractor Minority Business Enterprise Goals" to CTDOT's Manager of Contracts which must also contain the following documentation:

1. Information described in Section ID.

2. For each "Small Contractor" contacted but unavailable, a statement from each "Small Contractor" confirming its unavailability.

Upon receipt of the submission requesting a waiver, the CTDOT's Manager of Contracts shall submit the documentation to the Director of the Office of Contract Compliance who shall review it for completeness. After completion of the Director of Contract Compliance's review, she/he should write a narrative of his/her findings of the application for a waiver, which is to include his/her recommendation. The Director of Contract Compliance shall submit the written narrative to the Chairperson of the DBE Screening Committee at least five (5) working days before the scheduled meeting. The Contractor shall be invited to attend the meeting and present his/her position. The DBE Screening Committee shall render a decision on the waiver request within five (5) working days after the meeting. The DBE Screening Committee's decision shall be final. Waiver applications are available from the CTDOT Manager of Contracts.

Please note that effective with this update, Exhibit 1 is discontinued

Exhibit 2

Rev 7/2015

CONNECTICUT DEPARTMENT OF TRANSPORTATION (CTDOT)

PRE-AWARD SBE COMMITMENT APPROVAL REQUEST

TO BE SUBMITTED WITHIN THE TIME FRAME INDICATED IN THE BID DOCUMENTS

Only certified SBE firms will be approved. The SBE directory is available on the Department of Administrative Service's web site: http://www.biznet.ct.gov/SupplierDiversity/SDSearch.aspx

Sheet of

CDOT Project Number (s):

Town(s) of:

Submitted By:

Original Bid ($):

Dollar amount subcontracted to this SBE firm ($):

SBE Subcontractor:

Address:

Item Number & Description	Is This item Partial Yes No	Firm Type Code *	Units	Quantity bid by the Prime	Contract Unit Price	Quantity Subcontracted	Subcontract Unit Price **	Total Item price subcontracted
	N							0.00
	N							0.00
	N							0.00
	N							0.00
	N							0.00
	N							0.00
	N							0.00

If any of the items above are checked **Yes** as to **Partial**, please provided or use an attachment to offer an explanation of the work involved. Also please identify who is responsible for the remainder of the partial items.

* Firm Type Code: **S** (subcontractor), **M** (manufacturer), **P** (supplier), **T** (trucking), **V** (services)

** In instances where the Prime is paying the Subcontractor a higher unit price than the bid, by submitting this form the Prime agrees to the higher subcontracted price without qadditional costs to the Department.

Signature of Prime Contractor, Title

Date

Signature of Subcontractor, Title

Date

After this submittal is approved by the Department, any proposed changes to it must be submitted to the Department for approval.

SBE Exhibit 3 Revised May 2012

Sample of Past Construction Experience

Only include the work within the last 5 years that are relevant to the work performed on this project

CTDOT Project Number: _____

SBE Firm: _____

Project Description and Location	Your Contract Value	The Name of the Owner or the Prime Contractor on the Project/Contact Name and Phone Number	Actual or Estimated Completion Date	overview of items Performed

ITEM #0020801A – ASBESTOS ABATEMENT

Description:

Work under this item shall include the abatement of asbestos containing materials (ACM) and associated work by persons who are knowledgeable, qualified, trained and licensed in the removal, treatment, handling, and disposal of ACM and the subsequent cleaning of the affected environment. ACM shall include material composed of any type of asbestos in amounts greater than one percent (1%) by weight. The Contractor performing this work shall possess a valid Asbestos Abatement Contractor license issued by the Connecticut Department of Public Health (CTDPH).

These Specifications govern all work activities that disturb asbestos containing materials. All activities shall be performed in accordance with, but not limited to, the current revision of the OSHA General Industry Standard for Asbestos (29 CFR 1926.1001), the OSHA Asbestos in Construction Regulations (29 CFR 1926.1101), the USEPA Asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP) Regulations (40 CFR Part 61 Subpart M), the CTDPH Standards for Asbestos Abatement, Licensure and Training (19a-332a-1 through 16, 20-440-1 through 9 & 20-441), and the CTDEEP Special Waste Disposal Regulations (22a-209-8(i)).

The asbestos abatement work shall include the removal and disposal of all ACM as identified on the Contract Plans and Specifications prior to the planned renovation/demolition project. This Item 0020801A – Asbestos Abatement was designed by Mr. Stephen Arienti, a State of Connecticut licensed Asbestos Project Designer (#000284).

Deviations from these Specifications require the written approval of the Engineer.

Materials:

All materials shall be delivered to the job site in the original packages, containers, or bundles bearing the name of the manufacturer, the brand name and product technical description.

No damaged or deteriorating materials shall be used. If material becomes contaminated with asbestos, the material shall be decontaminated or disposed of as asbestos-containing waste material. The cost to decontaminate and dispose of this material shall be at the expense of the Contractor.

Fire retardant polyethylene sheet shall be in roll size to minimize the frequency of joints, with factory label indicating four (4) or six (6) mil thickness.

Six (6) mil polyethylene disposable bags shall have pre-printed OSHA/EPA/DOT labels and shall be transparent.

Tape (or equivalent) capable of sealing joints in adjacent polyethylene sheets and for the attachment of polyethylene sheets to finished or unfinished surfaces must be capable of adhering under both dry and wet conditions.

Surfactant is a chemical wetting agent added to water to improve penetration and shall consist of fifty (50) percent polyoxyethylene ether and fifty (50) percent polyoxyethylene ester, or equivalent. The surfactant shall be mixed with water to provide a concentration one (1) ounce surfactant to five (5) gallons of water, or as directed by the manufacturer.

Spray equipment must be capable of mixing necessary chemical agents with water, generating sufficient pressure and volume; and equipped with adequate hose length to access all necessary work areas.

Drills, saws, sanders, grinders, wire brushes and needle-gun type removal equipment shall be equipped with a High Efficiency Particulate Air (HEPA) filtered vacuum dust collection system.

Containers for storage, transportation and disposal of asbestos containing waste material shall be impermeable and both air and watertight.

Labels and warning signs shall conform to OSHA 29 CFR 1926.1101, USEPA 40 CFR Part 61.152, and USDOT 49 CFR Part 172 as appropriate.

Encapsulant, a material used to chemically entrap asbestos fibers to prevent these fibers from becoming airborne, shall be of the type which has been approved by the Engineer. Use shall be in accordance with manufacturer's printed technical data. The encapsulant shall be clear and must be compatible with new materials being installed, if any.

Any planking, bracing, shoring, barricades and/or temporary sheet piling, necessary to appropriately perform work activities shall conform to all applicable federal, state and local regulations.

Air filtration devices and vacuum units shall be equipped with HEPA filters.

Construction Methods:

(1) Pre-Abatement Submittals and Notices

(a) The scope of work for this project includes the removal of exterior non-friable ACM, which is not defined as “Asbestos Abatement” under the CTDPH Asbestos Abatement Standards (19a-332a-1) nor as Regulated asbestos containing materials (RACM) under the EPA Asbestos NESHAP. Therefore, the Contractor is **not required to submit an Asbestos Abatement Notification to CTDPH or EPA, prior to the commencement of work, so long as work practices will not render more than 25 square feet (SF) (CTDPH) or 160 SF (EPA) of the exterior non-friable ACM into a friable state.**

(b) Fifteen (15) working days prior to the commencement of asbestos abatement work, the Contractor shall submit to the Engineer for review and acceptance and/or acknowledgment of the following:

1. Permits and licenses for the removal of asbestos-containing or contaminated materials, including a CTDPH valid asbestos removal contractor’s license.

2. Documentation dated within the previous twelve (12) months, certifying that all employees have received USEPA Model Accreditation Plan approved asbestos worker/supervisor training in the proper handling of materials that contain asbestos; understand the health implications and risks involved, including the illnesses possible from exposure to airborne asbestos fibers; understands the use and limits of respiratory equipment to be used; and understands the results of monitoring of airborne quantities of asbestos as related to health and respiratory equipment as indicated in 29 CFR 1926.1101 on an initial and annual basis, and copies of all employees CTDPH asbestos worker and/or supervisor licenses.

3. Documentation from the Contractor, typed on company letterhead and signed by the Contractor, certifying that all employees listed therein have received the following:

    a. medical monitoring within the previous twelve (12) months, as required in 29 CFR 1926.1101;
    b. respirator fit testing within the previous twelve (12) months as detailed in 29 CFR 1910.134 (for all employees who must also don a tight-fitting face piece respirator).

4. Copies of the EPA/State-approved certificates for the proposed asbestos landfill.

(c) No abatement shall commence until a copy of all required submittals have been received and found acceptable to the Engineer. Those employees added to the Contractor's original list will be allowed to perform work only upon submittal to, and receipt of, all required paperwork by the Engineer.

(2) Asbestos Abatement Provisions:

(a) General Requirements

The Abatement Contractor/Subcontractor shall possess a valid State of Connecticut Asbestos Contractor License. Should any portion of the work be subcontracted, the subcontractor must also possess a valid State of Connecticut Asbestos Contractor License. The Asbestos Abatement Site Supervisor employed by the Contractor shall be in control on the job site at all times during asbestos abatement work. All employees of the Contractor who shall perform work (i.e. Asbestos Abatement Site Supervisor, Asbestos Abatement Worker) shall be properly certified/licensed by the State of Connecticut to perform such duties.

All labor, materials, tools, equipment, services, testing, insurance (with specific coverage for work on asbestos), and incidentals which are necessary or required to perform the work in accordance with applicable governmental regulations, industry standards and codes, and these Specifications shall be provided by the Contractor. The Contractor shall be prepared to work all shifts and weekends throughout the course of this project.

Prior to beginning work, the Engineer and Contractor shall perform a visual survey of each work area and review conditions at the site for safety reasons. In addition, the Contractor shall instruct

all workers in all aspects of personnel protection, work procedures, emergency evacuation procedures and use of equipment including procedures unique to this project.

The Contractor shall, when necessary, provide temporary power and adequate lighting and ensure safe installation of electrical equipment, including ground fault protection and power cables, in compliance with applicable electrical codes and OSHA requirements. The Contractor is responsible for proper connection and installation of electrical wiring.

If sufficient electrical service is unavailable, the Contractor may need to supply electrical power to the site by fuel operated generator(s). Electrical power supply shall be sufficient for all equipment required for this project in operation throughout the duration of the project.

Water service may not be available at the site. Contractor shall supply sufficient water for each shift to operate the decontamination shower units as well as to maintain the work areas adequately wet.

Ladders and/or scaffolds shall be in compliance with OSHA requirements, and of adequate length, strength and sufficient quantity to support the scope of work. Use of ladders/scaffolds shall be in conformance with OSHA 29 CFR 1926 Subpart L and X requirements.

Work performed at heights exceeding six feet (6') shall be performed in accordance with the OSHA Fall Protection Standard 29 CFR 1926 Subpart M including the use of fall arrest systems as applicable.

Data provided regarding asbestos sampling conducted throughout the structure(s) is for informational purposes only. Under no circumstances shall this information be the sole means used by the Contractor for determining the presence, location and/or quantity of all asbestos containing materials. The Contractor shall verify all field conditions affecting performance of the work as described in these Specifications in accordance with OSHA, USEPA, USDOT, DEEP standards. Compliance with the applicable requirements is solely the responsibility of the Contractor.

The Engineer will provide a Project Monitor to oversee the activities of the Contractor. No asbestos work shall be performed until the Project Monitor is on-site. Pre-abatement, during abatement and post-abatement air sampling will be conducted as deemed necessary by the Project Monitor. Waste stream testing will be performed, as necessary, by the Project Monitor prior to waste disposal.

(b) Set-Up

Pre-clean the work areas using HEPA filtered equipment (vacuum) and/or wet methods as appropriate, collecting and properly containing all loose debris as asbestos-containing/asbestos contaminated waste. Vacuum units, of suitable size and capabilities for the project, shall have HEPA filters capable of trapping and retaining at least 99.97 percent of all monodispersed particles of three micrometers in diameter or larger. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters.

The Contractor shall establish a remote Worker Decontamination Enclosure System consisting of Equipment Room, Shower Room and Clean Room in series, as detailed below. Access to the Regulated Area shall only be through this enclosure.

Access between rooms in the Worker Decontamination Enclosure System shall be through airlocks. Other effective designs are permissible. The Clean Room, Shower Room and Equipment Room located within the Worker Decontamination Enclosure, shall be contiguously connected with taped airtight edges.

The Clean Room shall be adequately sized to accommodate workers and shall be equipped with a suitable number of hooks, lockers, shelves, etc., for workers to store personal articles and clothing. Changing areas of the Clean Room shall be suitably screened from areas occupied by the public.

The Shower Room shall be of sufficient capacity to accommodate the number of workers. One shower stall shall be provided for each eight (8) workers. Showers shall be equipped with hot and cold or warm running water through the use of electric hot water heaters supplied by the Contractor. No worker or other person shall leave a Regulated Area without showering. Shower water shall be collected and filtered using best available technology and disposed of in an approved sanitary drain. Shower stalls and plumbing shall include sufficient hose length and drain system or an acceptable alternate.

The Contractor shall ensure that no personnel or equipment be permitted to leave the Regulated Area until proper decontamination procedures (including HEPA vacuuming, wet wiping and showering) to remove all asbestos debris have occurred.

Post warning signs meeting the specifications of OSHA 29 CFR 1910.1001 and 29 CFR 1926.1101 at each Regulated Area. In addition, signs shall be posted at all approaches to Regulated Areas so that an employee may read the sign and take the necessary protective steps before entering the area. Additional signs may require posting following construction of workplace enclosure barriers.

Alternate set up requirements for exterior non-friable asbestos abatement procedures

In lieu of the establishment of a negative pressure enclosure (NPE) system as described by CTDPH Sections 19a-332a-5(c), 5(d), 5(e), and 5(h), non-friable ACM will be removed from exterior work areas within an outdoor Regulated Area(s). The regulated work area will be established by the use of appropriately labeled barrier tape and postings in compliance with CTDPH 19a-332a-5(a) as well as OSHA 29 CFR 1926.1101. A remote personnel decontamination unit as specified in Section 19a-332a-6 will be required. This method shall only be utilized provided exposure assessment air sampling data collected during the removal of the exterior non-friable materials indicates that the exposure levels during removal of such materials do not exceed 0.1 asbestos f/cc. Should exposure assessment air sampling data exceed this level, and engineering efforts to reduce the airborne fiber levels not be successful in reducing the levels to less than 0.1 f/cc, removal shall occur within these areas under full containment conditions.

(c) Personnel Protection

The Contractor shall utilize all appropriate engineering controls and safety and protective equipment while performing the work in accordance with OSHA, USEPA, USDOT, CTDEEP and CTDPH regulations.

The Contractor shall provide and require all workers to wear protective clothing in the Regulated Areas where asbestos fiber concentrations may reasonably be expected to exceed the OSHA established Permissible Exposure Limits (PEL) or where asbestos contamination exists. Protective clothing shall include impervious coveralls with elastic wrists and ankles, head covering, gloves and foot coverings.

Respiratory protection shall be provided and shall meet the requirements of OSHA as required in 29 CFR 1910.134, and 29 CFR 1926.1101 as well as the requirements of the CTDPH regulations. A formal respiratory protection program must be implemented in accordance with 29 CFR 1926.1101 and 29 CFR 1910.134. The Contractor shall provide respirators from among those approved as being acceptable for protection by the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR Part ll.

All other necessary personnel protective equipment (i.e. hardhat, work boots, safety glasses, hearing protection, etc.) required to perform the asbestos abatement work activities shall conform to all applicable federal, state and local regulations.

All other qualified and authorized persons entering into a Regulated Area (i.e. Project Monitor, Regulatory Agency Representative) shall adhere to the requirements of personnel protection as stated in this section.

(d) Asbestos Abatement Procedures

The Asbestos Abatement Site Supervisor, as the OSHA Competent Person shall be at the site at all times.

The Contractor shall not begin abatement work until authorized by the Project Monitor, following a pre-abatement visual inspection.

All workers and authorized persons shall enter and leave the Regulated Area through the Worker Decontamination Enclosure System, leaving contaminated protective clothing in the Equipment Room for reuse or disposal of as asbestos contaminated waste. No one shall eat, drink, smoke, chew gum or tobacco, or apply cosmetics while in a Regulated Area.

The following details the extent of each phase of operation designated for this project. Phase areas may be combined or divided at the direction of the Engineer. Proceed through the sequencing of the work phases under the direction of the Engineer.

Bridge No. 06772, Route 63 over Straitsville Brook, Naugatuck, CT

Includes the removal of:

- **Underground 20" & 24" Asbestos Cement ("Transite") Water Mains (assumed)**

Exterior regulated areas shall be established at the perimeter of the work areas, and access shall be controlled by the Contractor. A remote personnel decontamination unit shall be utilized. Removal shall be undertaken in accordance with OSHA Class II and USEPA Asbestos NESHAP requirements utilizing wet methods and hand/mechanical techniques which minimize the generation of dust. Rotating saws without HEPA filtered shrouding cannot be used for the removal of the Category II non-friable ACM. Abatement Contractor shall be responsible for trenching, unearthing and uncovering the sections of asbestos cement pipe to access for removal and all required backfilling following removal. Any ends of the asbestos cement water mains that remain shall be squared off and encapsulated. Post-abatement visual inspections by a licensed Project Monitor shall follow abatement activities in each phase.

During removal, the Contractor shall spray asbestos materials with amended water using airless spray equipment capable of providing a "mist" application to reduce the release of airborne fibers. Spray equipment shall be capable of mixing wetting agent with water and capable of generating sufficient pressure and volume. Hose length shall be sufficient to reach all of the Regulated Area. Do not "flood" the area with hose type water supply equipment with the potential to create water releases and/or run-off from the regulated area.

The Contractor shall continue to spray the asbestos materials with amended water, as necessary, throughout removal activities to ensure the asbestos materials remain adequately wet. The asbestos materials shall not be allowed to dry out.

In order to minimize airborne asbestos concentrations inside the Regulated Area, the Contractor shall remove the adequately wetted asbestos in manageable sections. In addition, asbestos materials removed from any elevated level shall be carefully lowered to the floor.

The Contractor shall promptly place the adequately wet asbestos material in disposal containers (six (6) mil polyethylene bags/fiber drum/poly-lined dumpsters, etc.) as it is removed. Large components removed intact may be wrapped in two (2) layers of six (6) mil polyethylene sheeting secured with tape. As the disposal containers are filled, the Contractor shall promptly seal the containers, apply caution labels and clean the containers before transportation from the regulated area. Bags shall be securely sealed to prevent accidental opening and leakage by taping in gooseneck fashion. Small components and asbestos-containing waste with sharp-edged components (e.g. nails, screws, metal lath, tin sheeting) which could tear polyethylene bags and sheeting shall be placed in clean drums and sealed with locking ring tops. All waste containers shall be leak-tight, (typically consisting of two layers of 6 mil poly (or bags)), and shall be properly labeled and placarded with OSHA Danger labels, DOT shipping labels, markings and placards and USEPA NESHAP generators labels. Containers shall be decontaminated by wet cleaning and HEPA vacuuming prior to exiting the regulated area.

If at any time during asbestos removal, the Project Monitor should suspect contamination of areas outside the Regulated Area, the Contractor shall immediately stop all abatement work and take steps to decontaminate these areas and eliminate causes of such contamination. Unprotected individuals shall be prohibited from entering contaminated areas until air sampling and/or visual inspections determine decontamination.

After completion of abatement work, all surfaces from which asbestos has been removed shall be wet brushed, using a nylon brush, wet wiped and sponged or cleaned by an equivalent method to remove all visible material (wire brushes are not permitted). During this work the surfaces being cleaned shall be kept wet. Cleaning shall also include the use of HEPA filtered vacuum equipment.

The Contractor shall also remove and containerize all visible accumulations of asbestos-containing and/or asbestos-contaminated debris which may have splattered or collected on the polyethylene engineering controls/barriers.

The Contractor shall remove contamination from the exteriors of the scaffolding, ladders, extension cords, hoses and other equipment inside the Regulated Area. Cleaning may be accomplished by brushing, HEPA vacuuming and/or wet cleaning. The Contractor shall wet wipe the Regulated Area using cotton rags or lint free paper towels. Rags and towels shall be disposed of after each use. Workers should avoid the use of dirty rags to insure proper cleaning of surfaces. Waste water shall be filtered using best available technology into leak-proof containers prior to being transported to a sanitary sewer for discharge.

Once the Regulated Area surfaces have dried, the Project Monitor shall perform a thorough post abatement visual inspection utilizing protocols from the ASTM Standard E1368-90 *Standard Practice for Visual Inspection of Asbestos Abatement Projects*. All surfaces within the Regulated Area, including but not limited to ledges, beams, and hidden locations shall be inspected for visible residue. Evidence of asbestos contamination identified during this inspection will necessitate further cleaning as heretofore specified. The area shall be re-cleaned at the Contractor's expense, until the standard of cleaning is achieved.

Once the area has received a satisfactory post-abatement visual inspection, any equipment, tools or materials not required for completion of the work, shall be removed by the Contractor from the Regulated Area.

(e) Air Monitoring Requirements

1. The Contractor shall:

    a. Provide air monitoring equipment including sample filter cassettes of the type and quantity required to properly monitor operations and personnel exposure surveillance throughout the duration of the project.

    b. Conduct personnel exposure assessment air sampling, as necessary, to assure that workers are using appropriate respiratory protection in accordance with OSHA Standard 1926.1101. Documentation of air

sampling results must be recorded at the work site within twenty-four (24) hours and shall be available for review until the job is complete.

2. The Project Monitor, acting as the representative of the Engineer during abatement activities, will:

    a. Collect air samples in accordance with the current revision of the NIOSH 7400 Method of Air Sampling for Airborne Asbestos Fibers while overseeing the activities of the Abatement Contractor. Frequency and duration of the air sampling during abatement will be representative of the actual conditions at the abatement site. The size and configuration of the asbestos project will be a factor in the number of samples required to monitor the abatement activities and shall be determined by the Project Monitor. The following schedule of samples may be collected by the Project Monitor:

        1. Pre-Abatement (Optional)
            a. Background areas
            b. Area(s) adjacent to Work Area(s)
            c. Work Area(s)

        2. During Abatement (Optional)
            a. Within Regulated Area(s)
            b. Area(s) adjacent to Regulated Areas(s) (exterior to critical barriers)
            c. At the Decontamination Enclosure System

Abatement Activity	Pre-Abatement	During Abatement	Post-Abatement
Exterior Friable/Non-Friable	---	PCM	---

If air samples collected outside of the Regulated Area during abatement activities indicate airborne fiber concentrations greater than original background levels, or greater than 0.1 f/cc, as determined by Phase Contrast Microscopy, whichever is larger, an examination of the Regulated Area perimeter shall be conducted and the integrity of barriers shall be restored. Cleanup of surfaces outside the Regulated Area using HEPA vacuum equipment or wet cleaning techniques shall be done prior to resuming abatement activities.

(f) Post Abatement Work Area Deregulation

The Contractor shall remove all remaining polyethylene, including critical barriers, drop-cloths, and Decontamination Enclosure Systems. HEPA vacuum and/or wet wipe any visible residue which is uncovered during this process. All waste generated during this disassembly process shall be discarded as ACM waste.

A final visual inspection of the work area shall be conducted by the Competent Person and the Project Monitor to ensure that all visible accumulations of suspect materials have been removed and that no equipment or materials associated with the abatement project remain.

The Contractor shall restore all work areas and auxiliary areas utilized during work to conditions equal to or better than original. Any damage caused during the performance of the work activity shall be repaired by the Contractor at no additional expense to the Engineer.

(g) Waste Disposal

Unless otherwise specified, all removed materials and debris resulting from execution of this project shall become the responsibility of the Contractor and removed from the premises. Materials not scheduled for reuse shall be removed from the site and disposed of in accordance with all applicable Federal, State and Local requirements.

Waste removal dumpsters and cargo areas of transport vehicles shall be lined with a layer of six (6) mil polyethylene sheeting to prevent contamination from leaking or spilled containers. Floor sheeting shall be installed first, and shall be extended up sidewalls 12-inches. Wall sheeting shall overlap floor sheeting 24-inches and shall be taped into place.

OSHA "Danger" signs must be attached to vehicles used to transport asbestos-containing waste prior to loading ACM waste. The signs must be posted so that they are plainly visible.

Ensure all waste containers (bags, drums, etc.) are properly packed, sealed and labeled with USEPA NESHAP generator labels, OSHA danger labels and DOT shipping labels. For each shipment of ACM waste, the Contractor shall complete an EPA-approved asbestos waste shipment record.

Authorized representatives signing waste shipment records on behalf of the generator must have USDOT Shipper Certification training in accordance with HMR 49 CFR Parts 171-180.

Transport vehicles hauling ACM waste shall have appropriate USDOT placards visible on all four (4) sides of the vehicle.

The Contractor shall dispose of asbestos-containing and/or asbestos contaminated material at an EPA authorized site and must be in compliance with the requirements of the Special Waste Provisions of the Office of Solid Waste Management, Department of Energy & Environmental Protection, State of Connecticut, or other designated agency having jurisdiction over solid waste disposal.

Any asbestos-containing and/or asbestos-contaminated waste materials which also contain other hazardous contaminants shall be disposed of in accordance with the EPA's Resource Conservation and Recovery Act (RCRA), CTDEEP and ConnDOT requirements. Materials may be required to be stored on-site and tested by the Project Monitor to determine proper waste disposal requirements.

(h) Project Closeout Data:

1. Provide the Engineer, within 30 days of completion of asbestos abatement, a compliance package; which shall include, but not be limited to, the following:

    a. Asbestos Abatement Site Supervisor job log;
    b. OSHA personnel air sampling data;
    c. Completed waste shipment records.

The Contractor shall submit the original completed waste shipment records to the Engineer.

Method of Measurement:

No measurement will be made for the work in this Section. The completed work shall be paid as a lump sum.

Basis of Payment:

The lump sum bid price for this item shall include the specialty services of the Asbestos Removal Contractor including: labor, materials, equipment, insurance, permits, notifications, submittals, personal air sampling, personal protection equipment, temporary enclosures, utility costs, incidentals, fees and labor incidental to the removal, transport and disposal of ACM, including close out documentation.

Final payment for asbestos abatement will not be made until all the project closeout data submittals have been completed (including waste shipment record(s) signed by an authorized disposal facility representative) and provided to the Engineer. Once the completed package has been received in its entirety, the Engineer will make the final payment to the Contractor.

Pay Item	Pay Unit
Asbestos Abatement	Lump Sum

ITEM #0107090A - CTDOT BOUNDARY MARKER (SURVEY MONUMENT)

Description: Work done under this item consists of setting survey boundary monuments along Right–of–Way lines at the locations indicated on the plans or as directed by the Engineer.

Materials: CTDOT concrete boundary monuments and disks will be provided by the Department; the Contractor is responsible for the transportation of CTDOT monuments from the District office to the project site. All other materials shall be the responsibility of the Contractor.

Construction Methods: The Contractor shall be responsible for setting of CTDOT Boundary Markers at all points indicated on the plans.

The standard Boundary Marker will be the CTDOT concrete boundary monument. If the Engineer determines that it is impractical to set a full-length concrete boundary monument, the Engineer will direct the Contractor either (a) to cut the boundary monument to a shorter length and then secure it in place by placing concrete around the base of the cut monument such that it has the equivalent stability of the full-length monument or (b) to set a boundary disk in ledge or other structure.

The setting of Boundary Markers shall not begin until all excavation, filling operations, grading and drainage has been completed and approval has been granted by the Engineer. All computations of precise locations will be completed by the CTDOT District Survey Office, which will oversee installation in the correct locations.

Excavation for the placement of the CTDOT Boundary Markers shall be by hand or with a power auger. The use of a backhoe or other heavy equipment for excavation purposes will not be allowed. The concrete monument shall be set plumb into the hole to the finished grade and backfilled and compacted in six inch (6”) layers as detailed in the Contract or as directed by the Engineer.

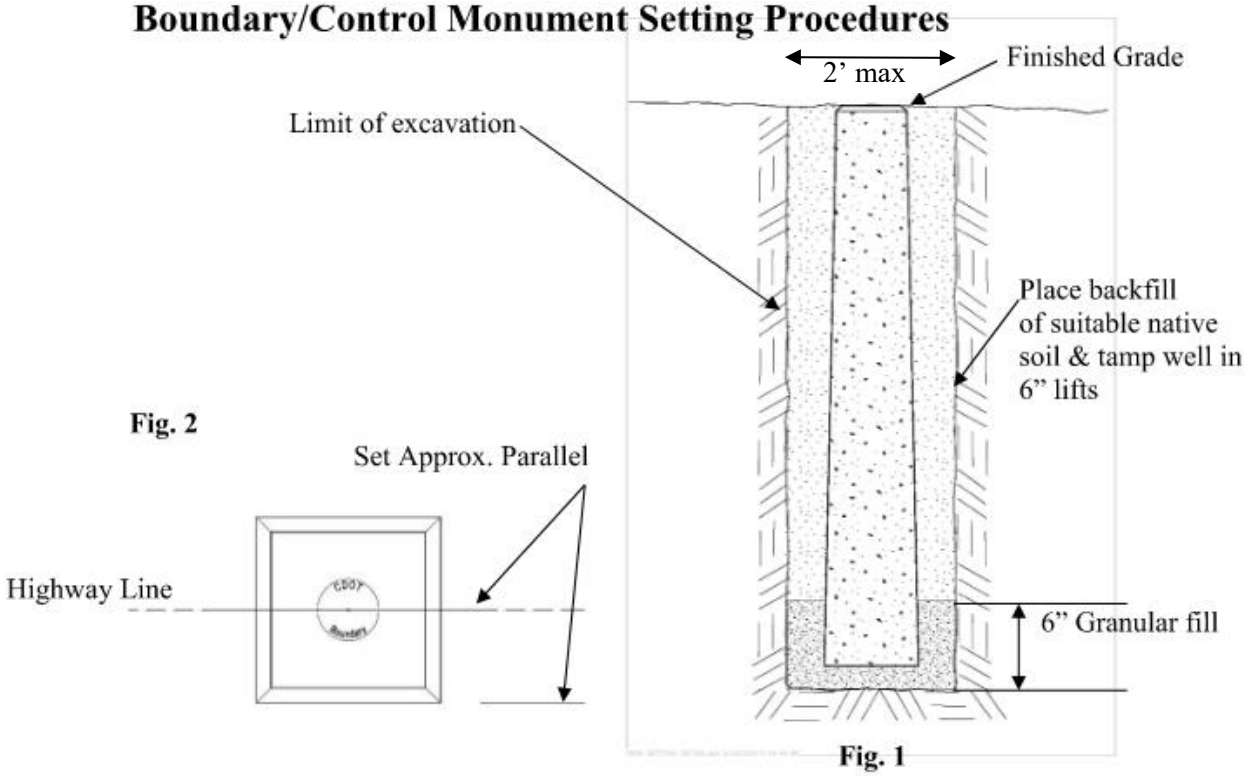
Monuments set in asphalt pavement (driveways, parking areas) shall be set a few inches below grade with a twelve inch (12”) diameter (or similar size as approved by the Engineer) cast iron manhole cover (with a finger hole) set in place over the monument.

All disks set in ledge or concrete shall be secured with ROCKITE®, KWIXSET®, QUIKRETE®, or approved equal fast-setting hydraulic anchoring cement compound; cut monuments can be secured with any of those products or any commercial-grade concrete mix, such as SAKRETE® OR QUIKRETE® brands, as approved by the Engineer. Submittal required prior to using any other material than listed.

Once the Boundary Markers have been set and backfilled at the direction of the Engineer and found to meet the Contract standards, the Engineer shall notify the Contractor of the approval of the work.

CONNECTICUT DEPARTMENT OF TRANSPORTATION

Boundary/Control Monument Setting Procedures



Method of Measurement: This work will be measured for payment by the number of monuments complete and accepted in place.

Basis of Payment: Work will be paid for at the Contract unit price each for the Boundary Markers complete and accepted in place, which price shall include all equipment, tools, transportation of Department-supplied materials, non-Department supplied materials, and labor incidental to the setting of Boundary Markers, and shall include any disposal of excess excavated materials.

Pay Item	**Pay Unit**
CTDOT Boundary Marker (Survey Monument)	ea

ITEM #0202216A – EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL

Description: This work shall consist of excavating existing channel bottom material, herein referred to as natural streambed material, in areas where the channel bottom is to be disturbed and regraded to create a work area for a bridge, culvert, articulated concrete block placement, cofferdam installation, as shown on the plans or as directed by the Engineer. This item shall also include the stockpiling and protecting of the excavated material on-Site, subsequent placement, top dressing, or backfilling of the excavated stockpiled material within the watercourse, as shown on the plans or as directed by the Engineer.

Materials: The material for this item shall consist of the existing naturally-formed rocks, cobbles, gravel, soils and clean natural sediments from within the channel.

Any material excavated from shale, ledge (bedrock) formations broken from larger boulders, or material with sharp acute edges will not be accepted. Broken concrete will not be accepted.

Geotextile: Geotextile shall be as specified in M.08.01-19 Geotextiles.

Construction Methods:

1. Stockpiling of Material. The Contractor shall submit for the Engineer's approval a proposed location for stockpiling material. The proposed location shall be upland where disruption to the stream channel or impact to wetland areas caused by moving the natural streambed material to and from the stockpile are minimized. The Contractor shall prepare the area approved by the Engineer, suitable in size and location for stockpiling the natural streambed material.

The stockpile shall be located where it can remain undisturbed for the duration of the stream channel reconstruction or as shown on the plans and shall be protected using sedimentation control measures. The stockpile area shall be free of debris and cleaned adequately to prevent mixing with underlying soil or other materials, including the use of a separation barrier such as: Geotextile – (Separation Class 1), polyethylene sheeting, or similar. The stockpile area shall be adequately covered to protect the excavated natural streambed material from erosion by rain, wind, or other forces.

2. Excavation of Natural Streambed Material. The Contractor shall notify the Engineer 10 days in advance of excavation and placement of natural streambed material activities. The Engineer will identify the limits of the exposed natural streambed material during excavation under this item. The Engineer will identify the bottom limit of excavation, an amount up to but not exceeding 24 inches in depth, unless approved by the Engineer or their authorized delegate, based upon visual inspection of the natural streambed material. After the limits of excavation have been determined, the Contractor shall excavate the natural streambed material, separate from any other roadway, structure, channel or unsuitable material excavation on Site. After the natural streambed material has been excavated, it shall be placed in the pre-approved stockpile area.

3. Backfilling and Placement with Natural Streambed Material. The stockpiled natural streambed material shall be placed as fill material as specified at the designated location(s) to the required thickness and elevation as shown on the plans or as directed by the Engineer or their authorized delegate. Placement methods likely to cause segregation of the various sizes of stone will not be permitted. Placement techniques shall prevent integration with non-natural streambed material and shall keep the natural streambed material relatively homogenous. The natural streambed material shall be placed in a manner that replicates the original condition of the channel prior to excavation and to the elevation as shown on the plans.

4. Top Dressing with Natural Streambed Material. The stockpiled natural streambed material shall be used as top dressing over riprap or other material as specified at the designated location(s) to the required thickness and elevation as shown on the plans or as directed by the Engineer or their authorized delegate. Placement techniques shall prevent integration with the non-natural streambed material and shall keep the natural streambed material relatively homogenous. The natural streambed material shall be placed in a manner that replicates the original condition of the channel prior to excavation and to the elevation as shown on the plans.

5. Site Maintenance. When backfilling, placing, or top dressing, the Contractor shall perform all containment, diversion, or other separation of the channel flow to minimize sediment transport downstream.

The disposal of any surplus and/or unsuitable material shall be in accordance with Article 1.09.04.

If the Engineer determines that there is an insufficient quantity of natural streambed material within the Project limits, the Contractor shall procure Supplemental Streambed Channel Material as specified under Item #0202217A.

If it is required for the Project to have washing-in of supplemental streambed material, the Contractor shall procure Washing-in Supplemental Streambed Material as specified under Item #0202218A.

The pre-approved stockpile areas shall be restored to the satisfaction of the Engineer. Work to restore/regrade stockpile areas will be paid for under the respective pay item(s).

Method of Measurement: This work will be measured for payment by the number of cubic yards of natural streambed material excavated, stockpiled, maintained, installed, and accepted.

The Engineer will delineate the horizontal pay limit prior to the start of excavation. The vertical pay limit will be measured from the top of the existing channel bottom to the bottom of excavation required specifically for the stockpiling of channel bottom material.

Any material excavated beyond the approved horizontal pay limits or deeper than the depth of natural streambed material identified and approved by the Engineer will not be measured for payment under this item. Should such additional excavation be required to complete the Contract work, it will be measured for payment separately under the applicable pay item(s).

Basis of Payment: Payment for this work will be made at the Contract unit price per cubic yard for "Excavation and Reuse of Existing Channel Bottom Material." The price shall include all materials, equipment, geotextile, tools, and labor incidental to the preparation of the stockpile area, excavation of natural streambed material, hauling of the material to the stockpile, and separation of any rock ledge or concrete debris, storing, and protecting (including sedimentation controls and covering) excavated material.

Payment for clearing and grubbing of the approved stockpile area will be included in the item "Clearing and Grubbing."

Payment for the removal and proper disposal of all surplus and/or unsuitable material will be in accordance with Article 1.09.04 – Extra and Cost-Plus Work.

Riprap or other specified material as shown on the plan will be paid for under the respective items.

Payment for supplemental streambed channel material will be included in the Item #0202217A "Supplemental Streambed Channel Material." If no item appears in the proposal, payment for the work will be in accordance with Article 1.09.04 – Extra and Cost-Plus Work.

Payment for washing in supplemental streambed channel material will be included in the Item #0202218A "Washing-in Supplemental Streambed Material." If no item appears in the proposal, payment for the work will be in accordance with Article 1.09.04 – Extra and Cost-Plus Work.

Payment for all containment, diversion or other separation of stream flow will be included in the item "Cofferdam and Dewatering" or special provision for "Handling Water."

Pay Item	Pay Unit
Excavation and Reuse of Existing Channel Bottom Material	c.y.

ITEM #0202217A – SUPPLEMENTAL STREAMBED CHANNEL MATERIAL

Description: This work shall consist of procuring, transporting, and placing supplemental streambed channel material, herein referred to as supplemental streambed material, meeting the visual inspection requirements herein, along stream bank/channel improvement locations as shown on the plans or denoted on the Project's permit applications. This item shall also include any necessary temporary protection and stockpiling of the supplemental streambed material on–Site, subsequent placement, top dressing, or backfilling of the supplemental streambed material within the watercourse, as shown on the plans or as directed by the Engineer.

Materials: When a sufficient quantity of material is not available from the existing streambed channel for placement, top dressing, or backfilling within the permitted footprint of the stream bank/channel improvement locations, the Contractor shall furnish supplemental streambed material from an off-Site source. Supplemental streambed material must be visually inspected and accepted by the Engineer or their authorized delegate prior to being delivered to the Site. The Contractor shall notify the Engineer at least 10 working days in advance of the need for inspection of proposed off-Site material.

The supplemental streambed material for this item shall be consistent with the existing naturally-formed cobbles and rocks, gravel, and clean natural sediments found within the existing channel. Rock excavated from shale, ledge (bedrock) formations broken from larger boulders, broken concrete or angular material, or material with sharp acute edges will not be accepted.

Geotextile: Geotextile shall be as specified in M.08.01-19 Geotextiles.

Construction Methods:

1. Stockpiling of Material. At the start of construction, the Contractor shall prepare an area, approved by the Engineer, suitable in size and location for stockpiling the supplemental streambed material. The Contractor shall select an upland location where disruption to the stream channel or impact to wetland areas caused by moving the supplemental streambed material to and from the stockpile are minimized during the placement of material. The stockpile shall be located where it can remain undisturbed for the duration of the stream channel construction and shall be protected using sedimentation control measures.

The stockpile area shall be free of debris and cleaned adequately to prevent mixing with underlying soil or other materials, including the use of Geotextile – (Separation Class 1), or similar, if required. The stockpile area shall be adequately covered to protect the supplemental streambed channel material from erosion by rain or other forces. After supplemental streambed material and existing natural streambed material have been placed in the stockpile areas, no other excavated or off-Site material shall be placed in the stockpiles.

2. Backfilling and Placement with Supplemental Streambed Material. The stockpiled supplemental streambed material shall be placed as fill material as specified at the designated location(s) to the required thickness and elevation as shown on the plans or as directed by the

Engineer or their authorized delegate. Placing this material by methods likely to cause segregation of the various sizes of stone will not be permitted. Placement techniques shall prevent integration with non-natural streambed material and shall keep the streambed material relatively homogenous. The streambed material shall be placed in a manner that replicates the original condition of the channel prior to excavation and to the elevation as shown on the plans.

3. Top Dressing with Supplemental Streambed Material. The stockpiled supplemental streambed material shall be used as top dressing over riprap or other material as specified at the designated location(s) to the required thickness and elevation as shown on the plans or as directed by the Engineer or their authorized delegate. Placement techniques shall prevent integration with the non-natural streambed material and shall keep the streambed material relatively homogenous. The streambed material shall be placed in a manner that replicates the original condition of the channel prior to excavation and to the elevation as shown on the plans.

4. Site Maintenance. When placing, backfilling, or top dressing streambed material, the Contractor shall perform all containment, diversion, or other separation of the channel flow to minimize sediment transport downstream.

If it is required for the Project to have washing-in of supplemental streambed material, the Contractor shall procure Washing-in Supplemental Streambed Material as specified under Item #0202218A.

The pre-approved stockpile areas shall be restored to the satisfaction of the Engineer. Work to restore/regrade stockpile areas will be paid for under the respective pay item(s).

Method of Measurement: Work under this item will be measured for payment as provided under Article 1.09.04 – Extra and Cost-Plus Work.

The sum of money shown on the estimate and in the itemized proposal as "Estimated Cost" for this work will be considered the price bid even though payment will be made only for actual work performed. The estimated cost figure is not to be altered in any manner by the bidder. Should the bidder alter the amount shown, the altered figures will be disregarded and the original price will be used to determine the total amount bid for the Contract.

Basis of Payment: Payment for "Supplemental Streambed Material" shall include all materials, equipment, geotextile, tools, and labor incidental to the preparation of the stockpile area, hauling of the material to the stockpile, placement of supplemental streambed material, and separation of any rock ledge or concrete debris, storing, and protecting (including sedimentation controls and covering) excavated material.

Payment will be as specified under Article 1.09.04 – Extra and Cost-Plus Work.

Payment for clearing and grubbing of the approved stockpile area will be included in the item "Clearing and Grubbing."

Payment for excavation and reuse of existing channel bottom material will be included in the Item #0202216A “Excavation and Reuse of Existing Channel Bottom Material.”

Payment for washing in supplemental streambed material will be included in the Item #0202218A “Washing-in Supplemental Streambed Material.” If no item appears in the proposal, the work will be in accordance with Article 1.09.04 – Extra and Cost-Plus Work.

Payment for all containment, diversion or other separation of stream flow will be included in the item “Cofferdam and Dewatering” or special provision for "Handling Water."

Pay Item	Pay Unit
Supplemental Streambed Channel Material	est.

ITEM #0202218A – WASHING-IN SUPPLEMENTAL STREAMBED MATERIAL

Description: This work shall consist of procuring, transporting, stockpiling, and washing in of supplemental streambed material, meeting the visual inspection requirements herein, along stream bank/channel improvement locations as shown on the plans or denoted on the Project's permit applications or as directed by the Engineer. This item shall also include any necessary temporary protection and stockpiling of the washing-in supplemental streambed material on–Site and subsequent washing in of supplemental streambed material for filling voids of riprap areas within the watercourse, as shown on the plans or as directed by the Engineer.

Materials: When washing in of supplemental streambed material is required, the Contractor shall furnish the washing-in supplemental streambed material from an off-Site source. The supplemental streambed material for washing in must be visually inspected and accepted by the Engineer or their authorized delegate prior to being delivered to the Site. The Contractor shall notify the Engineer at least 10 working days in advance of the need for inspection of proposed off-Site material.

Geotextile: Geotextile shall be as specified in M.08.01-19 Geotextiles.

Construction Methods:

1. **Stockpiling of Material**. At the start of construction, the Contractor shall prepare an area, approved by the Engineer, suitable in size and location for stockpiling the supplemental streambed material for washing in. The Contractor shall select an upland location where disruption to the stream channel or impact to wetland areas caused by moving the supplemental streambed material to and from the stockpile are minimized during the placement of material. The stockpile shall be located where it can remain undisturbed for the duration of the stream channel construction and shall be protected using sedimentation control measures. The stockpile of streambed material for washing in shall be kept separate from other streambed material stockpile areas.

The stockpile area shall be free of debris and cleaned adequately to prevent mixing with underlying soil or other materials, including the use of Geotextile – (Separation Class 1), or similar, if required. The stockpile area shall be adequately covered to protect the supplemental streambed material from erosion by rain or other forces. After supplemental streambed material for washing in has been placed in the stockpile area, no other excavated or off-Site material shall be placed in the stockpiles.

2. **Washing-in Supplemental Streambed Material.** If it is specified on the plans that washing-in supplemental streambed material for filling voids between riprap, or other material, is required, the Contractor must submit a Washing-In Supplemental Streambed Material Plan (SMP) for the Engineer's acceptance. The SMP shall include the following:

1) Provide a plan and section identifying the completed installation and preparation of riprap area to receive streambed material as shown on the plans or as directed by the Engineer or their authorized delegate.
2) Provide means and methods for washing in the supplemental streambed material. Means and methods shall include:
   a. Equipment used to place material.
   b. Washing in of material is to be done manually. Water from the watercourse shall be used to wash in the streambed material into the voided areas between the riprap or other material as specified on the plans. Washing in should be done carefully and at a controlled flow rate/velocity (approximately 4.0 gpm) to not cause erosion of adjacent erodible soils or cause turbid effluent to flow out of the riprap-filled area.
   c. Provide a Catalogue Cut of type and size of pump and hose proposed to be used.
   d. Measures to prevent turbidity from the work area. The Contractor may dewater the areas as defined under Article 2.04 Cofferdam and Dewatering or Item Handling Water.
3) Show calculations of estimated quantity of streambed material needed to wash in and fill riprap voids. The ratio of natural streambed material to riprap shall be approximately 1:3 (assuming 30% voids in the riprap).

Method for washing in supplemental streambed material:

Pre-blending riprap with the supplemental streambed material is prohibited. Placement and washing in of supplemental streambed material shall occur after all the riprap has been installed and shaped to final dimensions and grade as shown on the plans or as directed by the Engineer. Placement and washing in of supplemental streambed material must occur within a confined area.

1) Initially place approximately 12-inch lift of the washing-in streambed material over the riprap. Manually hand shovel/rake to assist with placing the streambed material into the riprap voids prior to washing in the streambed material.
2) Begin to manually wash the streambed material into the voids, slowly add more washing-in streambed material on top, in a manner to prevent turbid effluent flow from exiting the work area.
3) If turbidity is observed discharging from the confined work area, cease operations immediately and implement preventative measures as outlined in the approved SMP, until the water level subsides and naturally permeates. Continually observe the confined work area.
4) The Contractor may be allowed to move to different area(s) and continue the washing in process, as noted in Steps 1-3 above, if other locations need the water levels to subside and permeate. (It may be necessary to stop temporarily if the rate of water application exceeds the storage capacity and natural infiltration of the riprap area.)
5) The Contractor shall continue until all voids are filled with streambed material to the satisfaction of the Engineer or their authorized delegate. The ratio of streambed material to riprap shall be approximately 1:3 (assuming 30% voids in the riprap). This ratio should

be considered as a guideline in deciding whether riprap voids are likely to be filled. If the calculated volume of streambed material based on 30% void space has not been washed in, it should be assumed that the voids are not fully filled.

6) Partially remove water-handling-cofferdams or cofferdams to allow watercourse to flow through the area in a controlled manner. Observe watercourse over a period of time; should the water flow go under the surface through the recently created riprap area, reinstall water-handling-cofferdams and continue washing streambed material into riprap voids. Repeat this process as necessary until subsurface flow is no longer observed.

The Contractor may propose alternative methods to meet the requirements noted above. The means and methods will be reviewed by the Engineer or their authorized delegate for acceptance.

3. Site Maintenance. When washing in supplemental streambed material, the Contractor shall perform all containment, diversion, or other separation of the channel flow to minimize sediment transport downstream.

The pre-approved stockpile areas shall be restored to the satisfaction of the Engineer. Work to restore the stockpile areas shall be paid for under the respective pay item.

Method of Measurement: Work under this item shall be measured for payment as provided under Article 1.09.04 – Extra and Cost-Plus Work.

The sum of money shown on the estimate and in the itemized proposal as "Estimated Cost" for this work will be considered the price bid even though payment will be made only for actual work performed. The estimated cost figure is not to be altered in any manner by the bidder. Should the bidder alter the amount shown, the altered figures will be disregarded, and the original price will be used to determine the total amount bid for the Contract.

Basis of Payment: The price shall include all materials, equipment, geotextile, pumps, hoses, tools, and labor incidental to the preparation of the stockpile area, hauling of the material to the stockpile, placement and washing-in supplemental streambed material to fill riprap voids, and separation of any rock ledge or concrete debris, storing, and protecting (including but not limited to sedimentation controls and covering of excavated material).

Payment for Washing-in Supplemental Streambed Material will be paid for under Article 1.09.04 – Extra and Cost-Plus Work.

Payment for clearing and grubbing of the approved stockpile area will be included in the Item "Clearing and Grubbing."

Payment for excavation and reuse of existing channel bottom material will be included in the ITEM #0202216A "Excavation and Reuse of Existing Channel Bottom Material."

Payment for supplemental streambed channel material, other than washing-in streambed material, will be included in the Item #0202217A “Supplemental Streambed Channel Material.”

Payment for all containment, diversion or other separation of stream flow will be included in the item “Cofferdam and Dewatering” or special provision for "Handling Water."

Pay Item	Pay Unit
Washing-in Supplemental Streambed Material	est.

ITEM #0202452A – TEST PIT

Description:
The work covered under this item includes furnishing all labor, equipment, materials, and incidentals necessary to perform all operations in connection with excavating and backfilling by machine or by hand, exploratory test pits at locations indicated or directed by the Engineer. The purpose of the test pits is for locating and examining soils, groundwater, drains, pipes, rocks, utilities, structure foundations, or any other obstacles.

Utility facilities to be located shall include pipes, conduits, service connections, handholes, structures, tanks, utility appurtenances, and any miscellaneous items directed by the Engineer such as telltales/ markers on the existing pipes, etc.

Materials:
All materials for the restoration of the surfaces where test pits were taken shall conform to the following:

Topsoil shall conform to Article M.13.01.

Fertilizer shall conform to Article M.13.03.

Seed mixture shall conform to Article M.13.04

Mulch shall conform to Article M.13.05.

Erosion control matting shall conform to Article M.13.09.

Construction Methods:
Test pit excavations shall have neat, clean-cut, and vertical sides; hand-digging shall be employed when required by the Engineer. Sawcut shall be performed where necessary and as directed by the Engineer.

The Contractor shall contact “Call Before You Dig” before any excavation work.

Perform all work in conformance with local, state, and federal codes.

Dig test pits so as to ensure that underground utilities or structures are not damaged. It shall be the Contractor’s sole responsibility for any damages incurred during excavation operations. Any damages shall be repaired or replaced by the Contractor to the satisfaction as directed by the Engineer at the Contractor’s own expense.

Contractor shall notify the Engineer of any revealed conflicts which may require design revisions, relocations, or adjustments as early as possible to avoid unnecessary delays. The Engineer shall be allowed sufficient time to perform all necessary design revisions. No work shall be started within areas of conflict until so authorized.

Protect each pit with steel plates, other coverings, fences, barriers, or other appropriate materials as deemed necessary. Do not backfill pits until authorized. Compact backfill materials 95% to the sub-grade elevation or as otherwise directed.

The surface of test pit areas shall be restored to a condition equal to or better than original as directed by the Engineer. Test pits throughout the project area are to be completed prior to beginning other construction activities.

Method of Measurement:

Test pits will be measured as each excavated, backfilled, surveyed, documented, and accepted per site and as directed by the Engineer. There will be no separate measurement for mobilization and demobilization associated with this item.

Basis of Payment:

Test Pits will be paid for at the contract unit price each complete in place and accepted, which price shall include all materials, equipment, tools, handhole extensions, covers, surveys, and labor incidental thereto per site.

The price shall also include backfilling, patching roadways, and sidewalks in kind, restoration of the ground where required and the disposal of surplus material. No additional payment will be made for shoring, bracing, pumping, and bailing or for material or equipment necessary for the satisfactory completion of the work.

Pay Item	Pay Unit
Test Pit	EA.

ITEM #0202560A – PROTECT SURVEY MONUMENT

Description: Work done under this item consists of protecting existing survey monuments within the construction area or adjacent to the construction area as shown on the plans from damage and protecting survey monuments against physical of the monument. Existing survey monuments shall be protected from all construction activities and storage of equipment and materials.

Construction Methods: The Contractor shall record the initial location of all survey monuments within the project limits including Northing, Easting, and Elevation. the Contractor shall also document the condition of the survey monument with high resolution photographs. The location survey shall be performed by a Professional Land Surveyor licensed in the state of Connecticut. The location survey and condition photos shall be submitted to the Engineer for review prior to major work activities.

The Contractor shall record the location and take additional photographs of all survey monuments within the project limits after all major construction activities have completed. The final location survey and condition photos shall be submitted to the Engineer for review.

If any survey monument moved or damaged due to construction activities the monument shall be removed and replaced at the Contractor's expense.

The Contractor shall also submit the Engineer means and methods of protecting all survey monuments within the project limits against damage and movement during construction activities.

Method of Measurement: This work will be measured for payment by the number of CTDOT boundary markers, (either monuments, disks, or capped rebar) to be protected in place.

Basis of Payment: This work will be paid for at the Contract unit price each for "Protect Survey Monument" complete, which price shall include all equipment, tools and labor incidental to the protection of the monuments.

Pay Item	Pay Unit
Protect Survey Monument	ea.

ITEM #0202911A – CONDITION SURVEY (SITE NO. 1)

Description: This work shall include pre- and post-construction condition surveys of portions of Beacon Valley Road and Beacon Valley Road 2 that will be used to access the Project site. Pre- and post-construction condition survey limits will be defined by the limits of Beacon Valley Road and Beacon Valley Road 2 Town of Naugatuck (Town) Right of Way including all paved surfaces, lane striping, curbs, drainage features, structures, rails, bridges, signs, utilities, plantings and all other features within the Town Right of Way Limits of Beacon Valley Road and Beacon Valley Road 2. Pre- and post-construction condition survey limits will be defined by the areas of the roadway required for site access by the Contractor.

Materials: Not Applicable

Construction Methods: The Contractor shall engage a Professional Engineer licensed in the State of Connecticut, with a minimum of five (5) years of experience, to conduct and prepare pre-construction condition surveys of the following structures:

The pre-condition survey shall consist of a written description of the condition of each of the structures examined. Descriptions shall locate any existing cracks, damage, or other defects and shall include such information so as to make it possible to determine the effect, if any, of the construction operations on the defect. Particular note shall be made of evident structural faults and deficiencies, or recent repairs. Where significant cracks or damage exist, or for defects too complicated to document in words only, sketches and photographs shall be taken or a good quality videotape survey with appropriate audio description of locations, conditions, and defects shall be performed to supplement the written description. Pictures and sketches shall be provided with a scale where practical. Prior to the start of work, a copy of the pre-construction condition survey that is signed, sealed, and dated by a Professional Engineer licensed in the State of Connecticut shall be submitted to the Engineer for review.

At least two (2) weeks prior to performing the conditions surveys, the Contractor shall notify in writing, the owners of each respective structure to be surveyed. The notifications shall be made by certified mail. The notice shall state the dates on which surveys are to be made. Copies of all notices shall be provided to the Engineer.

Upon completion of all construction activities, the Contractor shall conduct a post-construction survey of the structures that were included in the pre-construction survey. Notice shall be given to all interested parties so that they may be present during the final examination. Records of the final examination that are signed, sealed, and dated by a Professional Engineer licensed in the State of Connecticut shall be distributed the same as the original pre-construction condition survey.

If the Contractor or the Engineer is made aware of any damage or negative impacts to surveyed structures or features as a result of the construction activities, the Contractor shall notify the Engineer of the damage immediately with documentation and photos to describe the extent of

such damage. Should the condition of the impacted structure or feature warrant immediate action, the Contractor shall take the necessary actions as ordered by the Engineer to address the deficiencies.

The Contractor will not be held liable for pre-existing deficiencies noted in the pre-condition survey that are not worsened by the construction activities and are not detrimental to the successful completion of the work.

The condition survey shall include the existing roadway surface condition, as well as the condition of the appurtenant curbs, rails, sign structures, embankments, utility features and drainage features.

The survey shall also include all existing bridge structures below Beacon Valley Road and Beacon Valley Road 2. Existing bridges shall be surveyed and dimensioned sketches of the structures shall be generated with all pre-existing deficiencies clearly noted. Existing bridges shall only be crossed by construction vehicles once the initial Condition Survey submission has been reviewed. Should the results of the survey show that the bridges are not capable of safely supporting the anticipated construction vehicles, the Contractor shall develop a plan to safely cross the structures or indicate that the bridges will not be crossed, and the non-bridge route adhered to for all construction traffic. The dimensioned sketches including all material notes and structure geometries, as well as catalog cuts for all anticipated vehicles shall be submitted to the Engineer for review.

Method of Measurement: This work will not be measured for payment.

Basis of Payment: The pre- and post-construction condition survey will be paid for at the contract lump sum price for "Condition Survey (Site No. 1)", complete in place, which price shall include condition documentation, submissions, development of sketches, materials required to safely cross bridges, post-condition survey repair of structures, and all materials, equipment, tools, labor and work incidental thereto.

Pay Item	Pay Unit
Condition Survey (Site No. 1)	l.s.

ITEM #0204151A - HANDLING WATER

Description: Work under this item shall consist of designing, furnishing, installing, maintaining, and removing of a temporary water handling system. This may include water-handling-cofferdams, bypass pipes, bypass pumps/hoses, temporary energy dissipation, sump pumps, drainage channels, water handling for ancillary drainage, and dewatering.

A temporary water handling system redirects water beyond, through, or around the limits of construction to allow work to be done in the dry.

Materials: The materials required for this work shall be as shown on the plans, on the accepted Contractor's Working Drawing submittal, or as ordered by the Engineer.

Construction Methods: The Contractor shall prepare and submit written procedures for handling water. Working Drawings, in accordance with Article 1.05.02, shall also be prepared and submitted.

The Contractor shall consider stream conditions, water elevations, expected weather, and risks associated with the Site to determine the type of temporary water handling system required to redirect water away from work being performed. The system shall be designed to comply with the Temporary Hydraulic Table in the Contract plans and be compatible with the stage of construction and Maintenance and Protection of Traffic scheme, as indicated in the Contract, and shall conform to Section 1.10.

The Contractor shall be responsible to maintain and repair the water handling system throughout the duration of the Contract. If the system becomes damaged, displaced, or not functioning properly due to construction activities, stream conditions or storm events, the Contractor shall be responsible to remediate the system back to working order per plan or as required at the direction of the Engineer.

Unless otherwise directed by the Engineer, all temporary water handling system components shall be removed in an acceptable manner when no longer required.

Bypass Pumping:

The bypass pump system shall be designed by the Contractor to comply with the Temporary Hydraulic Table in the Contract plans.

When incorporating a bypass pump/hose system, the Contractor shall provide a means to maintain continuous flow to the downstream channel to protect resources, unless otherwise noted in the Contract plans or as accepted by the Engineer. The Contractor shall provide for both maintaining continuous flow and accommodating temporary design flows using appropriate pump size for each case, valving, metering, or adjusting the flow during construction.

A pump screen shall be provided on the intake with maximum 0.5 inch diameter openings.

Method of Measurement: The work under this item, being paid on a lump sum basis, will not be measured for payment.

Basis of Payment: This work will be paid for at the Contract lump sum price for "Handling Water" completed and accepted, which price shall include designing (including submittals and

Working Drawings), furnishing, installing, maintaining, and removing of all temporary water handling system components as are necessary for completion of the work. This price shall include all materials, equipment, tools, labor and work incidental thereto.

A schedule of values for payment shall be submitted to the Engineer for review and comment.

Pay Item	Pay Unit
Handling Water	l.s.

ITEM #0210821A—WATER POLLUTION CONTROL

Description: This work shall consist of measures to control water pollution and soil erosion which become necessary for the completion of the work, but for which no item is provided in the Contract. Such measures include:

- temporary check dams, water bars, berms, dikes, dams
- temporary sediment traps
- pump settling basins
- silt fence
- inlet protection
- hay bales
- erosion control matting
- fiber rolls, coir rolls, wattles
- gravel, stone, riprap
- mulch
- permanent or temporary seeding
- slope drains, ditches, channels, temporary drainage measures
- dust control
- topsoil
- other erosion control materials, devices, or methods

If a situation arises that requires immediate deployment of water pollution control measures, the Engineer will direct the Contractor to use this item to prosecute the work.

If the Contractor proposes changes in construction methods or staging which would affect the as designed pollution controls, plans for revised pollution controls shall be submitted for the Engineer's approval prior to start of work.

Materials: The materials shall meet the pertinent articles of the Standard Specifications. The Contractor shall submit Product Data for the materials.

Construction Methods: The Engineer has the authority to control the surface area of earth material exposed by construction operations and to direct the Contractor to immediately provide permanent or temporary pollution control measures to protect watercourses, wetlands, or other natural resources. Every effort shall be made by the Contractor to prevent erosion on the Site and prevent runoff onto abutting property.

All disturbed areas shall be permanently or temporarily stabilized by mulching, seeding or other methods as the work progresses to comply with the intent of this specification.

All damaged slopes shall be repaired as soon as possible. The Engineer will limit the surface area of earth material exposed if the Contractor fails to sufficiently protect the slopes.

The Contractor shall always have on hand the necessary materials and equipment to provide for slope stabilization and corrective measures to damaged slopes.

Temporary channels, ditches, water bars and outfalls shall be protected prior to directing water into them.

The erosion control features installed by the Contractor shall be maintained by the Contractor, and such installations shall be removed if ordered by the Engineer. Maintenance of erosion control measures by the Contractor shall include the clean out of accumulated sediment.

Method of Measurement: The work and materials required for Water Pollution Control measures will be measured for payment as provided for under 1.09.04 - Extra and Cost-Plus Work.

The sum of money shown on the estimate and in the itemized proposal as "Estimated Cost" for this work will be considered the price bid even though payment will be made only for actual work performed. The estimated cost figure is not to be altered in any manner by the bidder. Should the bidder alter the amount shown, the altered figures will be disregarded, and the original price will be used to determine the total amount bid for the Contract.

Basis of Payment: Work will be paid for as provided under 1.09.04 - Extra and Cost-Plus Work.

Control measures that are made necessary by the Contractor's failure to install and maintain controls as a part of the work as scheduled or ordered by the Engineer shall be performed by the Contractor at its own expense.

Control work at off-Site areas selected by the Contractor shall be the responsibility of the Contractor.

Pay Item	Pay Unit
Water Pollution Control	est

ITEM #0216012A - CONTROLLED LOW STRENGTH MATERIAL

Description: Controlled Low Strength Material (CLSM) is a self-consolidating, rigid setting material to be used in backfills, fills, structural fills and elsewhere as indicated on the plans, or as directed by the Engineer. The flow and set time characteristics of CLSM shall be designed to meet the specific job conditions. All CLSM material covered by this specification shall be designed to be hand excavatable at any time after placement. It shall be composed of a mixture of Portland cement, aggregate, and water with the option of using fly ash, slag cement, air-entraining agents, and other approved admixtures.

Materials: All materials utilized in the CLSM mix design shall be in accordance with the applicable requirements of Article M.03.01.

Composition: The composition of the CLSM shall be in accordance with the requirements set forth in Article M.03.01-Component Materials, as well as the applicable sections of ACI 229R. The Contractor shall submit each proposed mix design, with all supporting data, to the Engineer for review and approval at least two weeks prior to its use.

The setting time of CLSM materials shall be designed so as to achieve the strength necessary to comply with the time constraints called for under the Maintenance and Protection of Traffic requirements of the project specifications. The use of chloride accelerators is not permitted.

The minimum compressive strength of the CLSM material shall be 30 pounds per square inch (psi) and the maximum compressive strength of the CLSM shall be 150 pounds per square inch (psi) when tested in accordance with ASTM D4832 after 56 days.

The CLSM mix design shall utilize a nominal maximum size of No. 8 aggregate as specified in M.01.01.

Construction Methods: CLSM shall only be placed when the ambient temperature is at least 32° F and rising. CLSM material shall be deposited within 2 hours of initial mixing.

CLSM may be placed by chutes, conveyors, buckets or pumps depending upon the application and accessibility of the site. Should voids or cavities remain after the placement of the CLSM, the Contractor shall modify the placement method or flow characteristics of the CLSM. Voids or cavities which have not been filled properly shall be corrected as directed by the Engineer and at the Contractor's expense.

Method of Measurement: This work will be measured for payment by the actual number of cubic yards of "Controlled Low Strength Material" installed and accepted within the pay limits shown on the contract plans or as directed by the Engineer.

Basis of Payment: This work will be paid at the contract unit price per cubic yard "Controlled Low Strength Material," which price shall include all materials, equipment, tools and labor incidental thereto.

Pay Item	Pay Unit
Controlled Low Strength Material	c.y.

ITEM #0503967A – TEMPORARY WORK PLATFORM

Description:

This work consists of the design, construction, maintenance and subsequent removal of a temporary work platform in accordance with the Plans and as needed in order to provide adequate access over a temporary water-handling bypass pipe to the Straitsville Brook embankment downstream of Bridge No. 06772. The temporary work platform shall be an extension of a temporary access road as indicated on the Plans for the access area extending over Straitsville Brook.

Materials:

Temporary work platforms shall be comprised of timber crane mats supported by precast concrete blocks. The Contractor may elect to substitute the material or combination of materials required to construct the temporary work platform system provided they are properly designed for the purpose intended. Systems utilizing proprietary components shall conform to the manufacturer's specifications and project specifications. The parts list shall be furnished for the proprietary system and the Contractor shall provide the Material Certificates for the parts to the Engineer for review.

Construction Methods:

Design of Temporary Work Platforms: The design of temporary work platforms is the responsibility of the Contractor. The design shall meet the requirements of the latest edition of the AASHTO "Guide Design Specification for Bridge Temporary Works", the AASHTO "Construction Handbook for Bridge Temporary Works", and applicable OSHA requirements including OSHA Safety and Health Requirements, 29 CFR 1926. Temporary access platforms shall be designed to support all anticipated construction vehicles, equipment and personnel necessary to perform the embankment stabilization work.

The Contractor shall furnish Working Drawings showing details of the platform and assembled sections, details of all components, connections, as well as construction and removal sequences. The Contractor shall also provide contingency plans for flood events where the flow from Straitsville Brook would overtop the water-handling-cofferdams immediately upstream of the temporary work platform. If the Contractor's flood contingency plan does not indicate that all components of the temporary work platform are to be removed for the duration of flood events, the Contractor shall design the temporary work platform for buoyant effects assuming a water

surface elevation equivalent to the 100-year event as indicated on the plans. The Working Drawing submittal shall also list all applicable ASTM designations, material properties and hydraulic characteristics.

The limits of the work platform shall be as indicated on the Plans and shall span beyond the Straitsville Brook ordinary high water limits to ensure that fill associated with the temporary access road and temporary work platform is not placed within the limits of ordinary high water. Temporary fill associated with either the temporary work platform or the temporary access road shall not be placed within the limits of ordinary high water under any circumstances. The precast concrete blocks or other platform supporting system on the same embankment as the temporary access road shall be located outside the limits of ordinary high water. Minimal localized cut slopes/ excavation may be required to properly seat the precast concrete blocks or supporting system to ensure full bearing. The platform surface shall be set at the elevations as shown on the Plans. The lowest point of the platform components that span the watercourse shall be set at a minimum of 1 foot above the top of the temporary water-handling bypass pipe.

Working Drawings shall be submitted in accordance with Section 1.05.02. Plans and design calculations for temporary platforms shall be prepared by a licensed Professional Engineer registered in the State of Connecticut and submitted to the Engineer for review at least 30 days prior to construction of platforms. No platform construction shall be done until the Engineer's review has been made and all deficiencies have been addressed. The review of the platform plans by the Engineer shall not relieve the Contractor of any responsibility for safely and adequately designing and constructing platforms.

<u>Working Drawing Submission shall include the following:</u>

- Verification of all existing elevations and dimensions
- Typical scale details of the work platform with dimensions
- Connection details
- Cross sections perpendicular to the watercourse at 10-foot intervals showing the following:
    - Clearance between top of bypass pipe to bottom of work platform
    - Proximity of precast concrete blocks or supporting system to the work area
    - Top of platform elevation
    - Invert elevation of temporary water-handling bypass pipe
- List of equipment to be used on temporary platform with maximum operating loads
- Means and methods to prepare the area for installation of the work platform
- List of all equipment necessary to install the temporary work platform components
- Staging plans for temporary work platform construction and deconstruction showing locations of all excavators, cranes or other hoisting equipment.

- Work platform construction sequence
- Work platform deconstruction sequence
- Work platform flood contingency plan
- Design computations addressing buoyant effects if platform to be left in place during flood events
- Design computations to verify structural adequacy of all components.
- Material designations for all components
- Certified Test Reports and Materials Certificates for all components in accordance with Section 1.06.07.
- False work requirements
- A description on the methods to provide access to the platform, and the procedures and equipment that will be used to protect Contract Representatives including the Engineer.

Platforms shall be constructed in accordance with the reviewed platform Working Drawings. If during platform construction, site conditions are such that changes to the platforms are required, new platform Working Drawings shall be submitted to the Engineer for review prior to continuing construction of the platforms.

Unless otherwise specified on the Working Drawings or approved by the Engineer, all temporary platforms shall be removed upon completion of the work by the Contractor and acceptance of the work by the Engineer. The removal of temporary platforms shall be done in such a manner that no damage occurs to the accepted work.

All temporary excavation and fill areas shall be restored to the pre-existing grade. Minor temporary cuts may be made by the Contractor within the limits of ordinary high water as needed.

Method of Measurement:

This item, being paid on a lump sum basis, will not be measured for payment.

Minor temporary excavation and grade restoration within the limits of ordinary high water as required to properly seat the precast concrete blocks or supporting system to ensure full bearing to be measured for payment in accordance with "Excavation and Reuse of Existing Channel Bottom Material." Temporary fill associated with the temporary access road and temporary work platform shall not be placed within the limits of ordinary high water. Temporary excavation or temporary fill outside the limits of ordinary high water required for the installation of the work platform, will not be measured for payment but will be included in the general cost of the work for this item.

Basis of Payment:

This work will be paid for at the Contract lump sum price for "Temporary Work Platform", which shall include the design, construction, maintenance and subsequent removal of temporary work platforms; providing access to the platforms for the Engineer during inspections and at other times when accessing the platform; and all equipment, material, tools and labor incidental thereto.

Minor temporary excavation and grade restoration within the limits of ordinary high water as required to properly seat the precast concrete blocks or supporting system to ensure full bearing to be included for payment in accordance with “Excavation and Reuse of Existing Channel Bottom Material.”

Installation of temporary water-handling bypass pipe and water-handling-cofferdam system prior to construction of the temporary work platform to be included for payment under “Handling Water.”

Pay Item	Pay Unit
Temporary Work Platform	L.S.

ITEM #0601930A – SLIP-LINING GROUT

Description: This item consists of furnishing and placing a non-shrink grout for the purposes of completely filling the annular space between the slip-liner pipe (liner pipe) and the host structure as shown in the plans or as directed by the Engineer, and entirely filling all voids behind host structure walls. The flow and set time characteristics of the slip-lining grout shall be designed to meet the specific site conditions. The grout shall be composed of a mixture of Portland cement and water with the option of using, fly ash, slag cement, air- entraining agents, and other approved admixtures.

Materials: The material for this work shall be in conformance with Article M.03.01 – Component Materials, Article M.03.02 – Cast-in-Place (CIP) Standard Mix design Requirements, and as follows:

1. Reduced Density Cement Grout (Cementitious): Neat cement grouts shall contain only cement, water, and possibly a flowability performance enhancing additive such as fly ash, silica fume, chemical dispersants or thixotropic agents. The grout mixture shall not contain thickening aggregates or sand.

    a. Compressive Strength: The grout shall have a minimum compressive strength of 300 psi in 28 days.
    b. Density: The Contractor shall design a grout mix with a density that will not float the liner pipe. Density shall be verified by ASTM C138 or by other methods as approved by the Engineer.

2. Cellular Grout (Cellular Concrete): Cellular grout shall contain the same materials as neat cement grouts, blended with pre-generated aqueous foam to form macroscopic non-interconnected air cells uniformly distributed throughout the grout. The air cells may account for up to 60% of the grout mix. Foaming agent shall be added to the grout on-site by a licensed Foam Contractor.

    a. Compressive Strength: The cellular grout shall have a minimum compressive strength of 300 psi in 28 days.
    b. Density: The Contractor shall design a grout mix with a density that will not float the liner pipe. Density shall be verified by ASTM C138 or by other methods as approved by the Engineer.

Mix Designs: The Contractor shall submit the proposed mix design(s), with all supporting data, to the Engineer for review and approval at least two weeks prior to its use.

The mix used to fill the annular space between the host structure and the liner pipe and shall meet the following requirements:

1. Accommodate the minimum size of the annular void.
2. Accommodate the void size of the surrounding pipe.

3. Accommodate the absence or presence of groundwater.
4. Provide the acceptable strength and durability.
5. Set-up or harden to prevent movement of the liner pipe.
6. Shrinkage shall not exceed 0.5% by volume.
7. Completely fill the annular space between the host structure and the liner pipe

The mix used to fill the voids behind the host structure walls shall meet the following requirements:

1. Accommodate the absence or presence of groundwater.
2. Provide the acceptable strength and durability.
3. Shrinkage shall not exceed 0.5% by volume
4. Completely fill the void between the host structure and surrounding soil

During the grout curing process, heat is generated and while this heat generally does not affect metal pipes, it may warp or deform plastic pipes. If plastic liner pipe is used in the slip-lining process, then the maximum temperature of the grout directly around the pipe shall not exceed 140 degrees Fahrenheit.

Construction Methods: Prior to the pipe slip-lining operation, voids or serious deterioration in the host structure shall be identified and the host structure modified adequately to promote the flow of slip-lining grout into the entirety of the void spaces during the grouting process. The host structure shall also be cleaned of loose coatings, streambed material and debris.

Bulkheads shall be placed at the ends of each pipe to seal the annular space from grout leakage. Any temporary bulkheads shall not be removed until after the grout has set. Stay-in place mortar bulkheads may also be used. Bulkheads used for placement of slip-lining grout shall be recessed from the barrel openings as shown on the Plans to allow for placement of a concrete closure pour after slip-lining grout has cured.

The liner pipe shall be equipped with grout ports, or a system of low-pressure grout pipes and vents will be utilized to enable the grout to be installed. The liner pipe shall be blocked or supported so as to prevent flotation/deformation during the grouting operation. The temporary use of sandbags or other precisely weighted components inside the liner pipe to counteract the buoyant loads for each lift of slip-lining grout is acceptable but shall be included in the Contractor’s grouting plan submission.

When there is a significant change in elevation between the ends of the slip-lined pipe, the grout may exert additional pressure on the liner pipe. The method of grout installation must be evaluated to prevent the collapse of the liner pipe.

Standing or running water in the annular space shall be removed or controlled to maintain the correct water ratio of the grout mixture. In situations where seepage of groundwater through the host structure walls cannot be avoided, the Contractor shall install a non-metallic underdrain system at the invert of the host structure to facilitate the removal of water from the system prior

to installation of the liner pipe and placement of slip-lining grout. Underdrains, if used, shall not have an impact on the specified liner pipe invert elevations called for on the Plans. Underdrains shall be held securely in place using grout or other means. Underdrains shall be filled with grout and shall not be visible in the final condition.

The annular space shall be grouted by injecting grout from one end of the pipe segment and allowing it to flow towards the other end. The annular space shall be vented to assure uniform filling of the void space.

Pressure in the annular space shall be limited to prevent damage to the slip-lined pipe or to prevent grout from infiltrating the gasket/band of the slip-lined pipe. Regardless of the grout pressure, the Contractor shall be solely responsible for any damage or distortion to the slip-lined pipe due to the grouting operation.

The Contractor shall establish proposed grout material and mixes, equipment, placement procedures, applicator, set-up, and criteria that the grouting operations shall meet. The grouting system shall have sufficient gauges, monitoring devices, and tests to determine the effectiveness of the grouting operations. Should the Contractor elect to modify the grouting procedure during construction activities after the original procedure has been submitted and reviewed, the Contractor shall submit the revised procedure for review.

The grout materials shall be mixed in equipment of sufficient size and capacity to provide the desired amount of grout material for each stage in a single operation. The equipment shall be capable of mixing the grout at densities required for the approved procedure and shall also be capable of changing densities as dictated by field conditions any time during the grouting operation. Gauges shall be attached immediately adjacent to an injection port at the bulkhead or grout port; the gauge shall conform to an accuracy of no more than two (2) percent error over the full range of the gauge operation. The grouting operation shall be contained to eliminate slurry discharge into watercourse or groundwater.

Method of Measurement: The quantity for slip-lining grout will be measured for payment by the number of cubic yards, complete and as accepted by the Engineer. Underdrains, Low pressure grout tubes and vent tubes will not be measured for payment but will be included as part of this item. Grout ports through the liner pipe walls and the work to clean and prepare the host structure will not be measured for payment under this item but will be paid under the item "Corrugated Steel Structural Plate Liner" as applicable.

Basis of Payment: This work will be paid for at the contract unit price per cubic yard for "Slip-Lining Grout", complete in place, which price shall include all materials, tools, equipment, and labor incidental thereto. The cost of supporting the liner pipe during the grouting operations, installing grout ports through the liner pipe walls and the work to clean and prepare the host structure will be paid under the item "Corrugated Steel Structural Plate Liner" as applicable. Contractor-designed bulkheads to be paid for under the item "Corrugated Steel Structural Plate Liner."

Pay Item	Pay Unit
Slip-Lining Grout	c.y.

ITEM #0651661A—CORRUGATED STEEL STRUCTURAL PLATE LINER

Description:

Work under this item shall consist of furnishing and installing a Corrugated Steel Structural Plate Liner (liner), conforming to the sizes and dimensions as shown on the Plans. The completed liner shall consist of a series of tunnel liner plates assembled with staggered longitudinal seam joints and flanged circumferential joints. Work under this item also includes cleaning the host structure, modification of the host structure as necessary to accommodate the liner, design and construction of shoring within the host structure to support temporary construction loads where necessary, grout ports, rails, skids and blocking, all associated hardware, and falsework necessary for the installation of the liner.

Materials:

Corrugated Steel Structural Plate Liner: Corrugated metal plates shall meet the requirements of ASTM A761 except as modified by this Special Provision and the Plans. The neutral axis of the corrugated steel structural plate liner shall be as specified on the Plans. The plates shall be of the thickness and corrugation profile shown on the Plans.

The base metal for liner plates must comply with ASTM A1011. Before cold forming into liner plates, the plates shall conform to the following mechanical requirements:

Quality Characteristics	
Tensile strength (min. psi)	42,000 psi
Yield point (min, psi)	28,000 psi
Elongation in 2 inches (min, %)	30%
Modulus of elasticity	29,000 ksi

The liner shall be constructed from 2-flange plates with flanged circumferential joints and lap joints for longitudinal seams. The thickness of the corrugated plates shall conform to Gage 3 (0.2391 inches). Completed liner section must conform to the dimensions specified in the Plans and consist of a series of galvanized corrugated steel liner plates. The length of corrugated liner plates shall be 18 inches.

Grouting Ports: Furnish plates with 2.0-inch diameter grouting ports with pipe plugs. When the plates are installed, grout ports must be spaced so that one line of holes is at the crown of the

liner and one line of holes is on each side at approximately the midpoint as shown. The holes in each line must be not more than 9 feet apart, and holes in adjacent lines must be staggered. Additional lines of grout ports shall be as indicated on the Plans. The grout ports shall not project more than 1" beyond the crest of corrugations at the interior of the barrel measured from the corrugation crest to the limits of the grout plug.

Forming and Punching of Steel Liner Plates: All plates shall be formed to provide circumferential flanged joints. Longitudinal joints shall be of the offset lap seam type. Fabricate the lap splice to allow the cross section of the plates to be continuous through the seam. All plates shall be punched for bolting on both the longitudinal and the circumferential seams or joints. Bolt spacing on circumferential flanges shall be in accordance with the Manufacturer's standard spacing and shall be a multiple of the plate length so that plates having the same curvature shall be interchangeable and will permit staggering of the longitudinal seams. For lapped longitudinal seams, bolt spacing shall be in accordance with the Manufacturer's standard but not less than that necessary to meet the longitudinal seam strength requirements specified in the ASTM A761 Table 3 or *AASHTO LRFD Bridge Design Specifications,* Article 12.13.3.1. Drilling, punching, reaming, or drifting to correct defects in manufacturing is not permitted. Plates with improperly punched holes will be rejected.

Plate Galvanizing: After plates are formed, punched, and curved they shall be galvanized in accordance with the requirements of ASTM A761 Section 8.2. Plates may instead be galvanized in accordance with ASTM A123, except the zinc shall be applied at a rate of 3.0 ounces per square foot total for both sides.

Hardware: Bolts and nuts for assembling 2-flange plates shall not be less than 0.625 inches in nominal diameter. Bolts shall meet the requirements of ASTM A449, Type 1. Nuts shall meet the requirements of ASTM A563, Grade DH. Washers shall not be installed as part of the fastener assemblies at either circumferential or longitudinal seam connections. Bolts and nuts shall be galvanized in accordance with ASTM F2329.

Bolts used at longitudinal lap seam connections shall be fabricated with square shoulders and with a radiused surface at the underside of the heads. Nuts used at longitudinal lap seam connections shall be fabricated with a radiused surface on one side. Radiused surfaces shall be provided to aid fit-up when the fastener assembly components are nested in the corrugations at the longitudinal lap seam connections. Bolts and nuts used at circumferential flanged connections shall not be fabricated with a radius.

Temporary Bulkheads: End and intermediate bulkheads used to facilitate the placement of Slip-Lining Grout shall be temporary in nature and shall be designed by the Contractor. Temporary

bulkheads shall be removed after Slip-Lining grout has cured. Permanent mortared bulkheads may also be used if requested by the Contractor. Bulkheads used for placement of slip-lining grout shall be recessed from the barrel openings as shown on the Plans to allow for placement of a concrete closure pour after slip-lining grout has cured.

Slip-Lining Grout: Grout used to fill voids behind the walls of the host structure as well as grout used to fill the annular space between the host structure and the liner shall conform to the requirements of Slip-Lining Grout as outlined in the Special Provision for Item #0601930A - Slip-Lining Grout.

Concrete Closure Pours: The limits of Slip-Lining Grout used to fill the annular space between the host structure and the liner shall be recessed from the ends of the host structure as shown on the Plans. The annular space between the host structure and the liner beyond the limits of the recessed Slip-Lining Grout shall be filled with Class PCC04462 concrete after Slip-Lining Grout has cured and after temporary Contractor-designed bulkheads have been removed. The mix design for the closure pours shall meet the requirements of M.03.02 for Class PCC04462. Closure pour concrete to be included for payment under "Class PCC04462."

Grout and Vent Tubes: Grout and Vent tubes shall be fabricated from PVC piping and shall be designed by the Contractor. After grouting operations, grout and vent tubes shall be filled entirely with a neat cement grout and shall not be visible in the final condition. Grout and vent tubes to be included for payment under "Slip-Lining Grout."

Installation Rails and Blocking: All blocking, skids, or rails used to facilitate the installation of individual liner sections by providing a low friction surface on which the liner section can slide, shall be non-metallic and fabricated from materials that meet the recommendations of the manufacturer of the liner.

Headwall Anchorage: Headwall Anchor rods shall be stainless steel and shall meet the requirements of ASTM F593, Group 5. Stainless steel plate washers for use at headwall anchor rods shall have an outer diameter of 3" and shall meet the requirements of ASTM A240, Type 410. Stainless steel nuts for use at headwall anchor rods shall meet the requirements of ASTM A594, Group 5.

Construction Methods:

Working Drawings: The liner geometry as shown on the Plans has been designed by the Connecticut Department of Transportation for all applicable load effects. The Contractor shall be responsible for the design of the grouting sequence, grout port and grout and vent tube sizes and

locations, installation rails, falsework, installation procedure and temporary bulkhead placement.

The Contractor shall furnish Working Drawings showing typical sections of the liner plate and assembled sections, details of the plates, seams/ joints, grouting sequence, grout ports and grout and vent tube locations, installation locations of rails and falsework, including methods to address buoyancy and shape control during grouting operations. The Contractor shall provide buoyancy computations stamped by a Professional Engineer licensed in the State of Connecticut to confirm that the means and methods to address buoyancy and shape control during grouting operations are adequate. The Working Drawing submittal shall also list all applicable ASTM designations, material properties and hydraulic characteristics. The Contractor shall submit a copy of the manufacturer's printed installation instructions before installing the liner. Working Drawings shall be submitted in accordance with Section 1.05.02.

Working Drawing Submission shall include the following:

- Verification of all existing elevations and dimensions
- Typical scale details of the liner with dimensions
- Fastener assembly details
- A Site Plan detail with individual tunnel liner plate sections labeled
- A Section detail of the liner in place, including installation rail and blocking locations and grout port and vent and grout tube locations
- Joint locations
- Proposed temporary bulkhead details and locations
- Material designations for all components
- Certified Test Reports and Materials Certificates for all components in accordance with Section 1.06.07.
- Manning's coefficient value and 3rd party test data verifying the Manning's coefficient
- Means and methods to prepare the host structure including methods to clean and modify the host structure and methods to infill voids behind the walls of the host structure with Slip-Lining Grout
- Modification of the host structure (if required and as determined by the Engineer's review of the Inspection and Evaluation Report):
    - Means and methods for all work and any additional false work and/or shielding that may be required for the localized modification of host structure areas to install and achieve adequate fit-up of the liner
- Liner installation procedure
- Elevations of the structure in place as specified on the Plans
- Clearance diagrams between proposed liner and host structure at 5-foot intervals based on field survey performed by the Contractor

- Grouting sequence for placement of Slip-Lining Grout
- False work requirements
- Methods to address buoyancy forces acting on the liner during placement of Slip-Lining Grout

Quality Assurance: The Engineer shall have free access to the mill or shop for inspection and every reasonable facility shall be provided for this purpose. The inclusion of any material that has been previously rejected at the mill or shop will be considered sufficient cause for the rejection of the entire lot. A field inspection will be made by the Engineer. The Contractor shall furnish an itemized statement of the number and length of the plates in each shipment. Each plate included in a shipment shall comply with the requirements of this specification.

Field Survey: The Contractor shall compile an Inspection and Evaluation Report and perform a field survey of the existing structure intrados prior to fabrication of the tunnel liner plates. This field survey shall be submitted to the Engineer and reviewed with the Working Drawings for the Corrugated Steel Structural Plate Liner item. The field survey shall take place after the existing structure has been dewatered and cleaned of all debris and loose material.

Any condition that may prevent proper installation of or result in damage to the proposed liner during installation shall be documented with photos and dimensioned sketches. Conditions include, but are not limited to protrusions, collapsed or crushed areas, misaligned, separated and/or settled joints and reduced cross-sectional areas. The Contractor shall measure the distance to the location(s) of the described conditions relative to the host structure outlet. Provide cross-sectional measurements at five-foot intervals and as necessary to depict obstructions. Cross-sectional measurements shall be taken from a laser-line datum projected through the host structure to depict profile variations.

The video with audio must include the following:

<u>Video:</u>

- Recording number
- Inspection date
- Encoded text description of Bridge Number (if available), location, host structure size, type & length

<u>Audio:</u>

- Inspection date
- Bridge Number (if available)
- Description of host structure size, type and length

- Description and location of each defect

The Inspection and Evaluation Report shall be submitted within 15 calendar days of completing the inspection. The report shall provide a detailed description of the existing conditions which highlight specific conflict areas that may prevent proper installation or damage to the proposed liner during installation. Digital copies of videos and photos shall be submitted with this report. The Engineer will review and approve those areas that have been confirmed to be in conflict with the installation of the liner.

Cleaning and Modification of Host Structure: The host structure shall be dewatered and thoroughly cleaned of any sediment or debris. Any existing coatings or material including loose asphalt coatings, fins, stones, sand, sediment, organic material, etc. shall be completely removed to ensure an acceptable fit-up of the liner.

All perforations or separated joints found within the host structure shall be located, inspected and the host-structure modified to ensure all voids behind the host structure walls will be completely filled with Slip-Lining Grout to ensure full contact of the host structure with the surrounding soils during the grouting process.

Modification of the host structure may be required if the cross-sectional area or internal dimensions of the host structure have been reduced due to protrusions, collapsed or crushed areas, or misaligned, separated, and/ or settled joints. Any existing deformations or misalignment of the host structure that conflict with the installation of the liner shall be addressed through the Engineer's approval of such areas of conflict outlined in the Inspection and Evaluation Report. If the condition of the host structure presents geometric or alignment conflicts that will not allow for adequate fit-up or installation of the liner, the Contractor shall submit Working Drawings to the Engineer for approval showing the proposed method and materials to modify the host structure. The furnishing of Working Drawings shall not relieve the Contractor of any responsibility for the safety of the work or for the successful completion of work to modify the host structure. Working Drawings shall include, but not be limited to, means and methods to modify the host structure in the areas required to obtain the shape, line and grade required to install the liner to the elevations indicated on the Plans, as well as any strutting/bracing as required to ensure stability of the host structure throughout the liner installation process. If any additional areas of conflict with the host structure are found during liner installation after the Inspection and Evaluation Report has been approved by the Engineer, the Contractor shall notify the Engineer for approval of additional areas prior to additional modification work commencing.

Where subsurface utilities would cross over the host structure in the vicinity of deformations, the Contractor shall immediately notify the Engineer to ensure the proposed host structure

modification activities would not damage the subject utility. The host structure shall be completely cleaned, with perforations and separated joints identified and deformations adequately corrected prior to the installation of any section of the liner.

The Contractor shall control and redirect the existing watercourse and groundwater flow prior to cleaning the host structure during inspection in accordance with the item "Handling Water" as shown on the Plans and as indicated in these Special Provisions.

The Contractor shall clean the entire length of the host structure in accordance with the requirements of "Section 6.53 – Clean Existing Drainage System" prior to conducting the inspection. However, payment for cleaning will be included under "Corrugated Steel Structural Plate Liner." The Contractor shall review, log, and comment on the condition of the host structure. Video with audio and digital photos shall be taken during the inspection to clearly depict the condition of the existing host structure. Lighting of the area recorded and photographed must be adequate enough to identify details of the condition.

If the condition of the host structure presents geometric conflicts that will not allow for adequate fit-up or installation of the liner, the Contractor shall submit plans to the Engineer for approval showing the proposed method and materials to modify the host structure with the Inspection and Evaluation Report. The furnishing of such plans shall not relieve the Contractor of any responsibility for the safety of the work or for the successful completion of modifications to the host structure.

At locations where temporary construction access roads or construction loads are located directly over the host structure, the Contractor shall monitor the existing structure to ensure that excessive deflection does not occur. Should the host structure display signs of overstress at locations directly below areas where construction equipment may be staged, the Contractor shall immediately remove all equipment from the area and notify the Engineer. If excessive deflection, signs of overstress, or other Contractor investigations have determined that the host structure is unable to adequately support temporary construction loading, the Contractor shall design a temporary support system to be placed within the host structure to help support Construction loading. Once this determination has been made by the Contractor, no construction equipment shall be placed over the host structure without the presence of a Contractor-designed support system in place, or until the host structure has been fully lined with the annulus grouted.

Handling and Installing Liner: Galvanized steel plates shall be transported and handled in such a manner as to prevent delamination, bruising, scaling, or breaking of the coating. Any plates that are damaged during handling or placing shall be replaced at the Contractor's expense, except small areas of minor damage may be repaired by the Contractor as directed by the Engineer. Repair

procedures shall be submitted by the Contractor and approved by the Department. Liner plates shall be assembled progressively according to the manufacturer's instructions starting at either barrel opening of the host structure. The procedures to move or slide individual completed liner sections into the host structure shall be designed to not damage or distort the shape of the liner plates. This procedure shall also provide a minimum of 1" between the exterior of the liner and the invert of the host structure to ensure adequate clearance for grouting. The Contractor shall consider the available work areas restricted by available Rights of Way and previously approved permitting impact areas as shown on the Permit Plans when determining means and methods for installation of the liner. The Contractor shall not access any areas or perform any work outside of these limits as designated on the Permit Plans.

The Contractor shall control and redirect the existing watercourse and groundwater flow prior to cleaning the existing host structure. Water handling shall remain in place until the liner has been installed and grouted in place as shown on the Plans and in accordance with the "Handling Water" Special Provision.

In situations where seepage of groundwater through the host structure walls cannot be avoided, the Contractor shall install a non-metallic underdrain system at the invert of the host structure to facilitate the removal of water from the system prior to installation of the liner and placement of Slip-Lining Grout. Underdrains, if used, shall not have an impact on the specified liner invert elevations called for on the Plans. Underdrains shall be held securely in place using grout or other means. Underdrains shall be filled with grout and shall not be visible in the final condition. Underdrains, if used, shall be included for payment under "Slip-Lining Grout."

Plates shall be fabricated to allow for assembly of individual liner sections outside the host structure through assembling individual curved, corrugated plates together at longitudinal lap joints to form a complete cross-section. Assembled liner sections may then be brought into the host structure and connected to adjacent liner sections from the inside of the host structure using the internal circumferential flanges.

Pipe and fittings, such as fastener assemblies and grout port caps, shall be stockpiled in a safe manner at each staging area. The stockpile shall be located outside the safety clear zone of vehicular traffic or protected by barrier, guide rail, or other means. When handling tunnel liner plates, the installer shall take all precautions necessary to avoid damaging the plates.

On all plates above the invert plate or plates, only enough bolts shall be used at circumferential flanged connections to hold the individual liner sections loosely in position until assembly has been completed for four or more liner sections. When all plates are in position, all bolts not already in place shall be inserted and the nuts tightened progressively through the structure.

The liner invert grade shall be set linear between the inlet and outlet invert elevations as specified on the Plans. The liner ends at the inlet and outlet sides shall not be installed with circumferential flanges in the plane of the headwall faces at the inlet or outlet. Tunnel liner plates to be installed at the barrel openings may be fabricated without circumferential flanges for plate edges facing the barrel openings. Circumferential flanges at these locations may also be field-cut and removed by the Contractor. Field-cut plates shall be touched up with two coats of brush applied zinc paint conforming to ASTM A780. Repair coatings shall be of equal thickness to the shop-applied coating and shall have equal or greater adhesion properties. The finish of the liner plate ends at the inlet and outlet shall be smooth, free of burrs, fins, edges, and other irregularities

Slip-Lining Grout Placement: False work and forms used to facilitate placement of Slip-Lining Grout shall be as specified in Section 6.01.03. Placement of Slip-Lining Grout in the annular space between the liner and existing structure shall be performed in a maximum of 12-inch lifts, or as directed by the Engineer. The sequence of grouting shall be designed by the Contractor to ensure the Slip-Lining Grout in the annular space is fully consolidated and in full contact with both the host structure and the liner for each successive lift. The Contractor shall take the necessary measures to address buoyancy of the liner during placement of the Slip-Lining Grout to ensure that the intended invert elevations are maintained and to ensure that the shape of the liner is not affected by the grouting activities. Any buoyancy countermeasures shall be included in the Working Drawing Submittal. Grout or bleed ports through the wall of the liner are allowed but shall be designed by the Contractor. Grout ports shall be filled with Slip-Lining Grout after grouting operations are finished.

The Contractor shall install Class PCC04462 concrete closure pours in the annular space between the host structure and the liner beyond the limits of Slip-Lining Grout to seal the opening between the tunnel plate liner and the host structure. Closure pours shall be cast with a bevel at matching that of the headwall if called for on the Plans.

Penetration of the host structure walls will not be permitted to facilitate grouting or venting of the annular space. Multiple grout ports, grout tubes and vent ports may be required. Venting of the annular space shall be performed to allow for escape of air and excess water and to assure uniform grout placement in the annulus. At minimum, an open-ended high point vent or grout port must be provided and monitored at each bulkhead. Additional vents may be employed which can serve as intermediate grout verification points. Vent or grout tubes placed through the temporary bulkheads shall be PVC and shall be filled entirely with grout in the final condition. Grout and vent tubes placed through the bulkheads to aid in the grouting procedures shall not be visible in the final condition. This can be achieved by recessing the temporary bulkheads several inches from the ends of the host structure barrel, then once the grouting operations have completed, the grout and vent

tubes can be filled and cut flush with the cured Slip-Lining Grout after they have been filled. The remaining annular space at the host structure ends beyond the limits of Slip-Lining Grout placement shall be filled with Class PCC04462 concrete closure pours extending to the limits indicated on the Plans.

The annular space shall be fully grouted to ensure full load transfer between the host structure and the liner at all locations. Grouting in lifts will require multiple grout ports to maintain access to the annular space for sequential injections. The Contractor's submitted grouting plan shall identify which methods will be used.

The specific grout mixes shall be submitted for review by the Contractor prior to use. The mixes used to grout both the annulus and the voids behind the host structure shall conform to the requirements of Slip-Lining Grout.

Recommended pressure on the annular area shall not exceed the liner manufacturer's recommendations to avoid damage to the liner during the placement of Slip-Lining Grout. The installer shall be solely responsible for any damage or distortion to the liner due to exceeding the recommendations from the liner manufacturer on the grouting limits.

Placement of Fill: Where backfill is required as indicated on the Plans where the liner projects beyond the limits of the host structure, the backfill material shall be placed symmetrically in lifts about longitudinal centerline of the liner to not distort the shape of the liner during fill placement. The height differential of lifts at either side of the longitudinal centerline of the liner shall not exceed the specified lift thickness for that lift as shown on the Plans.

Method of Measurement:

Corrugated Steel Structural Plate Liner will not be measured for payment but will be paid for on a lump sum basis for the work included in this specification and as shown on the Plans. Headwall anchorage assemblies, Contractor-designed bulkheads, grout ports through the liner walls, slide rails, blocking, work to clean and prepare the host structure, and all other work required by this Special Provision incidental to the installation of the liner shall not be measured for payment but shall be included in the general cost of the work. Underdrains, low-pressure grout tubes and vent tubes will not be measured for payment but will be included under the "Slip-Lining Grout" item.

Basis of Payment:

This work shall be paid at the Contract lump sum price for the Corrugated Steel Structural Plate Liner, installed and accepted, which payment shall include fabrication, delivery and installation of the liner, Contractor-designed bulkheads, cleaning of the host structure, inspection and photo/video documentation of the host structure, investigation of voids, modification of the host structure as necessary for placement of Slip-Lining Grout to ensure all voids are filled, development of the Inspection and Evaluation Report, grout ports through the liner walls, rails, skids and blocking, headwall anchorage, falsework, and all labor, materials, tools, equipment incidental thereto.

Filling of voids behind the host structure walls will be paid for under “Slip-Lining Grout.”

Grouting of the annulus between the host structure intrados and the liner extrados and all underdrains and PVC grout tubes and vent tubes will be paid for under “Slip-Lining Grout.”

Concrete closure pours beyond the limits of Slip-Lining Grout will be paid for under “Class PCC04462.”

Dewatering of the host structure will be included for payment under “Handling Water.”

Modification of the host structure, if needed for adequate fit-up of the liner, will be included for payment under “Extra Work” as outlined in Article 1.05.04.

Pay Item	Pay Unit
Corrugated Structural Steel Plate Liner	l.s.

ITEM #0703008A — HEAVY RIPRAP

Work under this item shall conform to the requirements of Section 7.03 supplemented and amended as follows:

7.03.02 Materials:

1.0 Stone

Delete this section in its entirety and replace with the following:

Materials for this item shall consist of sound, tough, durable and angular rock, free from decomposed stones or other defects impairing its durability. The size of a stone as hereinafter specified shall be its least dimension. Neither the width nor the thickness of the angular shaped rock shall be less than one-third (1/3) its length. Broken concrete or rounded stones are not acceptable.

The material shall conform to the following gradation:

Percent Finer by Weight (%)	Allowable Range of Stone Sizes (Inches)	
	Minimum	Maximum
15	13.0	18.5
50	20.0	24.0
85	27.5	32.5
100	NA	42.0

Gradation Requirements for Riprap[1]

Class	% of Rock Equal or Smaller	Range of Intermediate Dimensions,[2] inches (millimeters)	Range of Rock Mass,[3] pounds (kilograms)
7	100	45 – 54 (1140 – 1370)	7400 – 12,800 (3350 – 5800)
	85	32 – 38 (810 – 970)	2650 – 4450 (1200 – 2000)
	50	23 – 28 (580 – 710)	990 – 1800 (450 – 820)
	15	15 – 20 (380 – 510)	270 – 650 (120 – 290)

(1) Gradation includes spalls and rock fragments to provide a stable, dense mass.
(2) The intermediate dimension is the longest straight-line distance across the rock that is perpendicular to the rock's longest axis on the rock face with the largest projection plane.
(3) Rock mass is based on a specific gravity of 2.65 and 85 percent of the cubic volume as calculated using the intermediate dimension.

ITEM #0728032A – NO. 6 CRUSHED STONE

Description: This item shall consist of crushed stone placed to the limits shown on the plans, or as directed by the Engineer.

Materials: The material for this work shall conform to the requirements of Article M.01.01 for No. 6 Crushed Stone.

Construction Methods: The Contractor shall place crushed stone to the limits and depths, and to the grade, shown on the Plans, or as directed by the Engineer.

The crushed stone shall be thoroughly compacted until the surface is true and unyielding, displaying no deformation or movement under the compaction equipment. Compact crushed stone by vibratory compaction equipment specifically manufactured for compaction purposes.

Method of Measurement: No. 6 Crushed Stone will be measured in place after compaction within the payment lines shown or specified by the Engineer.

Basis of Payment: This work will be paid for at the contract unit price per cubic yard for "No. 6 Crushed Stone," complete in place, which price shall include all materials, tools, equipment and work incidental thereto.

Pay Item	Pay Unit
No. 6 Crushed Stone	c.y.

ITEM #0819002A - PENETRATING SEALER PROTECTIVE COMPOUND

Description: Work under this item shall consist of cleaning concrete surfaces of dirt, dust, and debris, and furnishing and applying a clear, penetrating sealer to concrete surfaces where shown on the plans, to provide a barrier against the intrusion of moisture and chlorides. This work also includes furnishing, installing, and removing platforms, scaffolding, ladders, and other means of access as well as shields, as required, to protect adjacent areas and traffic from overspray.

Materials: The penetrating sealer shall conform to Article M.03.09. A Materials Certificate shall be submitted for the penetrating sealer in accordance with Article 1.06.07. A product not listed on the Qualified Products List (QPL) may be considered for approval. A Certified Test Report shall be submitted in accordance with Article 1.06.07 indicating that the product being considered conforms to the Test Requirements listed on the QPL.

Construction Methods:

Submittals: The Contractor shall submit to the Engineer Safety Data Sheets (SDS), Technical Data Sheets and product literature for the approved sealer. The literature shall include written instructions how to apply the sealer to vertical and horizontal surfaces, and where required, overhead surfaces. Application rate and number of applications of sealer shall be addressed.

The Contractor shall submit to the Engineer, in accordance with Article 1.05.02, written procedures for cleaning the concrete surfaces prior to sealer application The submittal shall include proposed equipment and materials and shall address how adjacent traffic and other areas shall be protected from dust, debris and overspray during the cleaning and application processes. Where the sealer is to be applied to parapets before pavement is placed, the submittal shall address protection of the deck and curb to which membrane waterproofing will be applied. Should the membrane already be present, the submittal shall address shielding of the membrane. It shall also indicate how vegetation and regulated areas shall be protected from overspray. The submittal shall address the conditions under which work may proceed, including wind speed, temperature and precipitation. It shall also include procedures to be followed to protect the work should unfavorable weather conditions occur before the product has been absorbed.

The Contractor shall inspect the surfaces to be sealed to identify surface cleaning needs before submitting the procedures. The Contractor shall identify concrete surfaces that:

- Need repair
- Require special attention or cleaning procedures
- Have been previously treated with coatings or curing compounds that would hinder penetration of the sealer into the concrete
- Will be new or newly repaired

Written procedures shall include observations listed above. Application of penetrating sealer to new concrete shall be addressed in the application procedures. Forms for surfaces of new concrete to receive penetrating sealer shall not be treated using form release oil, which can inhibit or prevent penetration of the sealer into the concrete.

Surface Preparation: Concrete surfaces to which penetrating sealer will be applied shall be clean and free of grease, oil, and other surface contaminants, including biological growth. Dry surfaces may be cleaned by sweeping with brushes or brooms, and blowing clean with oil-free, compressed air. The Contractor shall take care not to damage the concrete surface finish during cleaning operations. Care shall be taken so that cleaning methods do not damage joint sealant or other components of the structure that are to remain.

Application: Application of the sealer may begin only after the Engineer evaluates the concrete surfaces and determines that conditions for installation comply with the accepted written application procedures.

The sealer shall be applied in accordance with the accepted application procedures at the rate specified by the manufacturer. The Contractor shall monitor and record the number of square feet of concrete surface sealed and the number of gallons of sealer applied over that surface area to verify that the required application rate is being met. A minimum of three applications of sealer shall be assumed to be needed. After the first application of the sealer, curing time shall be recorded and submitted to the Engineer. Additional applications of sealer shall be applied as specified in the application instructions, provided adequate time between applications and appropriate curing of the sealer have occurred. For each application, the Contractor shall record the area and number of gallons of sealer applied as well as the curing time for that application. The Contractor may be directed to apply sealer in up to three separate applications if concrete surfaces readily absorb the previous application.

If the Contractor is directed to apply more than three applications of sealer, the additional applications will be compensated as extra work. Should salts, oil or other visually undesirable materials be evacuated from the concrete by the penetrating sealer and remain on the surface after sufficient rain events have occurred, the Engineer may order surface cleaning of the concrete as extra work.

The Engineer shall be provided access to inspect the concrete surface during application and after the sealer has had adequate time to cure.

Method of Measurement: This work will be measured for payment by the actual number of square yards of concrete, sealed and accepted, within the designated limits. The area will be measured once, regardless of the number of applications required.

Basis of Payment: This work will be paid for at the Contract unit price per square yard for "Penetrating Sealer Protective Compound," complete, which price shall include all equipment tools, labor and materials, incidental thereto, including the preparation of the concrete surfaces and proper disposal of debris.

The following are not included in the cost of this item and will be considered Extra Work:

- Special cleaning procedures ordered by the Engineer to properly prepare the concrete surface for application of the penetrating sealer (such as removal of tightly adherent biological growth, graffiti, or other difficult-to-remove surface contaminants)

- Additional applications of sealer as noted in the Construction Methods
- Cleaning of evacuated material from sealed surfaces as ordered by the Engineer.

Pay Item	Pay Unit
Penetrating Sealer Protective Compound	s.y.

ITEM #0912526A – HAND-DIGGING HOLES FOR GUIDERAIL POSTS AND ANCHORS

Description: Work under this item shall consist of hand-digging holes for guiderail posts or anchors where underground utilities are present as determined from test pit information or as directed by the Engineer.

Construction Method: The Contractor is hereby advised that underground utilities exist throughout the project work area. The Contractor's attention is directed to his responsibilities under Article 1.05.06- Cooperation with Utilities.

The Contractor shall hand-dig a hole to install the guiderail posts and anchors where proposed guiderail is in close proximity to utilities. The Contractor shall have available, tools and equipment capable of efficiently digging a hole by hand, to a depth sufficient to view the underground utility, but not to exceed six feet.

The guiderail post or anchor shall be set in the hole and the adjacent area shall be backfilled and compacted in accordance with Section 9.10 and 9.11. Any surplus or unsuitable material remaining after the completed installation shall be removed and disposed of by the Contractor.

If a conflict with an underground utility has been found to prohibit the installation of the guiderail post or anchor as shown on the plans, the Contractor shall notify the Engineer and any revisions to guiderail post or anchor installation shall be as directed by the Engineer.

Method of Measurement: The sum of money shown on the estimate and in the itemized proposal as "Estimated Cost" for hand-digging a hole for guiderail posts or anchors will be considered the price bid even though payment will be made only for actual work performed. The estimated cost figure is not to be altered in any manner by the bidder. Should the bidder alter the amount shown, the altered figures will be disregarded and the original price will be used to determine the total amount bid for the contract.

Basis of Payment: Hand-digging of the hole for guiderail posts or anchors will be paid in accordance with Article 1.09.04, Extra and Cost-Plus Work. There will be no additional payment for maintenance and protection of traffic for work associated with this item.

Pay Item	Pay Unit
Hand-digging Holes for Guiderail Posts and Anchors	Estimated cost

ITEM #0913835A – REMOVE AND RESET CHAIN LINK FENCE

Description: Work under this item shall consist of the removal and resetting existing chain link fence as indicated on the Plans. This item shall also include the storage of chain link fence and associated materials between the time of its removal and resetting. It shall be installed to match its pre-construction configuration or as ordered by the Engineer. Any existing fence damaged by the Contractor shall be repaired at their expense.

Work under this item shall be in accordance with the applicable sections of Article 9.13 Chain Link Fence of the Standard Specifications.

Materials: If new material is required, it shall meet the requirements of Article M.10.05 and shall be approved by the Engineer prior to installation.

Construction Methods: The construction methods shall comply with the applicable sections of Article 9.13.03. All work shall proceed as directed by and to the satisfaction of the Engineer, in accordance with the details shown on the plans and the requirements for Maintenance and Protection of Traffic. The chain link fence shall be removed and reset to the nearest fence post.

The Contractor shall take necessary precautions to prevent any damage to portions of fence to remain.

Method of Measurement: This work will be measured by the number of linear feet of the chain link fence, including posts, that is removed and installed, measured from outside to outside of the last undisturbed post to the last reset post.

Basis of Payment: This work will be paid for at the Contract unit price per linear foot for "Remove and Reset Chain Link Fence" which price shall include the removal and reinstallation of the existing chain link fence, excavation, backfilling, and disposal of surplus material, and all materials, equipment, tools and labor incidental thereto.

Pay Item	Pay Unit
Remove and Reset Chain Link Fence	l.f.

ITEM #0913952A - PROTECTIVE FENCE (5' HIGH)

Description: Work under this item consists of furnishing and installing chain link fencing on the embankment at the Bridge No. 06772 outlet and atop the new concrete headwall and wingwall at the Bridge No. 06772 inlet in accordance with the details shown on the Plans and with these specifications.

Materials: Materials for this work shall be as follows:

1. **Chain Link Fabric:** The fabric shall be a black Polyvinyl Chloride (PVC) - coated steel chain link type, conforming to the specifications of ASTM F668, Class 2b, thermally fused and bonded. The #9 gage core wire shall be galvanized, PVC-coated, then woven to create a continuous fabric having a two-inch mesh, knuckled at both top and bottom. The PVC coating shall be the color black as described in ASTM F934.

2. **Posts:** All posts shall conform to the requirements of ASTM A53, Type E or S, Grade B, except that the hydrostatic test need not be performed. Pipe shall be Schedule 40, round pipe. Posts may conform to the requirements of AASHTO M 181, Grade 2. All posts shall be hot-dip galvanized in accordance with ASTM A123 after fabrication and welding of the base plates, if required.

3. **Tension Wire:** The tension wire shall be coil spring steel and be #7 gage. The base material shall have a minimum tensile strength of 80,000 psi with an aluminum coating applied at a rate of 0.40 ounces per square foot of surface area.

4. **Fence Fittings:** All materials shall conform to the requirements of ASTM F626. The tie wires used to fasten the fabric to the posts shall not be less than #6 gage. Hog rings used to fasten the fabric to the tension wire shall be #9 gage polyvinyl chloride coated steel wire.

Fence Hardware: Fence hardware is defined as all hardware except for that used to anchor the post baseplates to the preset anchorage. All bolts shall conform to the requirements of ASTM A307, Grade A. Nuts shall conform to the requirements of ASTM A563, Grade A. The washers shall be standard, circular plate washers conforming to the requirements of ASTM F844. Bolts, nuts, and washers shall be galvanized in accordance with the requirements of ASTM F2329.

5. **Base plates:** Base plates shall conform to ASTM A709, Grade 36 and shall be shop welded to the fence posts. All burrs and sharp edges shall be removed and smoothed before galvanizing.

6. **Molded Pads:** All molded pads shall be manufactured from new unvulcanized elastomer and unused synthetic fibers, with a weight proportion of fiber content equal to approximately one-half of the total weight of the pad. The pads shall be formed into single sheets of 1/8 inch minimum thickness with a tolerance of plus or minus 10 percent. The pads shall have a Durometer hardness within the range of 70 to 90.

7. **Galvanizing Compound:** Zinc-rich paint for repair of zinc coatings on galvanized shall meet the following requirements:

- ASTM A780, Annex A2 with zinc dust concentration above 92% in the dried film;
- Zinc dust pigment shall conform to ASTM D520, Type III;
- The VOC content shall meet the current DEEP Air Compliance regulations for the coating category "zinc-rich primer;" (https://eregulations.ct.gov/eRegsPortal/Browse/RCSA/Title_22aSubtitle_22a-174Section_22a-174-41a/)
- Corrosion Performance Criteria: Must pass a minimum of 2000 hours of salt spray testing for a minimum of 2 mils of zinc in the dry film, without failure according to ASTM B117.

The products listed below meet the above requirements. If selecting one of these products, the Contractor shall submit a Materials Certificate in accordance with 1.06.07. Other products will be considered for the Engineer's acceptance by submitting a Materials Certificate and a Certified Test Report in accordance with 1.06.07, showing that the coating meets the specific requirements listed above.

Crown Cold Galvanize Coating 93% Zinc Rich
7007VG
Aervoe Industries, Inc.
P.O. Box 485
Gardnerville, NV 89410
1-800-227-0196 or 1-775-783-3100
www.aervoe.com

ZRC Cold Galvanizing Repair Compound
ZRC 221
ZRC Worldwide
145 Enterprise Drive Marshfield, MA 02050-2132
1-800-831-3275 or 1-781-319-0404
www.zrcworldwide.com

Or approved equal.

8. **Preset Anchorage:** The anchorage shall be fabricated as detailed on the Plans. the preset anchorage shall be embedded in the Concrete Walls at the locations indicated on the Plans. Wire struts shall conform to ASTM A510, Grade 1030 and shall have a minimum tensile strength of 100,000 psi. These wire struts shall be securely welded to the ferrules with the welds capable of developing the tensile strength of the struts. Materials for ferrules shall conform to ASTM A108, Grade 12L14. After fabrication the preset anchorage shall be hot-dip galvanized in accordance with ASTM A123. A plastic cap shall be provided for sealing the bottom of each ferrule before placing concrete for the Concrete Walls. Removable plastic washers of the same diameter as the

ferrule and approximately 3/32" in thickness shall be provided for the top of each ferrule and shall be left in place until the temporary supporting bolts are removed. Removable plastic caps shall be provided for sealing the top of each ferrule until the erection of fence posts. A sample anchorage shall be submitted to the Engineer for approval prior to incorporation into the project.

Anchorage Hardware: Anchorage hardware is defined as the bolts and washers that anchor fence post baseplates to the preset anchorage. Anchorage bolts shall have entirely threaded shafts and shall conform to the requirements of ASTM F3125, Grade A325T, Type 1. Washers shall conform to the requirements of ASTM F436, Type 1. Bolts and washers shall be galvanized in accordance with the requirements of ASTM F2329.

9. **Concrete for Foundations:** Where fence posts are to be installed on embankments, concrete footings shall be Class PCC03360, minimum compressive strength of 3,300 psi, as defined in M.03.02.

10. **Materials Certification and Testing:** The Contractor shall furnish a Materials Certificate in accordance with Article 1.06.07 for the fabric, posts, tension wire, all fittings. A sample of PVC-coated fabric shall be submitted to the Department for testing the bond of the coating in accordance with the requirements of ASTM F668, Class 2b.

Construction Methods:

Shop Drawings: Before fabricating any materials, the Contractor shall submit Shop Drawings to the Engineer for approval in accordance with Article 1.05.02. These drawings shall include the following information: a layout plan showing all post and rail spacing, all fence and anchorage details, connection hardware details, foundation details, concrete mix design, surface preparation and coating methods, including coating thickness, coating repair procedure prepared by the coating manufacturer, material lists and material designations and the name and telephone number of a person to contact who can answer questions about the shop drawings.

Fabrication: The protective fence shall be accurately fabricated and installed in accordance with the Plans and as directed by the Engineer.

The preset anchorages shall be fabricated for installation perpendicular to the grade of the headwalls and wingwalls. The anchorage shall be accurately positioned and restrained against movement during the placement of the concrete.

Wall-mounted posts shall be welded to the base plates before galvanizing. The bottom of posts shall be cut at an angle as needed to match top slope of wall prior to welding of base plates. Fence posts shall be provided with a ¼-inch diameter drain hole according to the details shown on the Plans. All welding shall conform to the requirements of Subarticle 6.03.03-4(c).

Installation: All base plates shall have full contact with the molded pad and concrete bearing surface and shall be caulked all around with a waterproof silicone rubber sealant.

All tension wires shall be erected to produce a smooth, continuous appearance with posts placed vertically and with all tension wires set parallel to the top of the walls or finished grade as applicable. The fabric shall be stretched tightly between end posts and securely fastened with stretcher bar bands. The fabric shall be attached to the line and end posts as shown on the Plans. Dome caps shall be installed on top of all end and corner posts. Loop caps shall be provided on all line posts. Line post height shall allow for top tension wire to pass through loop cap.

Damage to the galvanized coating shall be repaired in accordance with ASTM A780 with two coats of galvanizing compound, brush applied. The final dry film thickness of the galvanizing compound shall be a minimum of 2 to 3 mils.

PVC-coated fabric shall be handled with care so the coating is not damaged. Damage to PVC coating shall be repaired as directed by the manufacturer.

Fence posts to be installed at embankments shall be set in Portland cement concrete. Concrete footings shall extend 4 inches below the bottom of the fence posts. The footing diameter shall be 12 inches and extend a minimum of 4 feet below grade with posts centered within the concrete footing. All tops of concrete footings shall be crowned to shed water. The tops of concrete footings shall be cast flush with the surrounding grade. Concrete foundations shall be uncased, with concrete cast directly against undisturbed earth. After concrete foundations have cured, field drill a 0.25-inch diameter drain hole through fence post walls at low side of post immediately above the post interface with the foundation.

Method of Measurement: This work will be measured for payment by the number of linear feet of completed and accepted fence, measured horizontally from centerline to centerline of posts.

Basis of Payment: This work will be paid for at the contract unit price per linear foot for "Protective Fence (5' High)", complete and accepted in place, which price includes all fence posts, fittings, hardware, preset anchorages, baseplates, molded pads, chain link mesh, tension wires, tie wires, hog rings, stretcher bars, caps, drilling holes for concrete foundations, concrete for foundations, disposal of surplus material, and all materials, equipment, tools and work incidental thereto.

Pay Item	Pay Unit
Protective Fence (5' High)	l.f.

ITEM #0949875A – WETLAND PLANTINGS

Amend Section 9.49 as follows:

Article 9.49.01—Description: *Add the following:*

Work under this item shall include furnishing, installing, trees, shrubs and herbaceous stock of the type and size indicated in the Plant List(s) identified on the Permit Planting Plan, herein referred to as Wetland Area(s). Work in the Wetland Area(s) will be performed under the direction of an Environmental Scientist from the Connecticut Department of Transportation's Office of Environmental Planning (OEP).

Article 9.49.02—Materials: *Add the following:*

The trees, shrubs, and herbaceous stock to be planted within the Wetland Area(s) shall be straight species, native varieties, and conform to Section 3 of the American Standards for Nursery Stock, meeting the requirements for container size, root mass and number of canes of the of those species listed in the Plant List(s) identified on the Permit Planting Plan. No varieties, hybrids, or cultivars will be accepted.

Botanical Name	Common Name	Size	Qty.	Indicator
Acer Rubrum	Red Maple	3'-4' HT. 1 gallon container	20	FAC
Acer Rubrum	Red Maple	6'-8' HT. 3 gallon container	20	FAC

The Environmental Scientist from OEP must accept any species substitutions from the Plant List(s) identified on the Permit Planting Plan prior to plant inspection and delivery to the Site. If substitutions are proposed, the Contractor must provide OEP with documentation from 3 wholesale plant material sources of supply per M.13.07-5 indicating that the species type or size listed in the Plant List(s) identified on the Permit Planting Plan is not available. No varieties, hybrids, or cultivars of any species will be allowed as a substitution.

Article 9.49.03—Construction Methods:

1. Planting Season: *Add the following:*

All Plant Material to be Installed in Permit Planting Plan (Including Deciduous and Evergreen)

Spring: March 1 st to June 15th (inclusive).

Fall: August 15th to October 31 st (inclusive).

A schedule for planting must be submitted by the Contractor to the Engineer for OEP's acceptance.

3. Field Coordination: *Add the following:*

For the Wetland Area(s), a schedule for planting must be submitted by the Contractor to the Engineer for review and acceptance by OEP's Environmental Scientist at least 30 days prior to planting. Plant locations shall be as generally depicted and identified on the Permit Planting Plan as directed by the Environmental Scientist.

4. Planting Layout: *Add the following:*

For the Wetland Area(s), the Contractor shall review Site conditions and inform the Environmental Scientist of any conflicts. The Contractor shall coordinate planting layout with the Environmental Scientist for review and acceptance.

5. Preparation of Planting Areas: *Add the following:*

For the Wetland Area(s), the planting areas shall be prepared by use of approved tools or machinery. All undesirable invasive species shall be removed in accordance with the requirements detailed in the Control and Removal of Invasive Vegetation special provision. All undesirable material shall be removed from the Site and disposed of by the Contractor in a manner satisfactory to the Engineer.

6. Pit Excavation: *Add the following:*

Plant pits within the Wetland Area(s), must be hand dug. Machinery may be allowed for use in limited areas, with prior acceptance of the Environmental Scientist.

7. Setting Plants: *Add the following:*

All planting within the Wetland Area(s), shall meet the following additional requirements:

d. Plantings shall be installed as shown identified on the Permit Planting Plan according to their wetland indicator status or as directed by OEP's Environmental Scientist.

e. Setting of Trees and Shrubs in Wetland Area(s): Trees and shrubs shall be installed as shown and identified on the Permit Planting Plan or as directed by OEP's Environmental Scientist. All trees and shrubs identified on the Permit Planting Plan shall be set so that they are level with the microtopography within the immediate area.

f. All plants shall be set manually, and any relocated plants shall be placed in locations with suitable hydrology and soils, and where appropriate structural context with other plants can be maintained, as determined by OEP's Environmental Scientist.

8. Fertilizing: *Add the following:*

Fertilizing within the Wetland Area(s) is strictly prohibited.

11. Pruning: *Delete Section.*

12. Spraying: *Delete Section.*

13. Mulching: *Add the following:*

For the Wetland Area(s), mulching is not allowed below the state or federal inland wetland limit.

Add the following at the end of Article 9.49.03:

Article 9.49.04—Method of Measurement:

*Add the following**:***

Wetland Plantings will be measured for payment as a Contract lump sum item.

Article 9.49.05—Basis of Payment: *Add the following:*

Wetland Plantings will be paid for at the Contract lump sum price for "Wetland Plantings," which price shall include all materials, tools, equipment, labor, and work incidental thereto. The Contractor shall submit to the Department a Schedule of payment values for review and comment prior to payment.

Replacement of dead or rejected plants required within 1 year of the initial planting installation will not be measured for payment. The Environmental Scientist will inspect the wetland plants 1 year after initial installation and 1-year thereafter and determine the number and types of replacement plants to be provided. The Engineer will pay up to 60% of the lump sum cost for plantings installed but not yet receiving final acceptance.

Plantings not covered under Wetland Plantings shall be paid under individual Contract items. These plants are identified on the Permit Planting Plan.

Pay Item	Pay Unit
Wetland Plantings	l.s.

ITEM #950019A – TURF ESTABLISHMENT - LAWN

Description: The work included in this item shall consist of providing an accepted stand of grass by furnishing and placing seed as shown on the plans or as directed by the Engineer.

Materials: The materials for this work shall conform to the requirements of Section 9.50 of Standard Specification Form 819, and amended as follows:

The following mix shall be used for this item:

Proportion (Percent)	Species Common name	Scientific name
20	Kentucky Bluegrass Improved varieties	Poa pratensis
45	Red Fescue Improved varieties	Festuca rubra
35	Perennial Ryegrass Improved varieties	Lolium perenne

Construction Methods: Construction Methods shall conform to the requirements of Section 9.50 of Standard Specification Form 819, and amended as follows:

Construction methods shall be those established as agronomically acceptable and feasible and are approved by the Engineer. Rate of application shall be field determined in Pure Live Seed (PLS) based on the minimum purity and minimum germination of the seed obtained. Calculate the PLS for each seed species in the mix. Adjust the seeding rate for the above composite mix, based on 250 lbs. per acre of Pure Live Seed. The seed shall be mulched in accordance with Article 9.50.03.

Prior to the seeding operation, the topsoiled surface should be worked lightly disked or harrowed to provide acceptable soil condition for the seed. Should seeding be delayed and the topsoiled surface becomes compacted or crusted, it will be necessary to disk or harrow again.

Once turf is established, the Contractor shall mow to a height of 6” every 4 weeks during the during the growing season (April through October) throughout the duration of the project including the plant material establishment period. The Contractor shall monitor the site for broadleaf weeds, and spot spray herbicide as required, and bare spots larger than 4 square feet shall be re-seeded at no additional cost to the State.

Method of Measurement: This work will be measured for payment by the number of square yards of surface area of accepted established grasses as specified or by the number of square yards of surface area of seeding actually covered and as specified.

Basis of Payment: This work will be paid for at the contract unit price per square yard for "Turf Establishment - Lawn" which price shall include all materials maintenance, equipment, tools, labor, and work incidental thereto. Partial payment of up to 60% may be made for work completed, but not accepted. Accepted work shall be construed as fully established turf in accordance with this specification.

Pay Item	Pay Unit
Turf Establishment - Lawn	s.y.

ITEM #0950021A – LOW GROWTH TURF MIX

Description: The work included in this item shall consist of providing an accepted stand of grass by furnishing and placing seed as shown on the plans or as directed by the engineer.

Materials: The materials for this work shall conform to the requirements of Section 9.50 of Standard Specification Form. The following mix shall be used for this item:

Turf Seed Mix:
In order to preserve and enhance the diversity, the source for seed mixtures shall be locally obtained within the Northeast USA including New England, New York, Pennsylvania, New Jersey, Delaware, or Maryland. One approved seed mixture is detailed below. Other proposed mixtures and/or varieties must be approved by the ConnDOT Landscape Design office.

Proportion (Percent)	Species Common name	Scientific name
40%	Slender Creeping Red Fescue See approved varieties*	Festuca rubra L. spp. trichophylla
40%	Strong Creeping Red Fescue See approved varieties*	Festuca rubra L. spp. rubra
20%	Hard Fescue See approved varieties*	Festuca brevipila

Approved Varieties:
Slender Creeping Red Fescue: SeaMist, Seabreeze GT, Dawson, Sprinkler, SeaLink
Strong Creeping Red Fescue: Xeric, Shademaster III, Jasper II, Garnet, Chantilly
Hard Fescue: Blueray, Predator, Firefly, Spartan II, Eureka II, Henry
Trifolium repens: Pipolina, Pirouette

Construction Methods: Construction Methods shall be those established as agronomically acceptable and feasible and that are approved by the Engineer. Rate of application shall be field determined in Pure Live Seed (PLS) based on the minimum purity and minimum germination of the seed obtained. Calculate the PLS for each seed species in the mix. Adjust the seeding rate for the above composite mix, based on 250 lbs. per acre. The seed shall be mulched in accordance with Article 9.50.03.

Maintenance Requirements: As part of this item, the contractor shall mow all slopes 4:1 or less (flatter) and level turf established (seeded) areas to a height of 4 in (100 mm) when the grass growth attains a height of 6 inches, a minimum of three times per year for the duration of the

contract or as directed by the engineer. Additional mows to those included in the specification and as directed by the engineer shall be paid for as extra work.

Method of Measurement: This work will be measured for payment by the number of square yards of surface area of accepted established grasses as specified or by the number of square yards of surface area of seeding actually covered and as specified.

Basis of Payment: This work will be paid for at the contract unit price per square yard for "Low Growth Turf" which price shall include all materials maintenance, equipment, tools, labor, and work incidental thereto. Partial payment of up to 60% may be made for work completed, but not accepted.

Pay Item	Pay Unit
Low Growth Turf Mix	S.Y.

ITEM #0950040A - CONSERVATION SEEDING FOR SLOPES

Description: The work included in this item shall consist of providing an accepted stand of established conservation grasses by furnishing and placing seed as shown on the plans, permits, or as directed by the Engineer within the wetland mitigation Sites(s) or other areas when required.

Materials: All conservation grass mixture sources shall be locally obtained within the Northeast USA (New England, New York, Pennsylvania, New Jersey, Delaware, or Maryland) in order to preserve and enhance the diversity of native conservation grass species.

Three qualified conservation seed mixtures are detailed below:

1. **New England Conservation/Wildlife Mix**, New England Wetland Plants, Inc. 820 West Street Amherst, MA 01002, or equal. Rate shall be 1 pound PLS per 1,750 sq. ft.

2. **Mesic to Dry Native Pollinator Mix,** Ernst Conservation Seeds, Inc. 8884 Mercer Pike, Meadville, PA 16335, or equal. Rate shall be 1 pound PLS per 2,178 sq. ft.

3. **Vermont Conservation and Wildlife**, Vermont Wetland Plant Supply, LLC, P.O. Box 153, Orwell, VT 05760, or equal. Rate shall be 1 pound PLS per 2,180 sq. ft.

Fertilizer, if required, shall meet the requirements of Article M.13.03.
Mulch shall meet the requirements of Article M.13.05.
Erosion control matting shall be bio-degradable and meet the requirements of Article M.13.09.

All conservation seed mixture sources shall be reviewed and approved by the Engineer in advance of purchase and prior to application.

The Materials Certificate for all seed mixtures shall have a statement that certifies that the seed mixture does not include any invasive species pursuant to Connecticut General Statutes Sec. 22a-381d or any State Threatened or State Endangered species pursuant to Connecticut General Statutes Sec. 26-303. The seed tags from the bags are to be removed by the Engineer upon delivery and attached to the Materials Certificate. Seeding shall not occur if these requirements are not met.

All approved seed mixtures shall be obtained in sufficient quantities to meet the pure live seed (PLS) application rates as determined by the seed analysis of the mixture.

Construction Methods: Construction methods shall be those established as agronomically acceptable and feasible and shall be approved by the Engineer. The methods described in Article 9.50.03 shall be amended as follows:
Conservation seeding for slopes for wetland mitigation Site(s): Seeding shall occur during the fall season immediately following construction of the wetland mitigation Site(s). Seeding for wetland mitigation Site(s) must occur from August 15th to October 31st.

For non-wetland mitigation Site(s), seeding shall occur during the dates specified in Article 9.50.03-2.

If seed is purchased in bulk rather than by PLS, the rate of application must be adjusted to meet the required PLS seeding rate. This seeding rate shall be increased by the appropriate percentage as determined by the following formula based off of the information provided on the seed tags at delivery.

(Germination Percentage X Purity Percentage)/ 100 = Percentage PLS

The Engineer will verify that the seed is applied at a rate that will allow for 100 percent PLS.

Mowing will not be allowed within areas that are seeded with conservation seed mix, unless authorized by the Engineer.

Method of Measurement:

This work will be measured for payment by the number of square yards of surface area of accepted established conservation grasses as specified.

Basis of Payment:

This work will be paid for at the Contract unit price per square yard for "Conservation Seeding for Slopes," which price shall include all materials, maintenance, equipment, tools, labor, and work incidental thereto. Partial payment of up to 50% may be made for work completed, but not accepted. Full payment shall not be made until the area has been accepted by the Engineer.

Pay Item	Pay Unit
Conservation Seeding for Slopes	s.y

ITEM #0952051A - CONTROL AND REMOVAL OF INVASIVE VEGETATION

Description: This work shall include the development and implementation of an Invasive Vegetation Removal Plan (IVRP) to outline the identification and treatment methods for the control of invasive vegetation, including trees if present, as directed by the Engineer or their authorized delegate. This work will also include the removal and off-Site disposal of invasive vegetation from within the Project limits in accordance with the accepted IVRP.

The list of invasive vegetation to be controlled, removed, and disposed off-Site under this item can be found on the following websites:

- Connecticut Invasive Plant Working Group (CIPWG) Invasive Plants Council (http://cipwg.uconn.edu/invasive_plant_list/)
- US Army Corps of Engineers (ACOE) New England District Compensatory Mitigation Guidance Appendix K (http://www.nae.usace.army.mil/portals/74/docs/regulatory/Mitigation/2016_New_England_Compensatory_Mitigation_Guidance.pdf)

Materials: The herbicide shall be formulated as applicable for target-species foliar treatment or a flush cut/stump treatment. All herbicide applications shall be in accordance with Product label rates and in conjunction with Sections 22a-46 to 22a-66z of the Connecticut General Statutes (CGS).

Flagging tape, if used, shall be fluorescent, 'All-Weather' type, resistant to UV and water damage.

Stakes shall be survey-grade, as specified under Article 9.80.02.

Construction Methods: The Contractor shall be responsible to identify invasive vegetation at all times of the year and to prepare a plan for its control, removal, and off-Site disposal without assistance.

1. IVRP: Prior to any ground disturbance within the Project limits, the Contractor shall submit a proposed IVRP to the Engineer or their authorized delegate for review and comment. The Contractor shall address any comments to the satisfaction of the Engineer and resubmit their revised IVRP for review and acceptance.

The IVRP shall include the following information:

1) Proposed dates for the initial walk through of the invasive vegetated areas to be controlled and removed for off-Site disposal.
2) Schedule identifying specific dates when herbicide treatment or mechanical excavation or removal of invasive species is to occur for the life of the Contract, including the 1-year warranty period that begins at Substantial Completion. The treatment schedule shall coincide with the Contractor's schedule.
3) Plan sheets identifying the species of invasive vegetation and trees within the Project limits showing the total square yards proposed to be controlled and removed for off-Site disposal. For each species of invasive vegetation present on-Site, the following shall be described:
   a. Types and concentrations of any herbicides to be used to control the identified species

for the life of the Contract, including any adjuvants, SDS sheets, types of tools, equipment, or machinery to be used.

b. Mechanical excavation and removal methods including the type of machinery to be used.

4) Provide proof of DEEP Pesticide Application Business registration pursuant to CGS Section 22a-66b, and certifications for each supervisor and operational commercial applicator on-Site or as required under CGS Sections 22a-54 to 22a-58. All Contractors physically applying pesticides on Department construction Projects to treat invasive vegetation in the State highway right-of-way must ensure that the "6 Rights-of-Way Pest Control" certification is held by at least one Commercial Supervisory Pesticide Applicator employed at the Pesticide Application Business. If the applicator does not have a commercial supervisory certificate, then the applicator must have a junior operator certificate in "6 Rights-of-Way Pest Control" and operate under the written or in-person directions of the supervisor who is certified in "6 Rights-of-Way Pest Control." More information on DEEP certifications and permits for applying pesticides is available at the Pesticide Management Program page website. The Department reserves the right to require additional DEEP certifications based on Project Site specific requirements.
5) A description of safety equipment required.
6) Procedures for handling chemical spills.
7) Proposed disposal methods:
   a. Procedures for off-Site removal of invasive vegetation including trees.
   b. Provide address of disposal location, current permits / letters from the town authorizing such activity and a Site map (showing regulated areas).
   c. Invasive vegetation shall not be buried on-Site.

If changes are required to the accepted IVRP during the life of the Contract (including registration/certification changes for the personnel applying pesticides or new invasive species not previously identified in the original IVRP submission) or additional invasive vegetation control and/or removal are ordered by the Engineer, these changes shall be documented by the Contractor and resubmitted to the Engineer or their authorized delegate for review and acceptance. Only those changes recommended by the appropriately licensed supervisor/ applicator will be considered. At no time shall the Contractor direct or advise workforces on the pesticide treatment. All direction must be generated from the licensed Pesticide Application Business and approved by the Engineer.

The IVRP or any amended version must be accepted by the Engineer or their authorized delegate prior to beginning of any mechanical excavation or herbicide treatment in the areas which require invasive species control, removal and off-Site disposal as identified Contractor's marked up plan sheets. The accepted methods must be capable of total control and removal of all identified invasive species in the identified areas throughout the life of the Contract and the 1-year warranty period.

2. Special Handling of Invasive Species Vegetation: The Contractor will be allowed to mechanically excavate invasive vegetation and underlying soils using the accepted methods in the IVRP. The accepted methods must be capable of the removal of all soil to a depth where invasive plant material and root system is no longer evident, to the satisfaction of the Engineer or their authorized delegate. Suitable material shall be provided and placed to final grade as shown on the plans or as directed by the Engineer.

All excavated invasive vegetation and underlying soils shall be considered an unsuitable material and must be removed separately from clearing and grubbing operations and disposed of off-Site at an approved location as described in the Contractor's IVRP.

Whether the Contractor's method of removal is by flush cutting/stump treatment or spraying of herbicides, invasive species, including trees identified as invasive in the above websites or IVRP, must be removed separately from clearing and grubbing operations and disposed of at an approved location as described in the Contractor's IVRP.

The Contractor will not be allowed to strip/cut topsoil from any location and reuse this material within the Project limits identified within the IVRP as an area requiring treatment. The stripped/cut material is considered unsuitable material and is to be taken off-Site to an approved disposal facility as described in the Contractor's IVRP.

Wood chips from invasive species are not allowed to be stockpiled or reused on-Site. Wood chipping on-Site may be allowed to remain on-Site if temporarily stored in a properly contained enclosure and removed off-Site at the end of the treatment cycle, to the satisfaction of the Engineer or their authorized delegate.

No equipment or vehicles other than those required to complete the work as described in the Contractor's IVRP will be permitted in the areas designated for invasive vegetation removal. Any equipment used to process invasive vegetation, such as chippers and transport vehicles, must be cleaned prior to further use.

3. Site Maintenance: Broadcast or uncontrolled spray application will not be permitted, and care must be taken to avoid contacting non-target native species. If any non-target native species to remain within the Project limits are inadvertently treated with herbicide and perish, they shall be replaced with in-kind species at the Contractor's expense.

Vines shall be cut from the ground to the tree canopy. Twining vines within a tree canopy shall be removed to the greatest extent possible without damaging the existing tree to remain. Should branches be damaged, the Contractor shall prune damaged limbs at their expense. All corrective pruning shall meet the requirements of the National Arborists Association Pruning Standards. Note: Use of aerial equipment is encouraged; use of a pole saw to cut vines leaving unsightly debris hanging from the trees will not be allowed.

Flush cutting/stump treatment of brush and trees shall not be more than 2 inches above the ground line.

Any invasive species control and removal work performed throughout the duration of the Contract that causes damage or soil disturbance shall be repaired at the Contractor's expense within 7 days. Disturbed areas shall be vegetatively stabilized with the appropriate seed mix and protected with hay mulch, cellulous fiber mulch, or erosion control matting.

Limits for control and removal of invasive vegetation shall be maintained for the life of the Contract. Should stakes or flagging be damaged during the course of construction, the Contractor shall re-establish limits. Use of reference staking is permissible.

4. Field Meetings: The Contractor's IVRP must receive acceptance from the Engineer, or their authorized delegate and have the Site surveyed, staked, and flagged prior to any field meeting.

The Contractor shall provide at least 10 working days' notice to the Engineer for any scheduled field meeting(s) as described in the IVRP. During the meeting, the Contractor's IVRP shall be reviewed to verify the identified invasive species and to review the square yardage on the marked-up plan sheet(s). At this time, the Engineer or their authorized delegate may identify additional invasive species or designate additional areas for removal that are not included within the Contractor's submitted IVRP.

Additional field meetings may be warranted at any time, as directed by the Engineer or their authorized delegate, to ensure the Contractor is compliant with the IVRP or amended versions.

5. Treatment: The treatment schedule as identified in the IVRP may be modified based on changes to the Contractor's construction schedule or based on existing field conditions. The Contractor shall provide at least 10 working days' notice to the Engineer or their authorized delegate prior to proceeding with each treatment.

Treatment of invasive species will not be permitted without notifying the Engineer or their authorized delegate prior to activity and such personnel shall be on-Site to observe the work, unless specifically authorized otherwise. Treatment shall not be permitted outside of normal working hours, unless specifically authorized.

Prior to any herbicide treatment on-Site, the Contractor shall provide proof of DEEP Pesticide registration/certification, as specified above in **1. IVRP**. The Contractor shall not perform, nor allow subcontractors to perform, any treatment work at any time unless proof of current registration/certification for the actual supervisor and operator conducting or overseeing the herbicide application is available to the Engineer, upon request.

At a minimum, the Contractor shall treat all areas within the optimal growing season between April 15 and October 15. Additional spot treatment measures may be warranted within the same optimal growing season in any year throughout the life of the Contract if full control and removal of the invasive species is not achieved within the Project limits as outlined in the IVRP or as identified by the Engineer or their authorized delegate. When herbicide is used, a minimum of 10 working days is required prior to clearing and grubbing, planting, and seeding operations, so the herbicide application can take effect.

Mechanical excavation and disposal may occur at any time of the year as specified above in **2. Special Handling of Invasive Species Vegetation**.

If rain or windy conditions are anticipated on the day of the scheduled treatment, the Contractor will not be allowed to proceed, unless authorized by the Engineer or their authorized delegate.

Method of Measurement: The work to remove invasive vegetation, as defined above, will be measured for payment by the number of square yards of invasive vegetation surveyed, treated, and removed as required, including any required re-treatment of any regrowth or new growth. This work shall also include the removal of invasive trees, if present. No additional payment will be made for subsequent treatments.

All areas for removal shall be surveyed, flagged, and measured prior to treatment. After a review of the surveyed limits during the field meeting(s), the Engineer may designate additional areas for removal not indicated on the plans which will be measured for payment by the number of square yards treated.

Basis of Payment: The work for the removal of invasive vegetation and trees will be paid for at the Contract unit price per square yard for "Control and Removal of Invasive Vegetation." Payment shall include all labor, surveys, materials, tools, and equipment necessary for limits of the invasive area(s); development and required revisions of the IVRP; maintenance of the limits throughout the Project; species identification; proof of DEEP pesticide registration/certification; and cutting, excavation and replacement of in-kind material, treating, re-treating, removal, and off-Site disposal of designated invasive plant and tree material. Off-Site disposal of residue shall include the loading, transport, dumping, and fees associated with legal off-Site disposal.

- Upon Engineer's acceptance of the required IVRP, the Contractor will receive payment equal to 10% of the estimated Contract Item value.
- Upon completed initial herbicide or mechanical removal treatment methods as described in the IVRP, the Contractor will receive payment equal to 20% of all areas receiving treatment.
- The Contractor will receive incremental payments for each additional treatment throughout the duration of the Project of all areas receiving treatment. The total of incremental payments will not exceed 40% of the Contract item value.
- Upon successful completion of the 1-year warranty period covering all treated areas on the Project, the Contractor will receive final payment.
- Any fines levied against the Department due to the Contractor's or Subcontractor's failure to comply with the specifications or applicable regulations will be deducted from the monies due the Contractor.

All other vegetation to be removed which is not designated as invasive vegetation or invasive tree shall be removed in accordance with the Item "Clearing and Grubbing" or other Contract items. Vegetative stabilization of disturbed areas will be paid for under the respective Contract items.

Pay Item	Pay Unit
Control and Removal of Invasive Vegetation	s.y.

ITEM #0969062A - CONSTRUCTION FIELD OFFICE, MEDIUM

Description: Under the item included in the bid document, adequate weatherproof office quarters with related furnishings, materials, equipment, and other services, shall be provided by the Contractor for the duration of the work, and if necessary, for a close-out period determined by the Engineer. The office, furnishings, materials, equipment, and services are for the exclusive use of CTDOT forces and others who may be engaged to augment CTDOT forces with relation to the Contract. The office quarters shall be located convenient to the work site and installed in accordance with Article 1.08.02. This office shall be separated from any office occupied by the Contractor. Ownership and liability of the office quarters shall remain with the Contractor.

Furnishings/Materials/Supplies/Equipment: All furnishings, materials, equipment, and supplies shall be in like new condition for the purpose intended and require approval of the Engineer.

Office Requirements: The Contractor shall furnish the office quarters and equipment as described below:

Description \ Office Size	Small	Med.	Large	Extra Large
Minimum Sq. Ft. of floor space with a minimum ceiling height of 7 ft.	400	720	1400	2800
Minimum number of exterior entrances.	2	2	2	2
Minimum number of parking spaces.	7	7	10	15

Office Layout: The office shall have a minimum square footage as indicated in the table above and shall be partitioned as shown on the building floor plan as provided by the Engineer.

Unless otherwise approved by the Engineer, office space shall be partitioned into segregated work areas for each user as follows:

- Each work area (or cubicle) shall be a minimum of 8 feet × 8 feet, with full height walls or tall cubicle partitions (minimum 6 feet high), placed to provide a minimum of 6 feet walking space around and between each user work area (for social distancing).
- Only one user (workstation/desk) per work area.
- Desks, tables, and other work surfaces shall be arranged so that adjacent users do not face each other.

Tie-downs and Skirting: Modular offices shall be tied-down and fully skirted to ground level.

Lavatory Facilities: For field offices sizes Small and Medium the Contractor shall furnish a toilet facility at a location convenient to the field office for use by CTDOT personnel and such assistants as they may engage; and for field offices sizes Large and Extra Large the Contractor shall furnish two (2) separate lavatories with toilet (men and women), in separately enclosed rooms that are properly ventilated and comply with applicable sanitary codes. Each lavatory shall have hot and cold running water and flush-type toilets. For all facilities the Contractor shall supply lavatory and sanitary supplies as required.

Windows and Entrances: The windows shall be of a type that will open and close conveniently, shall be sufficient in number and size to provide adequate light and ventilation, and shall be fitted with locking devices, blinds, and screens. The entrances shall be secure, screened, and fitted with a lock for which four keys shall be furnished. All keys to the construction field office shall be furnished to the CTDOT and will be kept in their possession while State personnel are using the office. Any access to the entrance ways shall meet applicable building codes, with appropriate handrails. Stairways shall be ADA/ABA compliant and have non-skid tread surfaces. An ADA/ABA compliant ramp with non-skid surface shall be provided with the Extra-Large field office.

Lighting: The Contractor shall equip the office interior with electric lighting that provides a minimum illumination level of 100 foot-candles at desk level height, and electric outlets for each desk and drafting table. The Contractor shall also provide exterior lighting that provides a minimum illumination level of 2 foot-candles throughout the parking area and for a minimum distance of 10 ft. on each side of the field office.

Parking Facility: The Contractor shall provide a parking area, adjacent to the field office, of sufficient size to accommodate the number of vehicles indicated in the table above. If a paved parking area is not readily available, the Contractor shall construct a parking area and driveway consisting of a minimum of 6 inches of processed aggregate base graded to drain. The base material will be extended to the office entrance.

Field Office Security: Physical Barrier Devices - This shall consist of physical means to prevent entry, such as: 1) All windows shall be barred, or security screens installed; 2) All field office doors shall be equipped with dead bolt locks and regular day operated door locks; and 3) Other devices as directed by the Engineer to suit existing conditions.

Electric Service: The field office shall be equipped with an electric service panel, wiring, outlets, etc., to serve the electrical requirements of the field office, including lighting, general outlets, computer outlets, electronics, etc., and meet the following minimum specifications:

A. 120/240 volt, 1 phase, 3 wire
B. Ampacity necessary to serve all equipment. Service shall be a minimum 100 amp dedicated to the construction field office.
C. The electrical panel shall include a main circuit breaker and branch circuit breakers of the size and quantity required.
D. Additional 120-volt, single phase, 20-amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles will be installed at each desk and personal computer table (workstation) location.
E. Additional 120-volt, single phase, 20-amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles will be installed, for use by the Telephone Company.
F. Additional 120-volt circuits and duplex outlets as required meeting National Electric Code requirements.
G. One exterior (outside) wall mounted GFI receptacle, duplex, isolated ground, 120-volt, straight blade.

H. After work is complete and prior to energizing, the State's CTDOT electrical inspector, must be contacted at 860-594-2240. (Do Not Call Local Town Officials)
I. Prior to field office removal, the CTDOT Office of Information Systems (CTDOT OIS) must be notified to deactivate the communications equipment.

Heating, Ventilation and Air Conditioning (HVAC): The field office shall be equipped with sufficient and properly operating, heating, air conditioning, and ventilation equipment to maintain a temperature range of 68^{o}-80^{o} Fahrenheit within the field office. The Contractor shall increase ventilation rates and increase the percentage of outdoor air that circulates into the system where possible.

Telephone Service: The Contractor shall provide telephone service with unlimited nation-wide calling plan. For a Small, Medium, and Large field office this shall consist of the installation of one (1) telephone line for phone/voice service. For an Extra-Large field office this shall consist of three (3) telephone lines for phone/voice service. The Contractor shall pay all charges.

Data Communications Facility Wiring: Contractor shall install a Category 6 568B patch panel in a central wiring location and Cat 6 cable from the patch panel to each PC station, Smart Board location, Multifunction Laser Printer/Copier/Scanner, terminating in a (Category 6 568B) wall or surface mount data jack. The central wiring location shall also house either the data circuit with appropriate power requirements or a Category 6 cable run to the location of the installed data circuit. The central wiring location will be determined by the CTDOT OIS staff in coordination with the designated field office personnel for CTDOT employee staffed field offices as soon as the facility is in place and requested by the Contractor. The central wiring location will be determined with designated CTDOT District staff as soon as the facility is in place and requested by the Contractor.

The Contractor shall provide LAN switches and patch panels as needed to provide the data speeds and connections specified. The contractor shall run a CAT 6 LAN cable from each workstation and networked device (including Multi-Function Laser Printer/Copier/Scanner, printers, and docking stations) to the contractor supplied patch panel/LAN switch area leaving an additional 10 feet of cable length on each side with terminated RJ45 connectors. The Contractor shall install patch panel and LAN switch in data circuit area. Each run / jack shall be clearly labeled with an identifying Jack Number.

The Contractor shall supply cables to connect all devices to the Contractor supplied internet router, switches, and RJ45 connections as needed. These cables shall be separate from the LAN cables and data Jacks detailed above for the CTDOT network.

The number of networked devices anticipated shall be at least equal to the number of personal computer tables, Multi-Function Laser Printer/Copier/Scanner, contractor supplied devices, and smartboards listed below.

In addition to the contractor supplied internet service, the additional installation of a data communication circuit between the field office and the CTDOT OIS in Newington (will only apply to projects staffed with CTDOT employees) will be coordinated between the CTDOT District staff, CTDOT OIS staff and the local utility company once the Contractor supplies the field office phone

numbers and anticipated installation date. The Contractor shall provide the field office telephone number(s) to the CTDOT Project Engineer within 10 calendar days after the signing of the Contract as required by Article 1.08.02. This is required to facilitate data line and computer installations.

Additional Equipment, Facilities and Services: The Contractor shall provide at the field Office at least the following to the satisfaction of the Engineer:

Furnishing Description	Office Size			
	Small	Med.	Large	Extra Large
	Quantity			
Office desk (2.5 ft. x 5 ft.) with drawers, locks, and matching desk chair that have pneumatic seat height adjustment and dual wheel casters on the base.	1	3	5	8
Personal computer tables (4 ft. x 2.5 ft.).	2	3	5	8
Drafting type tables (3 ft. x 6 ft.) and supported by wall brackets and legs; and matching drafter's stool that have pneumatic seat height adjustment, seat back and dual wheel casters on the base.	1	1	1	2
Office Chairs.	2	4	8	20
Fire resistant cabinet (legal size/4 drawer), locking.	1	1	2	3
Vertical plan racks for 2 sets of 2 ft. x 3 ft. plans for each rack.	1	1	2	2
Case of cardboard banker boxes (Min 10 boxes/case)	1	1	2	3
White Dry-Erase Board, 36" x 48" min. with markers and eraser.	1	1	1	1
Wastebaskets - 30 gal., including plastic waste bags.	1	1	1	2
Wastebaskets - 5 gal., including plastic waste bags.	1	3	6	10
Electronic Level	1	1	1	2
Furnishing Description	Office Size			
	Small	Med.	Large	Extra Large
	Quantity			
Telephone.	1	2	3	-
Full size stapler 20 (sheet capacity, with staples)	1	2	5	8
Desktop tape dispensers (with Tape)	1	2	5	8
8 Outlet Power Strip with Surge Protection	3	4	6	9
Rain Gauge	1	1	1	1
Mini refrigerator - 3.2 c.f. min.	1	1	1	1

Hot and cold-water dispensing unit. Disposable cups and bottled water shall be supplied by the Contractor for the duration of the project.	1	1	1	1
Microwave, 1.2 c.f., 1000W min.	1	1	1	1
Fire extinguishers - provide and install type and *number to meet applicable State and local codes for size of office indicated, including a fire extinguisher suitable for use on a computer terminal fire.	*	*	*	*
Electric pencil sharpeners.	1	2	2	2
Multi-Function Laser Printer/Copier/Scanner combination unit, network capable, as specified below under Field Office Technology	1	1	1	1
Field Office Wi-Fi Connection as specified below under Field Office Technology	1	1	1	1
Wi-Fi Printer as specified below under Field Office Technology	1	1	1	1
Digital Camera as specified below under Field Office Technology	1	1	3	3
Teleconferencing Equipment as specified below under Field Office Technology	-	-	-	-
Infrared Thermometer, including annual third-party certified calibration, case, and cleaning wipes.	1	1	1	2
Concrete Curing Box as specified below under Concrete Testing Equipment.	1	1	1	1
Concrete Air Meter and accessories as specified below under Concrete Testing Equipment as specified below. Contractor shall provide third party calibration on a quarterly basis.	1	1	1	1
Concrete Slump Cone and accessories as specified below under Concrete Testing Equipment.	1	1	1	1
First Aid Kit	1	1	1	1
T-handle concrete cylinder mold splitter as specified below under Concrete Testing Equipment	1	1	1	1
Smart Phones as specified under Computer Related Hardware and Software.	-	-	-	-

The furnishings and equipment required herein shall remain the property of the Contractor. Any supplies required to maintain or operate the above listed equipment or furnishings shall be provided by the Contractor for the duration of the project.

Field Office Technology:

The Contractor shall supply the Field Office Wi-Fi Connection, Wi-Fi Printer, Digital Camera(s), Smart Phones, Multifunction Laser Printer/Copier/Scanner, Conference Room Teleconferencing Equipment, as well as associated hardware and software, meeting the requirements of this specification as well as the latest minimum specifications posted, as of the project advertising date,

at CTDOTs web site https://portal.ct.gov/dot/office-of-construction/construction-field-office-technology

Within 10 calendar days after the signing of the Contract but before ordering/purchasing the Wi-Fi Printer (separate from the Multifunction Laser Printer/Copier/Scanner), Field Office Wi-Fi, Digital Camera(s), Smart Phones, Multifunction Laser Printer/Copier/Scanner, Teleconferencing Equipment, as well as associated hardware, the Contractor must submit a copy of their proposed order(s) with catalog cuts and specifications to the Administering CTDOT District for review and approval. The Wi-Fi Printer, Wi-Fi Router, digital cameras, smart phones, and Teleconferencing Equipment will be reviewed by CTDOT District personnel. The Multifunction Laser Printer/Copier/Scanner will be reviewed by the CTDOT OIS. The Contractor shall not purchase the hardware, software, or services until the Administering CTDOT District informs them that the proposed equipment, software, and services are approved. The Contractor will be solely responsible for the costs of any hardware, software, or services purchased without approval.

The Contractor and/or their internet service provider shall be responsible for the installation and setup of the field office Wi-Fi/internet service, Wi-Fi printer, and the configuration of the wireless router as directed by the CTDOT. Installation will be coordinated with CTDOT District and Project personnel.

After the approval of the hardware and software, the Contractor shall contact the designated representatives of the CTDOT administering District, a minimum of 2 working days in advance of the proposed delivery or installation of the Field Office Wi-Fi Connection, Wi-Fi Printer, Digital Camera(s), Smart Phones, Multifunction Laser Printer/Copier/Scanner, Teleconferencing Equipment, as well as associated hardware, software, supplies, and support documentation.

The Contractor shall provide all supplies, paper, maintenance, service, and repairs (including labor and parts) for the Wi-Fi printers, copiers, field office Wi-Fi/internet service, and other equipment and facilities required by this specification for the duration of the Contract. All repairs must be performed with-in 48 hours. If the repairs require more than 48 hours, then an equal or better replacement must be provided.

Once the Contract has been completed, the hardware and software will remain the property of the Contractor.

First Aid Kit: The Contractor shall supply a first aid kit adequate for the number of personnel expected based on the size of the field office specified and shall keep the first aid kit stocked for the duration that the field office is in service.

Rain Gauge: The Contractor shall supply install and maintain a rain gauge for the duration of the project, meeting these minimum requirements. The rain gauge shall be installed on the top of a post such that the opening of the rain gauge is above the top of the post an adequate distance to avoid splashing of rainwater from the top of the post into the rain gauge. The location of the rain gauge and post shall be approved by the Engineer. The rain gauge shall be made of a durable material and have graduations of 0.1 inches or less with a minimum total column height of 5 inches.

If the rain gauge is damaged the Contractor shall replace it prior to the next forecasted storm event at no additional cost.

Electronic Level: The Contractor shall supply and maintain in working order, for the duration of the Contract, the number of electronic levels, identified in the Additional Equipment, Facilities and Services table of this specification. The electronic levels shall meet the following requirements:

A. 48-inch length, box beam type
B. IP65 water and dust proof
C. 0.1-degree accuracy
D. Backlit display
E. Carrying case included
F. New or like new condition

Concrete Testing Equipment: If the Contract includes items that require compressive strength cylinders for concrete, in accordance with the Schedule of Minimum Testing Requirements for Sampling Materials for Test, the Contractor shall provide the following equipment.

A. Concrete Cylinder Curing Box – meeting the requirements of Section 6.12 of the Standard Specifications.
B. Air Meter – The air meter provided shall be in good working order and meet the requirements of AASHTO T 152.
C. Slump Cone Mold – Slump cone, base plate, and tamping rod shall be provided in like-new condition and meet the requirements of AASHTO T119, Standard Test Method for Slump of Hydraulic-Cement Concrete.
D. T-handle concrete cylinder mold splitter.

All testing equipment will remain the property of the Contractor at the completion of the project.

Insurance Policy: The Contractor shall provide a separate insurance policy, with no deductible, in the minimum amount of five thousand dollars ($5,000) to insure all State-owned data equipment and supplies used in the office against all losses. The Contractor shall be named insured on that policy, and the CTDOT shall be an additional named insured on the policy. These losses shall include, but not be limited to theft, fire, and physical damage. The CTDOT will be responsible for all maintenance costs of CTDOT owned computer hardware. In the event of loss, the Contractor shall provide replacement equipment in accordance with current CTDOT equipment specifications, within seven days of notice of the loss. If the Contractor is unable to provide the required replacement equipment within seven days, the CTDOT may provide replacement equipment and deduct the cost of the equipment from monies due or which may become due the Contractor under the Contract or under any other contract. The Contractor's financial liability under this paragraph shall be limited to the amount of the insurance coverage required by this paragraph. If the cost of equipment replacement required by this paragraph should exceed the required amount of the insurance coverage, the CTDOT will reimburse the Contractor for replacement costs exceeding the amount of the required coverage.

Maintenance: During the occupancy by the CTDOT, the Contractor shall maintain all facilities and furnishings provided under the above requirements, and shall maintain and keep the office quarters clean through the use of professional cleaning including vacuuming carpet, washing & waxing floors, cleaning restrooms, removal of trash, general cleaning, etc.

Exterior areas shall be mowed and clean of debris. A trash receptacle (dumpster) with weekly pickup (trash removal) shall be provided. Snow removal, sanding and salting of all parking, walkway, and entrance ways areas shall be accomplished during a storm if on a workday during work hours, immediately after a storm and prior to the start of a workday. If snow removal, salting and sanding are not completed by the specified time, the State will provide the service and all costs incurred will be deducted from the next payment estimate.

Method of Measurement: The furnishing and maintenance of the construction field office will be measured for payment by the number of calendar months that the office is in place and in operation, rounded up to the nearest month.

There will not be any price adjustment due to any change in the minimum computer related hardware and software requirements.

Basis of Payment: The furnishing and maintenance of the Construction Field Office will be paid for at the Contract unit price per month for "Construction Field Office, Medium," which price shall include all material, equipment, labor, service contracts, licenses, software, repair or replacement of hardware and software, related supplies, utility services, parking area, external illumination, trash removal, snow and ice removal, and work incidental thereto, as well as any other costs to provide requirements specified herein.

Pay Item	Pay Unit
Construction Field Office, Medium	Month

ITEM #0971001A – MAINTENANCE AND PROTECTION OF TRAFFIC

Article 9.71.01 – Description *is supplemented by the following:*

The Contractor shall maintain and protect traffic as described by the following and as limited in the special provision for Section 1.08 - Prosecution and Progress:

Route 63 (New Haven Road)

The Contractor shall maintain and protect existing traffic lanes, with the following exceptions:

1. During the allowable periods and when the Contractor is actively working, the Contractor shall maintain and protect a minimum of 1 lane of traffic in each direction with each lane on a paved travelpath not less than 11 feet in width.
2. During the allowable periods and when the Contractor is actively working, the Contractor will be permitted to maintain and protect at least an alternating one-way traffic operation on a paved travel path not less than 11 feet in width and no more than 300 feet in length, unless specified elsewhere in the Contract. There shall be no more than one alternating one-way traffic operation within the Project limits without prior approval of the Engineer.

Beacon Valley Road and Candee Road

The Contractor shall maintain and protect existing traffic lanes with each lane on a paved travel path not less than 10 feet in width, with the following exceptions:

During the allowable periods and when the Contractor is actively working, the Contractor will be permitted to maintain and protect at least an alternating one-way traffic operation on a paved travel path not less than 11 feet in width and no more than 300 feet in length, unless specified elsewhere in the Contract. There shall be no more than one alternating one-way traffic operation within the Project limits without prior approval of the Engineer.

All Other Roadways

The Contractor shall maintain and protect existing traffic lanes with each lane on a paved travel path not less than 11 feet in width, with the following exceptions:

During the allowable periods and when the Contractor is actively working, the Contractor will be permitted to maintain and protect at least an alternating one-way traffic operation on a paved travel path not less than 11 feet in width and no more than 300 feet in length, unless specified elsewhere in the Contract. There shall be no more than one alternating one-way traffic operation within the Project limits without prior approval of the Engineer.

Commercial and Residential Driveways

The Contractor shall maintain access to and egress from all commercial and residential driveways throughout the Project limits. The Contractor will be permitted to temporarily close affected driveways while actively working with coordination and permission from the owner or proprietor.

Article 9.71.03 - Construction Methods *is supplemented as follows:*

General

The Contractor is required to delineate any raised structures within the roadway, so that the structures are visible day and night, unless there are specific Contract plans and provisions to temporarily lower these structures prior to the completion of work.

When the Contractor is excavating adjacent to the roadway, the Contractor shall provide a 3 foot shoulder between the work area and travel lanes, with traffic drums spaced every 50 feet. At the end of the work shift if the vertical drop-off exceeds 3 inches, the Contractor shall provide a temporary bituminous concrete traversable slope of 4:1 or flatter that is acceptable to the Engineer.

The Contractor, during the course of any active overhead construction work, shall close the lanes directly below the work area for the entire length of time overhead work is being undertaken.

When an existing sign is to be relocated or replaced, the work shall be completed during the same work shift.

The field installation of a signing pattern shall constitute interference with existing traffic operations and shall not be allowed, except during the allowable periods.

Existing Signing

The Contractor shall maintain all existing overhead and side-mounted signs within the Project limits throughout the duration of the Project. The Contractor shall temporarily relocate signs and sign supports as many times as deemed necessary, and shall install temporary sign supports if necessary and as directed by the Engineer.

Requirements for Winter

The Contractor shall schedule a meeting with representatives of the Department, including the offices of Maintenance and Traffic, and the Town/City to determine any interim traffic control measures the Contractor shall accomplish prior to winter to provide safety to motorists and permit adequate snow removal procedures. This meeting shall be held prior to October 31 of each year and will include, but not be limited to, discussion of the status and schedule of the following items: lane and shoulder widths, pavement restoration, traffic signal work, pavement markings, and signing.

Signing Patterns

The Contractor shall erect and maintain all signing patterns in accordance with the traffic control plans contained herein. Proper distances between advance warning signs and proper taper lengths are mandatory.

Traffic Control During Construction Operations

The following guidelines shall assist field personnel in determining when and what type of traffic control patterns to use for various situations. These guidelines shall provide for a safer and more efficient movement of traffic through work zones and enhance the safety of work forces in the work area.

Traffic Control Patterns

Traffic control patterns shall be used when a work operation requires that all or part of any vehicle or work area protrudes onto any part of a travel lane or shoulder or is within the clear

zone. For each situation, the installation of traffic control devices shall be based on the following:

- Speed and volume of traffic.
- Duration of operation.
- Exposure to hazards.

Traffic control patterns shall be uniform, neat, and orderly in order to command respect from the motorist.

Lane reduction tapers should be placed so that the entire length of the taper is installed on a tangent section of roadway and the entire taper area can be seen by the motorist.

All existing conflicting signs shall be removed, covered with an opaque material, or turned so that they are not legible to oncoming traffic prior to implementing a traffic control pattern. The existing signs shall be uncovered or reinstalled once the pattern is removed.

A buffer area should be provided during installation of a traffic control pattern and maintained for the duration of the work. The buffer area shall be free of any equipment, workers, materials, and parked vehicles.

Construction Traffic Control Plans 19 through 25 should be used for moving operations such as line striping, rumble strips, pothole patching, mowing, or sweeping when it is necessary for equipment to occupy a travel lane.

Traffic control patterns are not required for vehicles on an emergency patrol type activity or for a short duration stop of up to one hour, as long as the equipment is contained within the shoulder. Flashing lights, arrow boards, truck-mounted or trailer-mounted impact attenuators, and appropriate Trafficperson(s) shall be used when required.

In a situation not adequately covered by the Construction Traffic Control Plans, the Contractor shall contact the Engineer for assistance prior to setting up a traffic control pattern.

Placement of Signs

Signs shall be placed in a position that allows motorists the opportunity to reduce their speed prior to the work area. Signs shall be installed on the same side of the roadway as the work area. On multi-lane divided highways, advance warning signs shall be installed on both sides of the highway. On directional roadways (on-ramps, off-ramps, one-way roads) where the sight distance to signs is restricted, these signs should be installed on both sides of the roadway.

Allowable Adjustment of Signs and Devices Shown on the Construction Traffic Control Plans

The Construction Traffic Control Plans contained herein show the location and spacing of signs and devices under ideal conditions. Signs and devices should be installed as shown on these plans.

The proper application of the Construction Traffic Control Plans and installation of traffic control devices is dependent upon actual field conditions.

In the case of a horizontal or vertical sight restriction in advance of the work area, the traffic control pattern shall be extended to provide adequate sight distance for approaching traffic.

Adjustments to the Construction Traffic Control Plans shall only be made at the direction of the Engineer.

Table 1 indicates the minimum taper lengths required for a lane closure based on the posted speed limit and lane width of the roadway. These taper lengths shall only be used when the recommended taper lengths shown on the Construction Traffic Control Plans cannot be achieved.

Table 1 – Minimum Taper Length

POSTED SPEED LIMIT (MPH)	MINIMUM TAPER LENGTH FOR A SINGLE LANE CLOSURE (FEET)	
	FREEWAYS	SECONDARY ROADS
30 OR LESS	180	165
35	245	225
40	320	295
45	540	495
50	600	550
55	660	605
65	780	715

1. Work Zone Safety Meetings

1.a) Prior to the commencement of work, a Work Zone Safety Meeting shall be conducted with representatives from DOT Construction, Connecticut State Police (Local Barracks), Municipal Police, the Contractor (Project Superintendent) and the Traffic Control Subcontractor (if different than the prime Contractor) to review the traffic operations, lines of responsibility, and operating guidelines which will be used on the Project. DOT Traffic Engineering shall be invited to the Work Zone Safety Meeting. Other Work Zone Safety Meetings during the course of the Project should be scheduled as needed.

1.b) A Work Zone Safety Meeting Agenda shall be developed and used at the Meeting to outline the anticipated traffic control issues during the construction of this Project. Any issues that can't be resolved at these Meetings will be brought to the attention of the District Engineer and the Office of Construction. The agenda shall include:

i. Review Project scope of work and time;
ii. Review Section 1.08, Prosecution and Progress;
iii. Review Section 9.70, Trafficpersons;
iv. Review Section 9.71, Maintenance and Protection of Traffic;
v. Review Contractor's schedule and method of operations;
vi. Review special concern areas: ramps, turning roadways, medians, lane drops, etc.;
vii. Open discussion of work zone questions and issues;
viii. Discussion of review and approval process for changes in Contract requirements as they relate to work zone areas.

2. General

2.a) Traffic control patterns shall only be installed if the required minimum number of signs, traffic cones, traffic drums, and other equipment (i.e. one Arrow Board for each lane closed, two Truck-Mounted or Trailer-Mounted Attenuators (TMAs), Changeable Message Sign, etc.) are on Site.

2.b) The Contractor shall have spare maintenance and protection of traffic equipment (TMAs, Arrow Board, Changeable Message Sign(s), construction signs, traffic cones, traffic drums, etc.) available at all times in case of mechanical failures, etc. Spare maintenance and protection of traffic equipment installed as a result of a sudden equipment breakdown shall be replaced by the Contractor within 24 hours.

2.c) Failure of the Contractor to have the required minimum number of signs, personnel, and equipment, which results in the pattern not being installed, shall not be a reason for a time extension or claim for lost time.

2.d) In cases of differences of opinion between the Contractor and the Inspection staff, the Contractor shall follow the directions of the Engineer. The matter shall be brought to the District Office for resolution immediately or, in the case of work after regular business hours, on the next business day.

3. Installing and Removing Traffic Control Patterns

3.a) Lane closures shall be installed beginning with the advance warning signs and proceeding forward toward the work area.

3.b) Lane closures shall be removed in the reverse order, beginning at the end of the work area, or traffic control pattern, and proceeding back toward the advance warning signs.

3.c) Stopping traffic may be allowed within the allowable hours stated in Section 1.08.04:

i. For those activities stated within the Contract.

ii. During paving, milling operations, or similar activities where, in the middle of the operation, it is necessary to flip the pattern to complete the operation on the other half of the roadway so traffic does not travel across the longitudinal joint or difference in roadway elevation.

iii. To move slow moving equipment across live traffic lanes into the work area.

3.d) The Contractor shall adhere to using the proper signs, placing the signs correctly, and ensuring the proper spacing of signs.

3.e) Additional devices are required on entrance ramps, exit ramps, and intersecting roads to warn and/or move traffic into the proper travel path prior to merging with or exiting from the mainline traffic. This shall be completed before installing the mainline pattern past the ramp or intersecting roadway.

3.f) Workers are prohibited from crossing the travel lanes on limited access roadways to install and remove signs or other devices on the opposite side of the roadway. Any signs or devices on the opposite side of the roadway shall be installed and removed separately.

4. Implementation of Rolling Road Block (RRB)

4.a) Temporary road closures using a RRB may be allowed on limited access highways for operations associated with the installation and removal of temporary lane closures. RRB may be allowed for the installation and removal of lead signs and lane tapers only and shall meet the following requirements:

i. Refer to the Limitation of Operations Chart provided in Section 1.08.04 for the hours allowed for implementing a RRB operation. The Contractor shall only implement a RRB operation within the hours shown in the Chart.

ii. In areas with good sight lines and full shoulders, signs on the side of the road opposite the traffic pattern should be installed in a separate operation.

iii. TMAs equipped with Arrow Boards shall be used to slow traffic to implement the RRB. State Police Officers in marked vehicles may be used to support the implementation of the RRB. The RRB shall start by having all vehicles, including TMAs and police vehicles, leave the shoulder or on-ramp and accelerate to normal roadway speeds in each lane. The vehicles will then position themselves side by side and decelerate to the RRB speed on the highway.

iv. A Pre-Warning Vehicle, as specified elsewhere in the Contract, shall be used to advise the motorists that sign pattern installation or removal is underway.

v. The RRB duration shall not exceed 15 minutes from the start of the traffic block until all lanes are opened as designated in the Limitation of Operations chart. If the RRB duration exceeds 15 minutes on 2 successive shifts, no further RRB will be allowed until the Contractor obtains approval for a revised installation procedure from the District.

vi. RRB shall not be used to expand a lane closure pattern to an additional lane during the shift. The workers and equipment required to implement the additional lane closure should be staged from within the closed lane. TMAs (and State Police if available) shall be used to protect the workers installing the taper in the additional lane.

vii. Exceptions to these work procedures may be submitted to the District Office for consideration. A minimum of 2 business days shall be allowed for review and comment by the District.

viii. The Engineer and the Contractor will review and discuss the RRB procedures (including any revisions) in advance of the work. The implementation of the agreed upon plan will be reviewed with the State Police during the Work Zone Safety Meeting held before each shift involving temporary lane closures. If the State Police determine that alternative procedures should be implemented for traffic control during the work shift, the Department and Contractor will attempt to resolve any discrepancies with the duty sergeant at the Troop. If the discrepancies are unable to be resolved prior to the start of the shift, then the work will proceed as recommended by the Department. Any unresolved issues shall be addressed the following day.

5. Use of Arrow Boards

5.a) On limited access roadways, one Arrow Board shall be used for each lane that is closed. The Arrow Board shall be installed concurrently with the installation of the traffic control pattern and its placement shall be as shown on the Construction Traffic Control Plans. Additional Arrow Boards shall be deployed if sight distances are limited.

5.b) On non-limited access roadways, the use of an Arrow Board for lane closures is optional. The roadway geometry, sight distance, and traffic volume shall be considered in the decision to use the Arrow Board.

5.c) A vehicle displaying an arrow board shall be equipped with high-intensity rotating, flashing, oscillating, or strobe lights.

5.d) The flashing arrow mode shall be used for lane closure (merge) tapers.

5.e) The flashing arrow mode shall not be used for temporary alternating one-way traffic operations or to laterally shift lanes of traffic.

5.f) The flashing double arrow mode shall only be used for closing a center lane on a multilane roadway where adjacent left and right lanes remain open.

5.g) For shoulder work or roadside work near the shoulder, the Arrow Board shall be positioned in the shoulder and the flashing alternating diamond mode should be used.

5.h) The flashing alternating diamond caution mode should also be used when supplemental Arrow Boards are positioned in an already closed lane.

6. Use of Truck-Mounted or Trailer-Mounted Impact Attenuators (TMAs)

6.a) On limited access roadways, lane closures shall use a minimum of two TMAs to install and remove traffic control patterns. If two TMAs are not available, then the pattern shall not be installed.

6.b) On non-limited access roadways, the use of TMAs to install and remove patterns closing a lane(s) is optional. The roadway geometry, sight line distance, and traffic volume shall be considered in the decision to utilize the TMAs.

6.c) On limited access roadways, one TMA shall be placed on the shoulder and the second TMA shall be approximately 1,000 feet ahead blocking the lane to establish the advance and transition signing. The Arrow Board mounted on the TMA shall be in the arrow mode when taking the lane. The sign truck and workers shall be at sufficient distance ahead of the second TMA. In no case shall the TMA be used as the sign truck or a work truck. Once the transition is in place, the TMAs shall travel in the closed lane until all Portable Changeable Message Signs, signs, Arrow Boards, and cones/drums are installed. The Arrow Board mounted on the TMA should be in the flashing alternating diamond caution mode when traveling in the closed lane.

6.d) A TMA shall be placed prior to the first work area in the pattern. If there are multiple work areas within the same pattern, then additional TMAs shall be positioned at each additional work area as needed. The Arrow Board mounted on the TMA should be in the flashing alternating diamond caution mode when in the closed lane.

6.e) TMAs shall be positioned a sufficient distance prior to the workers or equipment being protected to allow for appropriate vehicle roll-ahead in the event that the TMA is hit, but not so far that an errant vehicle could travel around the TMA and into the work area. For additional placement and use details, refer to Section 18.06. Some operations, such as paving and concrete repairs, do not allow for placement of the TMA(s) within the specified distances. In these situations, the TMA(s) shall be placed at the beginning of the work area and shall be advanced as the paving or concrete operations proceed.

6.f) TMAs will be paid for in accordance with how the unit is used. If it is used as a TMA and is in the proper location as specified, then it will be paid for at the specified hourly rate for Truck-Mounted or Trailer-Mounted Impact Attenuator. When the TMA is used

as an Arrow Board, it will be paid for at the daily rate for Arrow Board. If a TMA is used to install and remove a pattern and is also used as an Arrow Board in the same day, then the unit will be paid for as a Truck-Mounted or Trailer-Mounted Impact Attenuator for the hours used to install and remove the pattern, typically 2 hours (1 hour to install and 1 hour to remove). If the TMA is also used as an Arrow Board during the same day, then the unit will only be paid for at the daily rate as an Arrow Board.

7. Use of Traffic Drums and Traffic Cones

7.a) On limited-access highways, ramps, and turning roadways:

i. Traffic drums shall be used for taper channelization.
ii. Traffic drums shall be used to delineate raised catch basins and other hazards.
iii. Traffic cones with a minimum height of 42 inches may be used in place of drums in the tangent section of a closed lane or shoulder.
iv. Traffic cones less than 42 inches in height shall not be used.

7.b) On all roadways:

i. Traffic drums shall be used in place of traffic cones in traffic control patterns that are in effect for more than a 36-hour duration.
ii. Traffic cones shall not be left unattended.
iii. Traffic cones with a minimum height of 42 inches shall be used when the posted speed limit is 45 MPH or above.

7.c) Typical spacing of traffic drums and/or cones shown on the Construction Traffic Control Plans in the Contract are maximum spacings and may be reduced to meet actual field conditions as required.

8. Use of Barricade Warning Lights

8.a) Barricade Warning Lights may be installed on channelizing devices when used in a merge taper. The Barricade Warning Lights shall flash in a sequential pattern when used in a merge taper. The successive flashing shall occur from the upstream end (beginning) of the merge taper to the downstream end (end) of the merge taper.

8.b) Type C Barricade Warning Lights may be used at night to delineate the edge of the travel way.

8.c) Type B Barricade Warning Lights shall be used on post-mounted advanced warning signs.

9. Use of Portable Changeable Message Signs (PCMS)

9.a) On limited access roadways, one PCMS shall be used in advance of the traffic control pattern for all lane closures. Prior to installing the pattern, the PCMS shall be installed and in operation, displaying the appropriate lane closure information. The PCMS shall

be positioned ½ to 1 mile ahead of the start of the lane closure taper. If the distance to the nearest exit ramp is greater than the specified ½ to 1 mile distance, then an additional PCMS shall be positioned a sufficient distance ahead of the exit ramp (and before the previous on-ramp where practical) to alert motorists to the work and therefore offer them an opportunity to take the exit.

9.b) On non-limited access roadways, the use of PCMS for lane closures is optional. The roadway geometry, sight line distance, and traffic volume shall be considered in the decision to use the PCMS.

9.c) PCMS should be placed off the shoulder of the roadway and behind a traffic barrier, if practical. Where a traffic barrier is not available to shield the PCMS, it should be placed off the shoulder and outside of the clear zone. If a PCMS has to be placed on the shoulder of the roadway or within the clear zone, it should be placed on the paved shoulder with a minimum of five traffic drums placed in a taper in front of it to delineate its position. The taper shall meet minimum distance requirements for a shoulder closure. The PCMS shall be protected if it is used for a continuous duration of 36 hours or more.

9.d) The PCMS shall be removed from the clear zone and have the display screen cleared and turned 90 degrees away from the roadway when the PCMS is no longer required.

9.e) The PCMS should not be used within 1,000 feet of an existing PCMS or Variable Message Sign (VMS).

9.f) A PCMS message shall:

i. consist of no more than two phases;
ii. contain no more than three lines of text per phase;
iii. have no more than eight characters per line, including spaces.

9.g) The PCMS should be used for specific situations that need to command the motorist's attention which cannot be conveyed with standard construction signs. The PCMS should not be used for generic messages (ex.: Road Work Ahead, Bump Ahead, Gravel Road, etc.) or for messages that need to be displayed for long periods of time, such as during stage construction. These types of messages should be displayed with construction signs. Special signs shall be coordinated with the Office of Construction and the Division of Traffic Engineering for the proper layout/dimensions required.

9.h) Typical messages that are allowed on the PCMS are shown below. Approval must be received from the Office of Construction for any message(s) different than the typical messages shown in Figure 1.

9.i) All messages shall comply with the information provided in Tables 2 and 3.

Message No.	Phase 1	Phase 2
1	LEFT LANE CLOSED	MERGE RIGHT
2	2 LEFT LANES CLOSED	MERGE RIGHT
3	LEFT LANE CLOSED	REDUCE SPEED
4	2 LEFT LANES CLOSED	REDUCE SPEED
5	RIGHT LANE CLOSED	MERGE LEFT
6	2 RIGHT LANES CLOSED	MERGE LEFT
7	RIGHT LANE CLOSED	REDUCE SPEED
8	2 RIGHT LANES CLOSED	REDUCE SPEED
9	LANES CLOSED AHEAD	REDUCE SPEED
10	LANES CLOSED AHEAD	USE CAUTION
11	EXIT XX CLOSED	USE EXIT YY
12	EXIT XX CLOSED USE YY	FOLLOW DETOUR
13	2 LANES SHIFT AHEAD	USE CAUTION
14	3 LANES SHIFT AHEAD	USE CAUTION

Figure 1: Typical PCMS Messages

Table 2: Acceptable Abbreviations

Word Message	Standard Abbreviation	Word Message	Standard Abbreviation
Access	ACCS	Minimum	MIN
Afternoon / Evening	PM	Minor	MNR
Ahead	AHD	Minute(s)	MIN
Alternate	ALT	Monday	MON
Avenue	AVE, AV	Morning / Late Night	AM
Bicycle	BIKE	Mount	MT
Blocked	BLKD	Mountain	MTN
Boulevard	BLVD	National	NATL
Bridge	BR	Normal	NORM
CB Radio	CB	North	N
Center	CTR	Northbound	NBND
Center	CNTR	Oversized	OVRSZ
Chemical	CHEM	Parking	PKING
Circle	CIR	Parkway	PKWY
Compressed Natural Gas	CNG	Pavement	PVMT
Condition	COND	Pedestrian	PED
Congested	CONG	Place	PL
Construction	CONST	Pounds	LBS
Court	CT	Prepare	PREP
Crossing	XING	Quality	QLTY
Crossing (other than highway-rail)	XING	Right	RT
Downtown	DWNTN	Road	RD
Drive	DR	Roadwork	RDWK
East	E	Route	RT, RTE
Eastbound	EBND	Saint	ST
Electric Vehicle	EV	Saturday	SAT
Emergency	EMER	Service	SERV
Entrance, Enter	ENT	Shoulder	SHLDR
Exit	EX	Slippery	SLIP
Express	EXP	South	S
Expressway	EXPWY	Southbound	SBND
Feet	FT	Speed	SPD
Freeway	FRWY, FWY	State, county, or other non-US or non-Interstate numbered route	[Route Abbreviation determined by highway agency]**
Friday	FRI	Street	ST
Frontage	FRNTG	Sunday	SUN
Hazardous	HAZ	Telephone	PHONE
Hazardous Material	HAZMAT	Temporary	TEMP
High Occupancy Vehicle	HOV	Terrace	TER
Highway	HWY	Thruway	THWY
Highway-Rail Grade Crossing	RR XING	Thursday	THURS

Hospital	HOSP	Tons of Weight	T
Hour(s)	HR, HRS	Traffic	TRAF
Information	INFO	Trail	TR
International	INTL	Travelers	TRVLRS
Interstate	I-	Tuesday	TUES
Junction / Intersection	JCT	Turnpike	TPK
Lane	LN	Two-Way Intersection	2-WAY
Left	LFT	Two-Wheeled Vehicles	CYCLES
Liquid Propane Gas	LP-GAS	Upper	UPR
Local	LOC	US Numbered Route	US
Lower	LWR	Vehicle(s)	VEH, VEHS
Maintenance	MAINT	Warning	WARN
Major	MAJ	Wednesday	WED
Maximum	MAX	West	W
Mile(s)	MI	Westbound	WBND
Miles Per Hour	MPH		

** A space and no dash shall be placed between the abbreviation and the number of the route.

Table 3: Unacceptable Abbreviations

Unacceptable Abbreviation	Intended Word	Common Misinterpretation
ACC	Accident	Access (Road)
CLRS	Clears	Colors
DLY	Delay	Daily
FDR	Feeder	Federal
L	Left	Lane (Merge)
LT	Light (Traffic)	Left
PARK	Parking	Park
POLL	Pollution (Index)	Poll
RED	Reduce	Red
STAD	Stadium	Standard
WRNG	Warning	Wrong

10. Use of State Police Officers

10.a) State Police may be used only on limited access highways and secondary roadways that are under their primary jurisdiction. A minimum of one Officer may be used per critical sign pattern; however, a State Police presence is not required. Shoulder closures and right lane closures can generally be implemented without the presence of a State Police Officer. Left lane closures may also be implemented without State Police presence in areas with only moderate traffic and wide, unobstructed medians. It may be desirable to have a State Police presence, when available, under specific situations, such as nighttime lane closures; left lane closures with minimal width for setting up advance signs and staging; lane and shoulder closures on turning roadways/ramps or mainline where sight distance is minimal; and closures where extensive turning movements or traffic congestion regularly occur; however, they are not required.

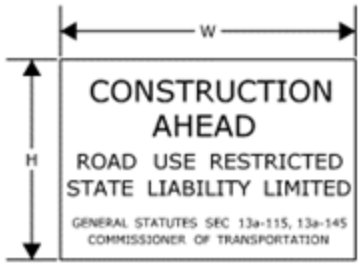
10.b) If a State Police presence is provided, once the pattern is in place, the State Police Officer should be positioned in a non- hazardous location in advance of the pattern to provide advance warning to the motorist. If traffic backs up beyond the beginning of the pattern, then the State Police Officer shall reposition so that they are located prior to the backup. The State Police Officer should not be located immediately behind or within the roll ahead area of any TMA or within the work zone buffer area. The State Police Officer shall not be positioned in such a way that the State Police Officer obstructs any construction warning signs or PCMS from view of the motorist.

10.c) Other functions of the State Police Officer(s) may include:

i. Assisting construction vehicles entering and exiting the work area.
ii. Enforcement of motor vehicle laws within the work area, if specifically requested by the Engineer.

10.d) State Police Officers assigned to a work site shall take direction from the Engineer.

SERIES 16 SIGNS



		W H
16-E	80-1605	84" x 60"
16-H	80-1608	60" x 42"
16-M	80-1613	30" x 24"



		W H
16-S	80-1619	48" x 30"

SIGN 16-S SHALL BE USED ON ALL PROJECTS THAT REQUIRE SIDEWALK RECONSTRUCTION OR RESTRICT PEDESTRIAN TRAVEL ON AN EXISTING SIDEWALK.

SERIES 16 SIGNS SHALL BE INSTALLED IN ADVANCE OF THE TRAFFIC CONTROL PATTERNS. SERIES 16 SIGNS SHOULD BE LOCATED TO ALLOW MOTORISTS THE OPPORTUNITY TO AVOID A WORK ZONE. SERIES 16 SIGNS SHOULD BE INSTALLED ON MAJOR INTERSECTING ROADWAYS THAT APPROACH THE WORK ZONE. ON LIMITED-ACCESS HIGHWAYS, THESE SIGNS SHOULD BE LOCATED IN ADVANCE OF THE NEAREST UPSTREAM EXIT RAMP AND ON ANY ENTRANCE RAMPS PRIOR TO OR WITHIN THE WORK ZONE LIMITS.

SIGNS 16-E AND 16-H SHALL BE POST-MOUNTED.

SIGN 16-E SHALL BE USED ON ALL FREEWAYS AND EXPRESSWAYS.

SIGN 16-H SHALL BE USED ON ALL RAMPS, OTHER STATE ROADWAYS AND MAJOR TOWN/CITY ROADWAYS.

SIGN 16-M SHALL BE USED ON OTHER TOWN ROADWAYS.

CONSTRUCTION TRAFFIC CONTROL PLAN
SERIES 16 SIGNS

SCALE: NONE

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

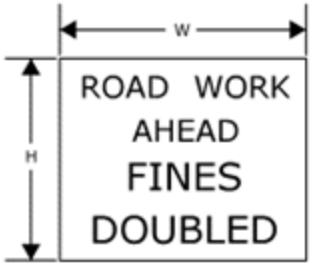
APPROVED Tracy L. Fogarty, P.E. 2013.10.09 16:30:32-04'00'
PRINCIPAL ENGINEER

REGULATORY SIGN "ROAD WORK AHEAD, FINES DOUBLED"

THE REGULATORY SIGN "ROAD WORK AHEAD FINES DOUBLED" SHALL BE INSTALLED FOR ALL WORK ZONES THAT OCCUR ON ANY STATE HIGHWAY AND MUNICIPAL ROAD IN CONNECTICUT WHERE THERE ARE WORKERS PRESENT ON THE HIGHWAY.

THE "ROAD WORK AHEAD FINES DOUBLED" REGULATORY SIGN SHALL BE PLACED AFTER THE SERIES 16 SIGN AND IN ADVANCE OF THE "ROAD WORK AHEAD" SIGN.

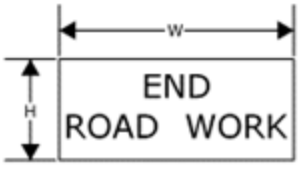
	W	H
31-1906	48"	42"
31-1907	60"	54"



"END ROAD WORK" SIGN

THE LAST SIGN IN THE PATTERN SHALL BE THE "END ROAD WORK" SIGN.

	W	H
80-9606	36"	18"
80-9612	48"	24"



CONSTRUCTION TRAFFIC CONTROL PLAN

ROAD WORK AHEAD SIGNS

SCALE: NONE

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED

Tracy L. Fogarty P.E.
2019.09.12 15:54:44-04'00'

PRINCIPAL ENGINEER

NOTES FOR TRAFFIC CONTROL PLANS

1. IF A TRAFFIC STOPPAGE OCCURS IN ADVANCE OF SIGN (A), THEN AN ADDITIONAL SIGN (A) SHALL BE INSTALLED IN ADVANCE OF THE STOPPAGE.

2. SIGNS (AA), (A), AND (D) SHOULD BE OMITTED WHEN THESE SIGNS HAVE ALREADY BEEN INSTALLED IN ADVANCE TO DESIGNATE A LARGER WORK ZONE THAN THE WORK ZONE THAT IS ENCOMPASSED ON THIS PLAN.

3. SEE TABLE 1 FOR ADJUSTMENT OF TAPERS IF NECESSARY.

4. TRAFFIC CONES AND PORTABLE CONSTRUCTION SIGNS SHALL NOT BE LEFT UNATTENDED.

5. ALL CONFLICTING SIGNS WITHIN THE LIMITS OF A ROADWAY / LANE CLOSURE AREA SHALL BE COVERED WITH AN OPAQUE MATERIAL WHILE THE CLOSURE IS IN EFFECT, AND UNCOVERED WHEN THE ROADWAY / LANE CLOSURE IS RE-OPENED TO ALL LANES OF TRAFFIC.

6. IF THIS PLAN REMAINS IN CONTINUOUS OPERATION FOR MORE THAN 48 HOURS, THEN ANY EXISTING CONFLICTING PAVEMENT MARKINGS SHALL BE ERADICATED OR COVERED, AND TEMPORARY PAVEMENT MARKINGS THAT DELINEATE THE PROPER TRAVELPATHS SHALL BE INSTALLED.

7. DISTANCES BETWEEN SIGNS IN THE ADVANCE WARNING AREA MAY BE REDUCED TO 100' ON LOW-SPEED URBAN ROADS (SPEED LIMIT ⩽ 40 MPH).

8. IF THIS PLAN IS TO REMAIN IN OPERATION FROM SUNSET TO SUNRISE, INSTALL BARRICADE WARNING LIGHTS - HIGH INTENSITY ON ALL POST-MOUNTED DIAMOND SIGNS IN THE ADVANCE WARNING AREA.

9. A PORTABLE CHANGEABLE MESSAGE SIGN SHALL BE INSTALLED ONE HALF MILE TO ONE MILE IN ADVANCE OF THE LANE CLOSURE TAPER.

10 SIGN (P) SHALL BE MOUNTED A MINIMUM OF 7 FEET FROM THE PAVEMENT SURFACE TO THE BOTTOM OF THE SIGN.

TABLE 1 - MINIMUM TAPER LENGTHS

POSTED SPEED LIMIT (MILES PER HOUR)	MINIMUM TAPER LENGTH FOR A SINGLE LANE CLOSURE
30 OR LESS	180'
35	245'
40	320'
45	540'
50	600'
55	660'
65	780'

CONSTRUCTION TRAFFIC CONTROL PLAN

NOTES

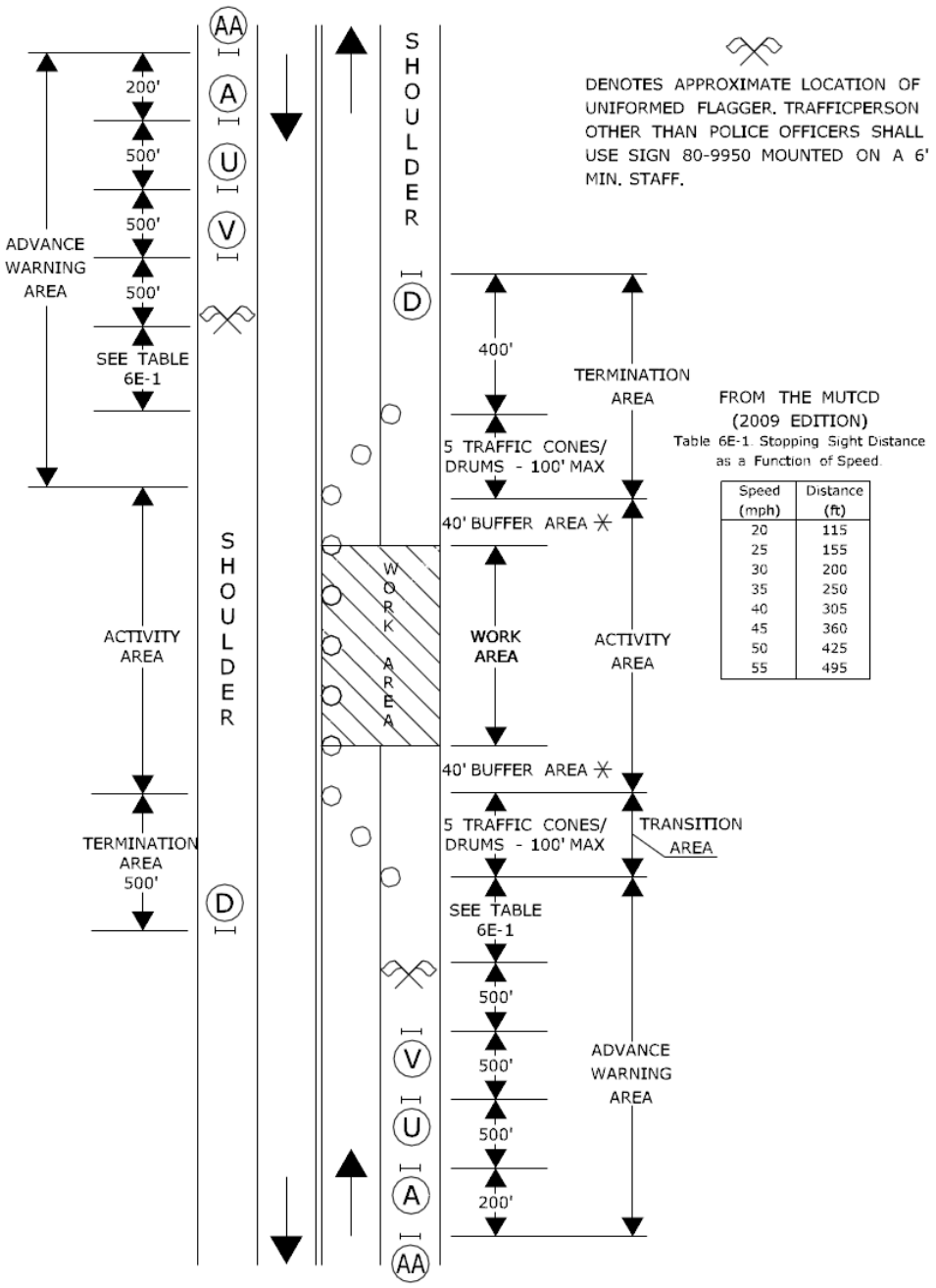
SCALE: NONE

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Tracy L. Fogarty, P.E. 2019.09.13 08:47:47-04'00'

PRINCIPAL ENGINEER

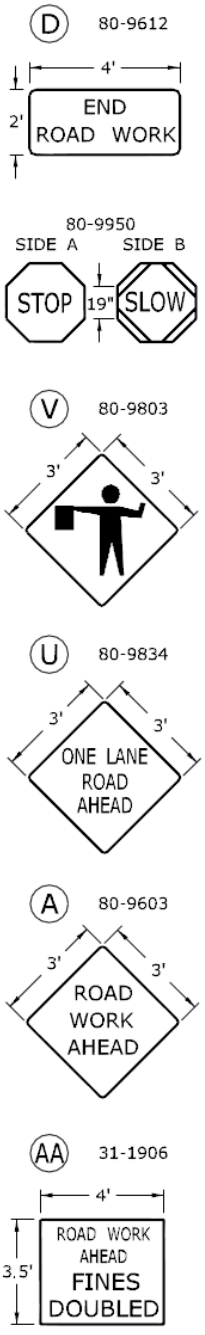
WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
ALTERNATING ONE-WAY TRAFFIC OPERATIONS



FROM THE MUTCD (2009 EDITION)
Table 6E-1 Stopping Sight Distance as a Function of Speed

Speed (mph)	Distance (ft)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495

SIGN FACE
108 SQ. FT (MIN.)



○ TRAFFIC CONE **OR** TRAFFIC DRUM
✳ OPTIONAL ⊗ TRAFFIC DRUM ⊢ PORTABLE SIGN SUPPORT
⇐ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

PLAN 13 - SHEET 1 OF 2

SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

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WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
ALTERNATING ONE-WAY TRAFFIC OPERATIONS

SIGN FACE
108 SQ. FT (MIN.)

HAND SIGNAL METHODS TO BE USED BY UNIFORMED FLAGGERS

THE FOLLOWING METHODS FROM SECTION 6E.07, FLAGGER PROCEDURES, IN THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES," SHALL BE USED BY UNIFORMED FLAGGERS WHEN DIRECTING TRAFFIC THROUGH A WORK AREA. THE STOP/SLOW SIGN PADDLE (SIGN NO. 80-9950) SHOWN ON THE TRAFFIC STANDARD SHEET TR-1220 01 ENTITLED, "SIGNS FOR CONSTRUCTION AND PERMIT OPERATIONS" SHALL BE USED.

A. TO STOP TRAFFIC

TO STOP ROAD USERS, THE FLAGGER SHALL FACE ROAD USERS AND AIM THE STOP PADDLE FACE TOWARD ROAD USERS IN A STATIONARY POSITION WITH THE ARM EXTENDED HORIZONTALLY AWAY FROM THE BODY. THE FREE ARM SHALL BE HELD WITH THE PALM OF THE HAND ABOVE SHOULDER LEVEL TOWARD APPROACHING TRAFFIC.



B. TO DIRECT TRAFFIC TO PROCEED

TO DIRECT STOPPED ROAD USERS TO PROCEED, THE FLAGGER SHALL FACE ROAD USERS WITH THE SLOW PADDLE FACE AIMED TOWARD ROAD USERS IN A STATIONARY POSITION WITH THE ARM EXTENDED HORIZONTALLY AWAY FROM THE BODY. THE FLAGGER SHALL MOTION WITH THE FREE HAND FOR ROAD USERS TO PROCEED.



C. TO ALERT OR SLOW TRAFFIC

TO ALERT OR SLOW TRAFFIC, THE FLAGGER SHALL FACE ROAD USERS WITH THE SLOW PADDLE FACE AIMED TOWARD ROAD USERS IN A STATIONARY POSITION WITH THE ARM EXTENDED HORIZONTALLY AWAY FROM THE BODY. TO FURTHER ALERT OR SLOW TRAFFIC, THE FLAGGER HOLDING THE SLOW PADDLE FACE TOWARD ROAD USERS MAY MOTION UP AND DOWN WITH THE FREE HAND, PALM DOWN.



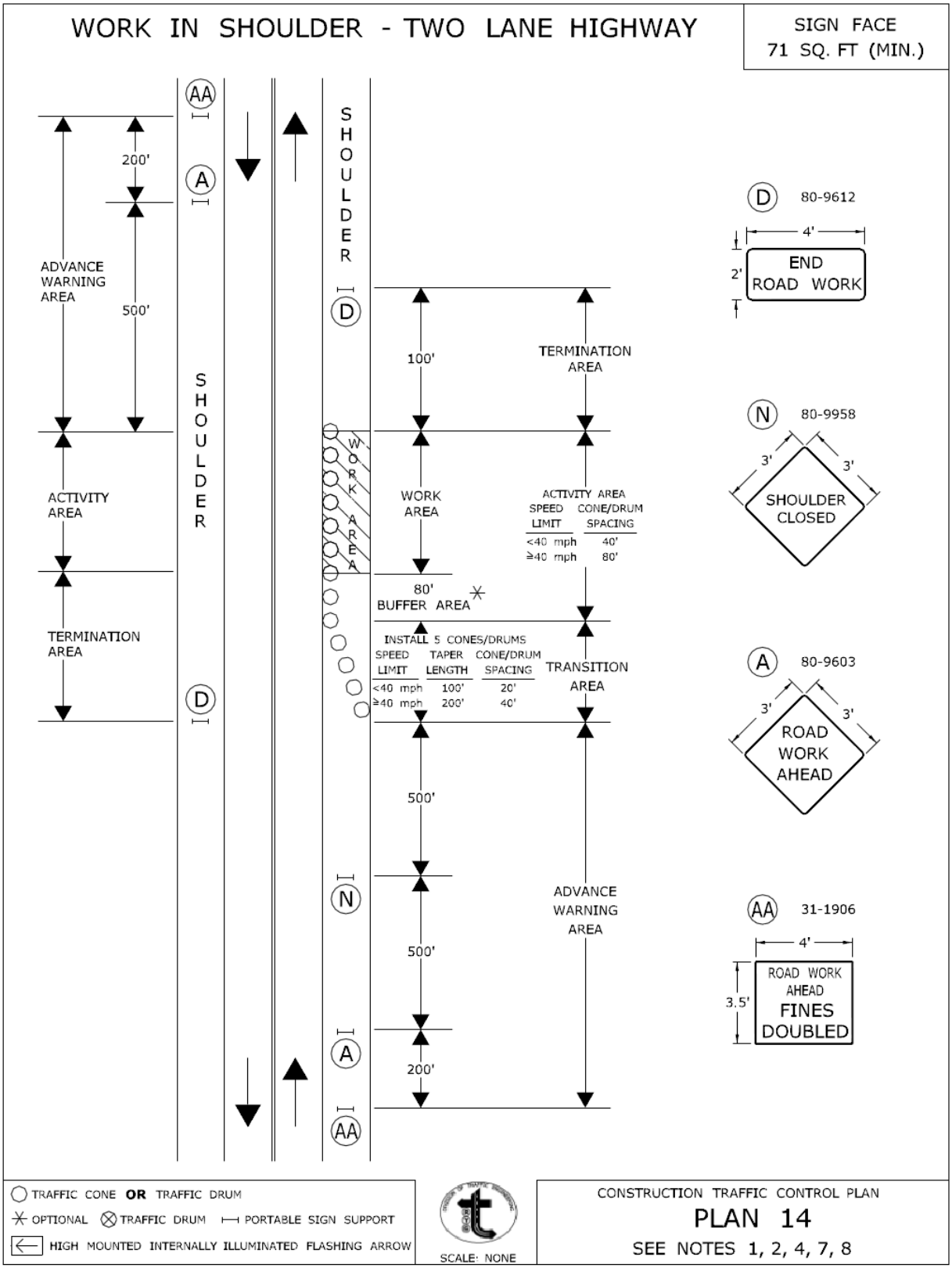
◯ TRAFFIC CONE **OR** TRAFFIC DRUM
✳ OPTIONAL ⊗ TRAFFIC DRUM ⊢⊣ PORTABLE SIGN SUPPORT
⟵ HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

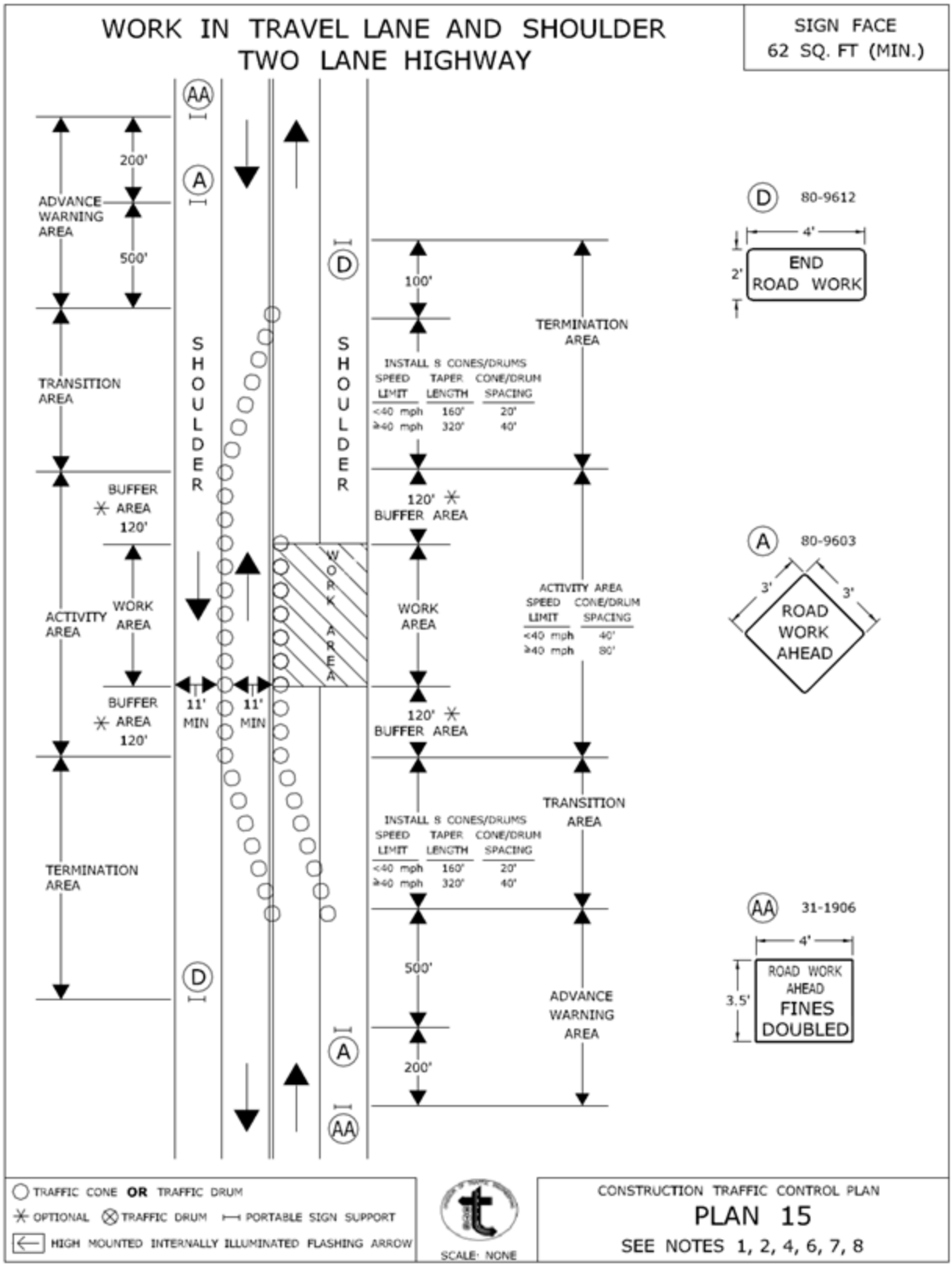
SCALE: NONE

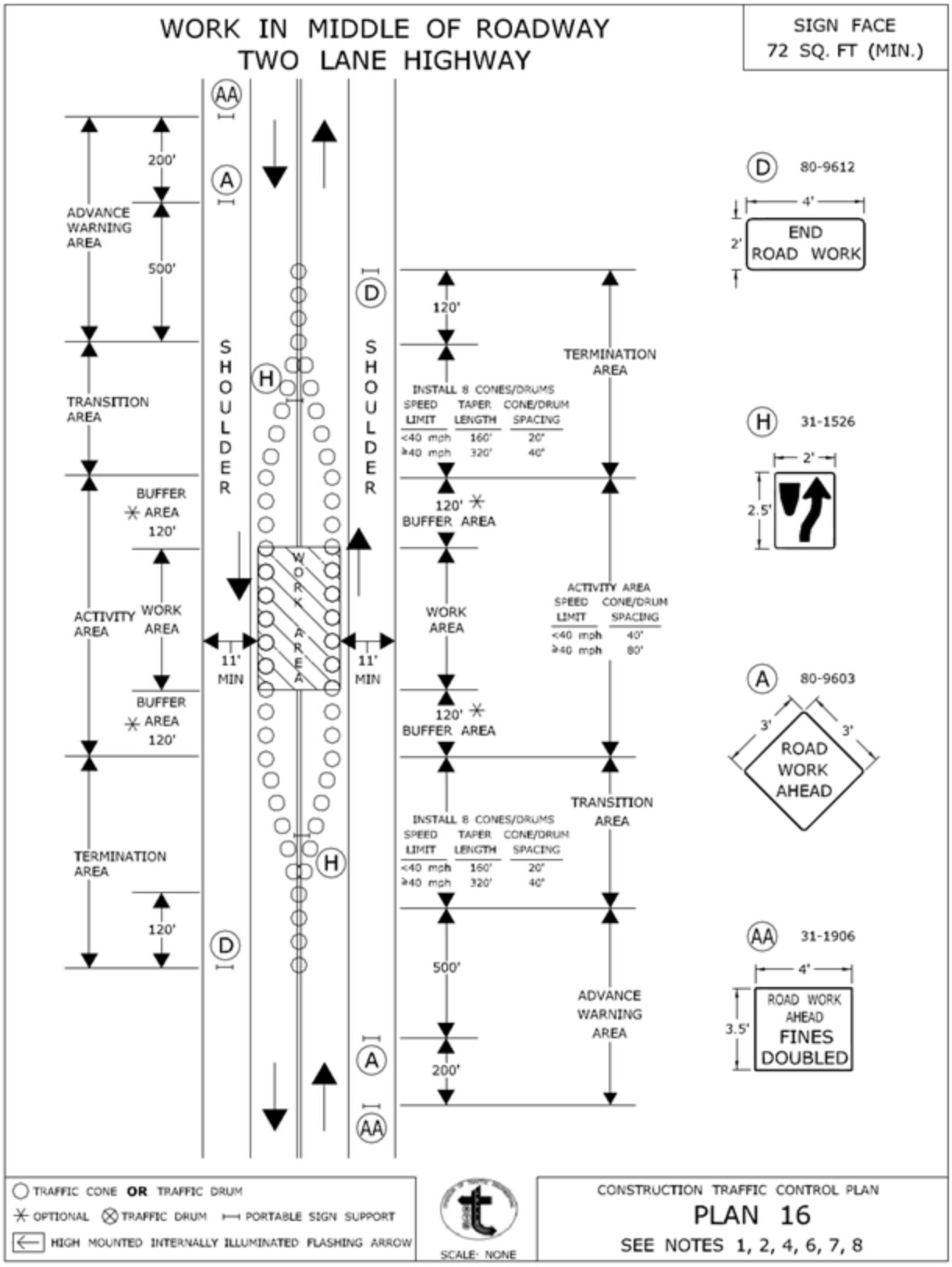
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 13 - SHEET 2 OF 2
SEE NOTES 1, 2, 4, 6, 7, 8

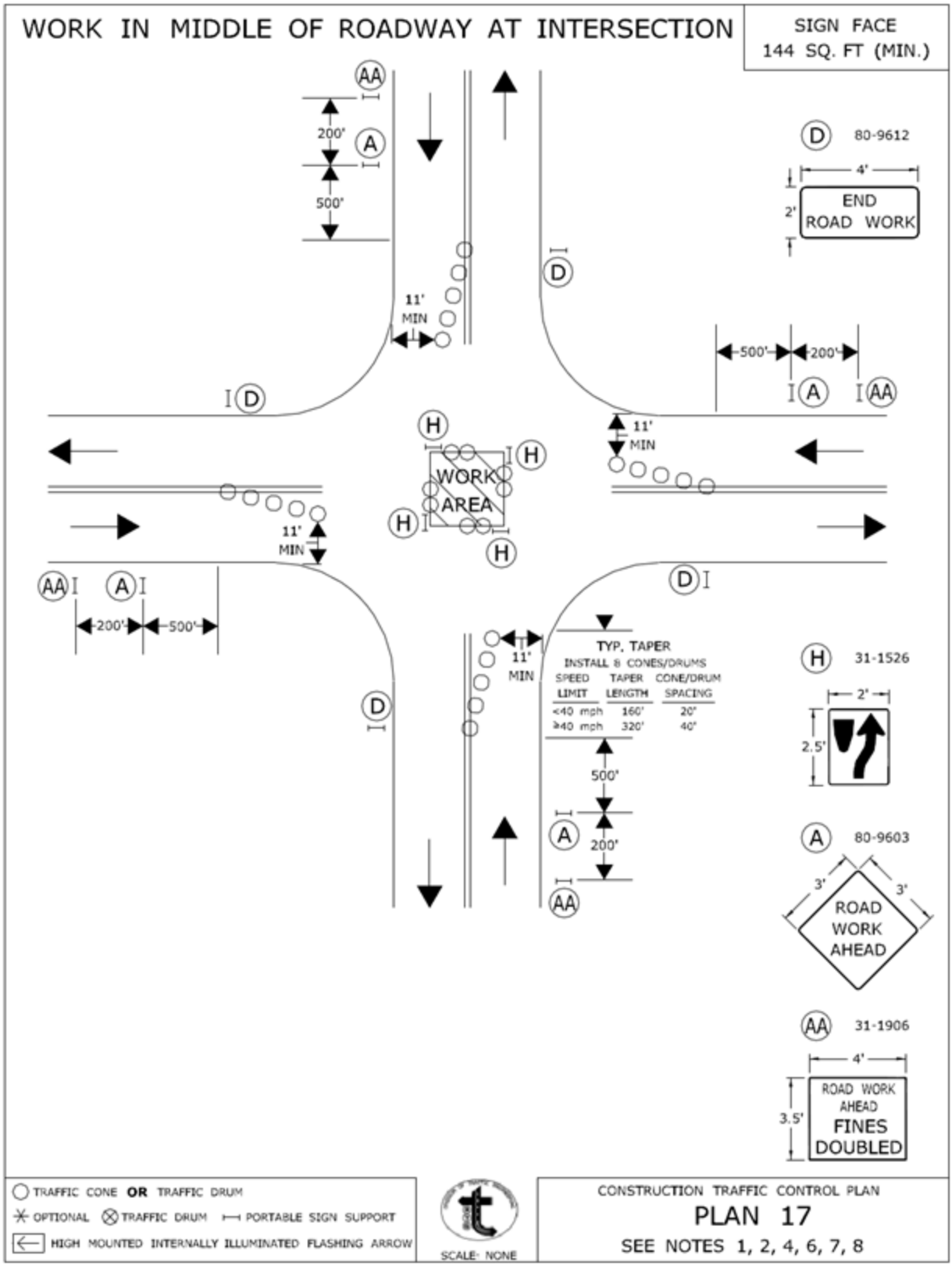
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PRINCIPAL ENGINEER


WORK IN SHOULDER - TWO LANE HIGHWAY
SIGN FACE
71 SQ. FT (MIN.)
AA
A
D
N
200'
500'
ADVANCE WARNING AREA
ACTIVITY AREA
TERMINATION AREA
SHOULDER
SHOULDER
WORK AREA
100'
TERMINATION AREA
WORK AREA
ACTIVITY AREA
SPEED LIMIT
CONE/DRUM SPACING
<40 mph 40'
≥40 mph 80'
80' BUFFER AREA
INSTALL 5 CONES/DRUMS
SPEED LIMIT
TAPER LENGTH
CONE/DRUM SPACING
<40 mph 100' 20'
≥40 mph 200' 40'
TRANSITION AREA
500'
500'
200'
ADVANCE WARNING AREA
D 80-9612
4'
2'
END ROAD WORK
N 80-9958
3'
3'
SHOULDER CLOSED
A 80-9603
3'
3'
ROAD WORK AHEAD
AA 31-1906
4'
3.5'
ROAD WORK AHEAD
FINES DOUBLED
TRAFFIC CONE OR TRAFFIC DRUM
OPTIONAL
TRAFFIC DRUM
PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
SCALE: NONE
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 14
SEE NOTES 1, 2, 4, 7, 8
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION
APPROVED
Charles S. Harlow
2012.06.05 15:56:09-04'00'
PRINCIPAL ENGINEER


WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
SIGN FACE
62 SQ. FT (MIN.)
AA
A
D
200'
500'
ADVANCE WARNING AREA
TRANSITION AREA
BUFFER AREA 120'
ACTIVITY AREA
WORK AREA
BUFFER AREA 120'
TERMINATION AREA
SHOULDER
SHOULDER
11' MIN
11' MIN
WORK AREA
100'
TERMINATION AREA
INSTALL S CONES/DRUMS
SPEED LIMIT | TAPER LENGTH | CONE/DRUM SPACING
<40 mph | 160' | 20'
≥40 mph | 320' | 40'
120' BUFFER AREA
WORK AREA
ACTIVITY AREA
SPEED LIMIT | CONE/DRUM SPACING
<40 mph | 40'
≥40 mph | 80'
120' BUFFER AREA
TRANSITION AREA
INSTALL S CONES/DRUMS
SPEED LIMIT | TAPER LENGTH | CONE/DRUM SPACING
<40 mph | 160' | 20'
≥40 mph | 320' | 40'
500'
ADVANCE WARNING AREA
200'
D 80-9612
4'
2'
END ROAD WORK
A 80-9603
3'
3'
ROAD WORK AHEAD
AA 31-1906
4'
3.5'
ROAD WORK AHEAD
FINES DOUBLED
TRAFFIC CONE OR TRAFFIC DRUM
OPTIONAL
TRAFFIC DRUM
PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
SCALE: NONE
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 15
SEE NOTES 1, 2, 4, 6, 7, 8
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION
APPROVED
PRINCIPAL ENGINEER
Charles S. Harlow
2012.06.05 15:56:29-04'00'


WORK IN MIDDLE OF ROADWAY
TWO LANE HIGHWAY
SIGN FACE
72 SQ. FT (MIN.)
ADVANCE WARNING AREA
200'
500'
TRANSITION AREA
BUFFER AREA
120'
ACTIVITY AREA
WORK AREA
BUFFER AREA
120'
TERMINATION AREA
120'
SHOULDER
SHOULDER
11' MIN
11' MIN
WORK AREA
120'
TERMINATION AREA
INSTALL 8 CONES/DRUMS
SPEED LIMIT | TAPER LENGTH | CONE/DRUM SPACING
<40 mph | 160' | 20'
≥40 mph | 320' | 40'
120' BUFFER AREA
WORK AREA
ACTIVITY AREA
SPEED LIMIT | CONE/DRUM SPACING
<40 mph | 40'
≥40 mph | 80'
120' BUFFER AREA
TRANSITION AREA
INSTALL 8 CONES/DRUMS
SPEED LIMIT | TAPER LENGTH | CONE/DRUM SPACING
<40 mph | 160' | 20'
≥40 mph | 320' | 40'
500'
ADVANCE WARNING AREA
200'
D 80-9612
4'
2'
END ROAD WORK
H 31-1526
2'
2.5'
A 80-9603
3'
3'
ROAD WORK AHEAD
AA 31-1906
4'
3.5'
ROAD WORK AHEAD
FINES DOUBLED
TRAFFIC CONE OR TRAFFIC DRUM
OPTIONAL
TRAFFIC DRUM
PORTABLE SIGN SUPPORT
HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW
SCALE: NONE
CONSTRUCTION TRAFFIC CONTROL PLAN
PLAN 16
SEE NOTES 1, 2, 4, 6, 7, 8
CONNECTICUT DEPARTMENT OF TRANSPORTATION
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APPROVED
PRINCIPAL ENGINEER
Charles S. Harlow
2012.06.05 15:56:51-04'00'



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PRINCIPAL ENGINEER

Article 9.71.05 – Basis of Payment *is supplemented by the following:*

The temporary relocation of signs and supports, and the furnishing, installation and removal of any temporary supports shall be paid for under the item "Maintenance and Protection of Traffic". Temporary overhead sign supports and foundations shall be paid for under the appropriate item(s).

The cost of furnishing, installing, and removing the material for the 4H:1V traversable slope shall be paid for under the item "Maintenance and Protection of Traffic".

ITEM #1208937A – SIGN FACE - SHEET ALUMINUM (TYPE XI RETROREFLECTIVE SHEETING)

Section 12.08 is supplemented and amended as follows:

12.08.01—Description:

Add the following:

All signs shall use Type XI retroreflective sheeting with the exception of side-mounted signs with white background which shall be Type IX.

This item shall also include field testing of metal sign base posts as directed by the Engineer.

Signs shall conform to the sign details located at https://portal.ct.gov/DOT/Traffic-Engineering/Catalog-of-Signs with legend for variable signs as shown in the plans.

12.08.03—Construction Methods:

Delete the last sentence and add the following:

Metal sign base posts shall be whole and uncut. Sign base post embedment and reveal lengths shall be as shown on the plans. The Contractor shall drive the metal sign base posts by hand tools, by mechanical means or by auguring holes. If an obstruction is encountered while driving or placing the metal sign base post, the Contractor shall notify the Engineer who will determine whether the obstruction shall be removed, the sign base post or posts relocated, or the base post installation in ledge detail shall apply. Backfill shall be thoroughly tamped after the posts have been set level and plumb.

Field Testing of Metal Sign Posts: When the sign installations are complete, the Contractor shall notify the Engineer the Project is ready for field testing. Based on the number of posts in the Project, the Engineer will select random sign base posts which shall be removed by the Contractor for inspection and measurement by the Engineer. After such inspection is completed at each base post location, the Contractor shall restore or replace such portions of the work to the condition required by the Contract. Refer to the table in 12.08.05 for the number of posts to be field tested.

12.08.04—Method of Measurement:

Add the following:

The work required to expose and measure sign base post length and embedment depth using field testing methods, and restoration of such work, will not be measured for payment and shall be included in the general cost of the work.

12.08.05—Basis of Payment:

Replace the entire Article with the following:

This work will be paid for at the Contract unit price per square foot for "Sign Face - Sheet Aluminum" of the type specified complete in place, adjusted by multiplying by the applicable Pay Factor listed in the table below. The price for this work shall include the completed sign, metal sign post(s), span-mounted sign brackets and mast arm-mounted

brackets, mounting hardware, including reinforcing plates, field testing, restoration and replacement of defective base post(s), and all materials, equipment, and work incidental thereto.

Pay Factor Scale: Work shall be considered defective whenever the base post length or base post embedment depth is less than the specified length by more than 2 inches. If the number of defects results in rejection, the Contractor shall remove and replace all metal sign base posts on the Project, at no cost to the Department.

Number of Posts to be Tested and Pay Factors (Based on Number of Defects)

Number of Posts in Project =>	**51-100**	**101-250**	**251-1000**	**>1000**
Sample Size=>	**5 Posts**	**10 Posts**	**40 Posts**	**60 Posts**
0 Defects	1.0	1.0	1.025	1.025
1 Defect	0.9	0.95	0.975	0.983
2 Defects	Rejection	0.9	0.95	0.967
3 Defects	Rejection	Rejection	0.925	0.95
4 Defects	Rejection	Rejection	0.9	0.933
5 Defects	Rejection	Rejection	Rejection	0.917
6 Defects	Rejection	Rejection	Rejection	0.9
7 or more Defects	Rejection	Rejection	Rejection	Rejection

Note: Projects with 50 or fewer posts will not include field testing

ITEM #1220027A – CONSTRUCTION SIGNS

Section 12.20 *is supplemented and amended as follows:*

Article 12.20.01 – Description:

Add the following:

The Contractor shall also furnish, install, maintain, and remove Bipartisan Infrastructure Law project signs. The Bipartisan Infrastructure Law project signs shall be of the details, colors and materials as shown on the attached detail sheet.

The sign legend for this Project shall include the U.S. Department of Transportation pictograph on the lower right side of the sign with the legend Federal Highway Administration.

Article 12.20.03 — Construction Methods:

Add the following:

The Contractor shall install the Bipartisan Infrastructure Law (BIL) project signs prior to initiating construction.

The Contractor shall install BIL project sign 80-5957 on each major roadway approach to the construction Site in advance of the Project limit(s).
The sign detail is included and is also available at 80-5957.

The Contractor shall maintain the BIL project signs for the entire duration of the Project. The Contractor shall relocate the BIL project signs during construction as needed and shall remove the signs after construction work is completed.

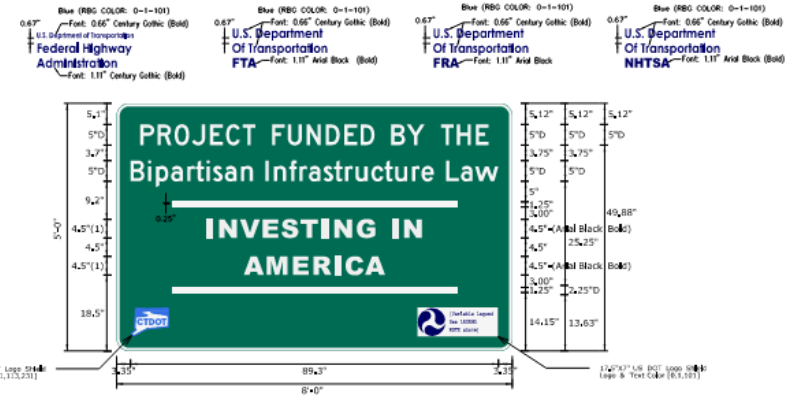
Article 12.20.05 – Basis of Payment:

Add the following:

The price shall also include furnishing, installing, maintaining, relocating, and removing the Bipartisan Infrastructure Law project signs and sign posts and all hardware, materials, and labor incidental thereto.

SIGN DETAIL
1:35

LEGEND NOTE: THE LEGEND NEXT TO THE US DOT LOGO SHALL BE ONE OF THE FOLLOWING BASED ON PROJECT FUNDING SOURCE:



SIGN NUMBER	80-5957
PANEL SIZE	8'-0" x 5'-0"
TOTAL AREA	40.0 Sq.Ft.
MUTCD	N/A
BDR INSET/WIDTH	0" / 0.75"
CORNER RADIUS	3"
BACKGROUND	TYPE: IX
	COLOR: Green
LEGEND/BORDER	TYPE: IX
	COLOR: White/White

* REFER TO CATALOG OF SIGNS FOR SHEETING TYPE.
WHEN COLOR IS BLACK TYPE IS "PLAIN".

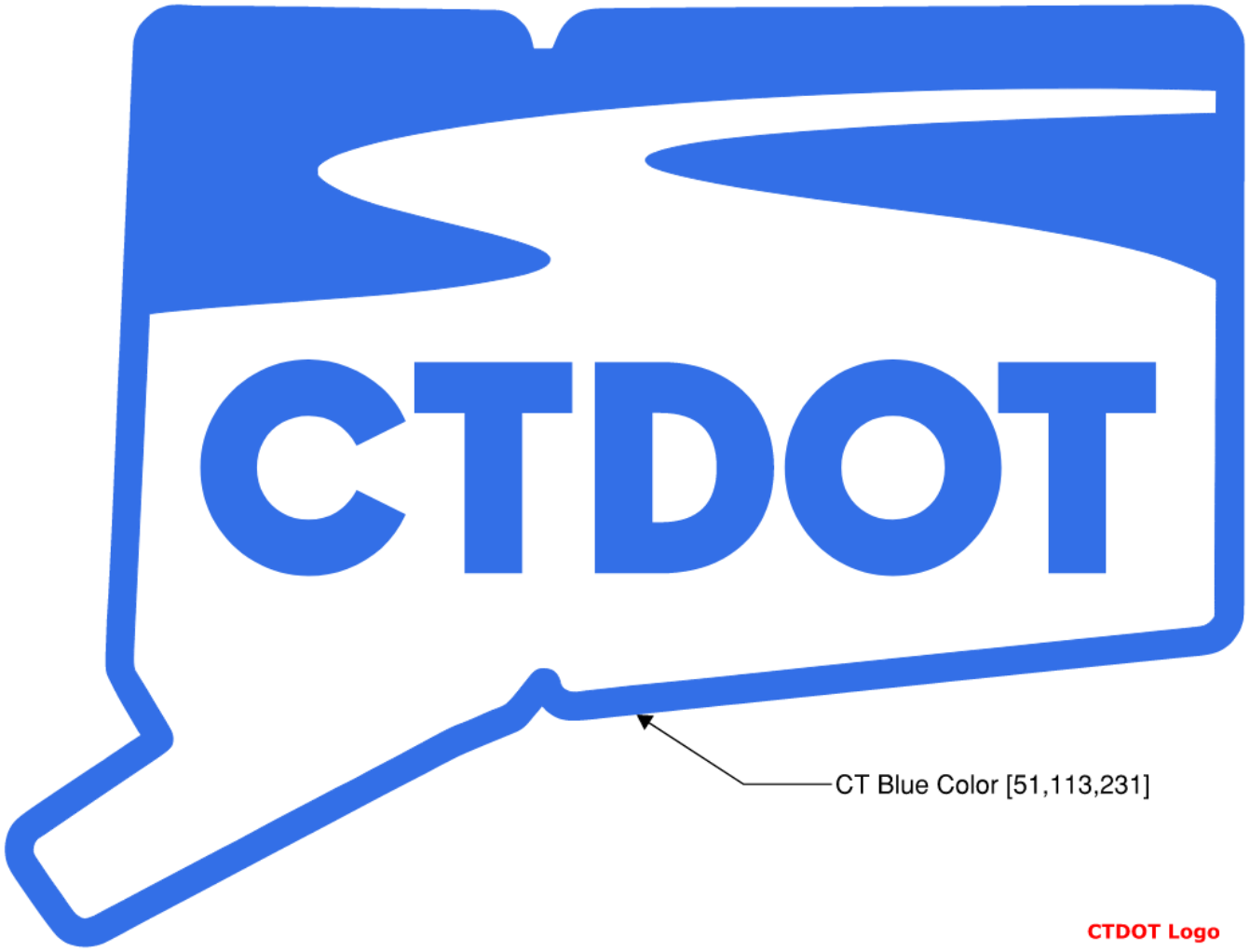
SYMBOL	ROT	X	Y	WID	HT
CT DOT LOGO	0	3.5	3.5	9.21	7
US DOT LOGO	0	75.0	3.5	17.5	7

REV'D 7/24

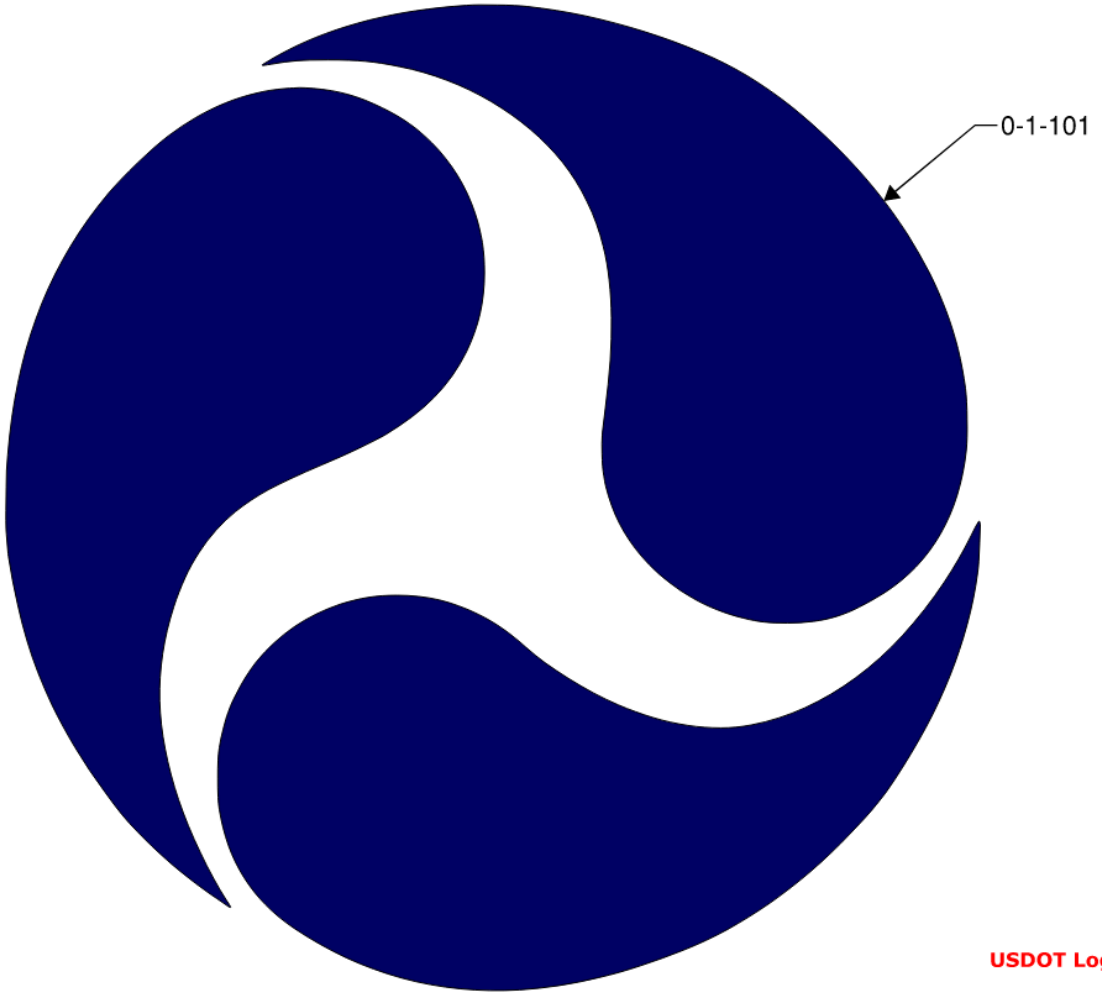
Dimensions are In Inches
Material : 0.125" Thick Sheet Aluminum
Ground Mounted

File name: 80-5957 Printed: 9/13/2024

LETTER POSITIONS (X)																				LENGTH	SERIES/SIZE
P	R	O	J	E	C	T	F	U	N	D	E	D	B	Y	T	H	E				D 2000
5.8	9.9	14.1	18.3	22.7	26.5	30.6	37.7	41.5	46.1	50.7	55.2	59.2	66.6	70.4	78.7	82.6	87.2				84.5	5
B	l	p	a	r	t	l	s	a	n												
3.4	7.6	9.6	13.2	17.1	19.2	21.8	23.4	26.2	30.2												
I	n	f	r	a	s	t	r	u	c	t	u	r	e	L	a	w					D 2000
36.1	38.2	41.8	44.3	46.6	50.2	52.8	55.4	57.9	61.8	65	67.6	71.6	74	79.9	83.5	87				89.3	5/3.8
I	N	V	E	S	T	I	N	G	I	N											Arial Black
22	24.9	29.9	35.4	40	44.7	49.9	52.8	58.2	66.8	69.7										52.1	4.5
A	M	E	R	I	C	A															Arial Black
30.8	36.4	42.8	47.7	52.9	55.5	60.3														34.3	4.5



CTDOT Logo



USDOT Logo

Link to .dgn file: USDOT_logo.dgn

ITEM #1302139A – CUT AND CAP (WATER MAIN)

Description:

Work under this item shall include all materials, labor, tools, and equipment necessary for the cutting and plugging or capping of an abandoned main or a portion of a main.

Work under this section shall include all materials, labor, tools, materials, and equipment necessary for:

- coordination of Call-Before-You-Dig mark out
- excavation for pipeline trenches as measured from the existing grade to the trench subgrade
- backfill and compaction of pipe trenches
- stockpiling, loading, hauling and legally disposing of surplus material
- unloading and storage of pipe, fittings, plugs, caps, and other appurtenances
- removal and restoration of walls, fences, signs and any other structures which must be removed to carry out the work
- care and protection of existing pipes, utilities, and other structures
- piling and storage of excavated materials
- the installation of mechanical joint restraints and hardware
- all other work specified or required for completing the plugging or capping

Materials:

Materials for this section include, but are not limited to, mechanical plugs, caps, coupling sleeves, mechanical joint restraints, wood, and backfill.

All plugs, caps, mechanical joint restraints and hardware shall be provided by the Contractor.

All hardware shall be stainless steel.

Backfill material shall be selected from the material removed from the excavation, subject to approval of the Engineer. If the Engineer deems this material unsuitable for use as backfill, then Contractor shall furnish Borrow material meeting the requirements of ConnDOT Form 819 (2024) Article 2.07.02.

Mechanical plugs, if used, shall be selected from the following list:

A. Sioux Chief - Test Titan - Item No. 882-4 “4 in Mechanical Pipe Plug”

B. Cherne Industries – Model No. 270296 “4 in. Mechanical Pipe Plug”

C. Equivalent products acceptable to the Town of Naugatuck.

Construction Methods:

The Contractor shall excavate to expose the ends of the water mains to be cut and plugged/capped and plug/cap the abandoned water main. The contractor shall excavate the ends of the pipe to ensure a perpendicular cut can be made at the pipe's ends, and plug it with a mechanical plug/cap.

1. Prior to commencement of work under this item, the contractor shall verify the positions of overhead and subsurface utilities.
2. Contractor shall excavate for water main plugging/capping in accordance with the requirements of ConnDOT Form 819 (2024) Article 2.86.03.
3. All materials resulting from water main plugging/capping operations shall become property of the Contractor and shall be lawfully disposed of outside of the contract limits.
4. Contractor shall backfill water main plugging/capping excavations in accordance with the requirements of ConnDOT Form 819 (2024) Article 2.86.03.

Method of Measurement:

Cut and Cap (Water Main) will be measured for payment per each, completed and accepted by CT Water.

Bedding material furnished, installed, and compacted, to the bedding material limits shown on the Typical Trench Detail, will not be measured separately for payment, but shall be included in the cost for cutting and capping the water main.

Rock in Trench, installation of pipe, fittings and appurtenances, including valves, air vent/blowoff assemblies, tees, bends, reducers, sleeves, and adapter couplings will not be measured separately for payment, but shall be included in the cost for the cut and cap.

Removal of Unsuitable Material and Additional Backfill Material will be measured separately for payment under those appropriate Item Numbers.

Basis of Payment:

Cut and Cap (Water Main) will be paid for at the contract unit price per each, completed and accepted by CT Water, including all materials, labor, tools and equipment necessary thereto.

No separate payment will be made for bedding material furnished, installed, and compacted, to the bedding material limits shown on the Typical Trench Detail, but shall be included in the cost for the cut and cap or plug.

No separate payment will be made for Rock in Trench, installation of pipe, fittings and appurtenances, including valves, air vent/blowoff assemblies, tees, bends, reducers, sleeves, and adapter couplings, but shall be included in the cost for the cut and cap or plug.

Removal of Unsuitable Material and Additional Backfill Material will be paid for separately at the contract unit price under those appropriate items.

Pay Item	**Pay Unit**
Cut and Cap (Water Main)	ea.

ITEM #1304066A – REMOVE WATER MAIN

Description:

Work under this item shall consist of the removal of existing water mains as shown on the contract plans.

Method of Measurement:

Work under this section will be measured for payment per linear foot of water main removed and backfilled.

The following will not be measured separately for payment, but shall be included in the linear foot cost of the pipe removal:

- excavating to the depth necessary to remove the pipe
- stockpiling and storing of the excavated material if suitable for backfill
- removal and disposal of the excavated material if deemed unsuitable for backfill
- demolition, loading, hauling and legally disposing of existing water piping
- backfilling with common fill, including native material if suitable for backfill
- compacting in specified lifts
- materials testing, including but not limited to, a Modified Proctor, sieve analysis, and nuclear density compaction testing
- trench bracing, sheeting, and trench boxes
- trench dewatering

Materials testing, including but not limited to, a Modified Proctor, sieve analysis, and nuclear density compaction testing shall not be measured separately for payment.

Additional backfill material, and temporary and permanent pavement, if needed, shall be measured separately for payment under the appropriate items.

Basis of Payment:

Work under this section will be paid for at the contract unit price per linear foot quantity for "Remove Water Main".

Pay Item	Pay Unit
Remove Water Main	l.f.

PERMITS AND/OR REQUIRED PROVISIONS:

The following Permits and/or Required Provisions follow this page and are hereby made part of this Contract.

PERMITS AND/OR PERMIT APPLICATIONS

	Approval/Status
• CTDEEP Inland Wetlands & Watercourses	February 10, 2025
• CTDEEP Pre-Construction Notification – USACE General Permits for CT	October 21, 2024
• USACE 404 Pre-Construction Notification (PCN) – Eng. Form 4345	November 24, 2024

Construction Contracts - Required Contract Provisions (State Funded Only Contracts)

Connecticut Department of Energy and Environmental Protection License*

Inland Wetlands & Watercourses Permit

Licensee(s):	Connecticut Department of Transportation
Licensee Address(s):	2800 Berlin Turnpike Newington, CT 06131-7546
License Number(s):	202407001
Municipality:	Naugatuck
Project Description:	Rehabilitation of Bridge No. 06772 for infrastructure improvement
Project Address/Location:	Route 63 over Straitsville Brook, Naugatuck, CT 06770
Waters:	Straitsville Brook
Authorizing CT Statute(s) and/or Federal Law:	CGS Section 22a-36 to 45
Applicable Regulations of CT State Agencies:	22a-39-1 to 15
Agency Contact:	Land & Water Resources Division, Bureau of Water Protection & Land Reuse, 860-424-3019
License Expiration:	Five (5) years from the date of issuance of this license.
Project Site Plan Set:	*Environmental Permit Plans State Project No. 0087-0148: Rehabilitation of Bridge No. 06772 carrying Route 63 over Straitsville Brook in the Town of Naugatuck, CT,* 7 sheets, dated May 9, 2024, and prepared by the State of Connecticut Department of Transportation.

*Connecticut's Uniform Administrative Procedure Act defines License to include, "*the whole or part of any agency permit, certificate, approval, registration, charter or similar form of permission required by law . . .*"

License Enclosures: LWRD General Conditions; Site Plan Set; LWRD Work Commencement Form; LWRD Compliance Certification Form

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Authorized Activities:

The Licensee is hereby authorized to conduct the following work as described in application # 202407001 and as depicted on any site plan sheets / sets cited herein:

Temporarily and permanently impact 1670 square feet (sf) and 5250 sf of watercourse, respectively, due to the rehabilitation of Bridge No. 06772 which includes:

1. Slip lining the existing 75 ft long, 9 ft wide x 6 ft 5-inch high corrugated steel arch culvert with an 8 ft wide x 5 ft 6 inch height corrugated steel liner and secure with grout between the structures;
2. Regrading 60 linear ft of Straitsville Brook upstream of the culvert inlet by installing a minimum of 12" of natural streambed material over 12" of No. 6 crushed stone as depicted on plan sheet PMT-04;
3. Regrading 10 linear ft of Straitsville Brook downstream of the culvert outlet by installing a minimum of 12" of natural streambed material as depicted on plan sheet PMT-04;
4. Replacing the inlet headwalls and wingwalls, and outlet endwall with associated temporary stabilization measures (earth retaining system) as depicted on plan sheet PMT-04;
5. Installing a 140 ft rip rap revetment approximately 300 ft downstream from the culvert's outlet; and composed of 4 ft of heavy rip rap on 12" of modified rip rap, over 6" of No. 6 crushed stone, with natural streambed material washed in up to the 2-year water surface elevation as depicted on plan sheet PMT-05;
6. Installing a temporary crane-mat platform over Straitsville Brook and temporary 18" diameter bypass pipe for water-handling during the rip rap revetment work as depicted on plan sheet PMT-05; and
7. Installing temporary cofferdams and a temporary 18" diameter bypass pipe for water-handling during the culvert rehabilitation work as depicted on plan sheet PMT-06.

Failure to comply with the terms and conditions of this license shall subject the Licensee and / or the Licensee's contractor(s) to enforcement actions and penalties as provided by law.

This license is subject to the following Terms and Conditions:

1. **License Enclosure(s) and Conditions.** The Licensee shall comply with all applicable terms and conditions as may be stipulated within the License Enclosure(s) listed above.
2. **Discharge of Materials.** At no time shall the Licensee allow grout or low strength material to discharge into Straitsville Brook.

3. **Natural Streambed Material.** The Licensee shall stockpile and contain natural streambed material with a sedimentation control system that is excavated during the pipe relining, rip rap installation, and channel regrading components of the project.
4. **Washing in of Natural Streambed Material.** The Licensee shall wash in natural streambed material up to the 2-year surface elevation within the proposed rip rap revetment as described in Authorized Activity 5.
5. **Large Boulder Stockpiling.** The Licensee shall temporarily stockpile and restore large stones/boulders removed from the immediate downstream side of the bridge during Authorized Activity 3 as described on plan sheet PMT-04 of the site plan set.
6. **Invasive Species Management.** The Licensee shall manage invasive species within the clearing limits and impact areas, including but not limited to Japanese barberry (*Berberis thunbergia*), Japanese knotweed (*Reynoutria japonica*), Oriental bittersweet (*Celastrus orbiculatus*), mugwort (*Artemisia vulgaris*), and multiflora rose (*Rosa multiflora*), as depicted on plan sheet PMT-07 of the site plan set.
7. **Management of Materials.** All wastewaters produced from the cleaning, preparation, and/or installation for slip-lining shall be managed in accordance with all federal, state, and local requirements, including Chapter 446K Water Pollution Control, Chapter 445 Hazardous Waste, and Chapter 446d Solid Waste of the Connecticut General Statutes.

Issued under the authority of the Commissioner of Energy and Environmental Protection on:

Feb. 10, 2025
Date

Emma Cimino
Emma Cimino
Deputy Commissioner
Environmental Quality Branch

LWRD General Conditions

1. **Land Record Filing (for *Structures Dredging & Fill*, *Tidal Wetlands*, *Certificate of Permission*, and *Long Island Sound General Permit* Licenses only).** The Licensee shall file the Land Record Filing on the land records of the municipality in which the subject property is located not later than thirty (30) days after license issuance pursuant to Connecticut General Statutes (CGS) Section 22a-363g. A copy of the Notice with a stamp or other such proof of filing with the municipality shall be submitted to DEEP.LWRDRegulatory@ct.gov no later than sixty (60) days after license issuance. If a Land Record Filing form is not enclosed and the work site is not associated with an upland property, no filing is required.

2. **Contractor Notification.** The Licensee shall give a copy of the license and its attachments to the contractor(s) who will be carrying out the authorized activities prior to the start of construction and shall receive a written receipt for such copy, signed and dated by such contractor(s). The Licensee's contractor(s) shall conduct all operations at the site in full compliance with the license and, to the extent provided by law, may be held liable for any violation of the terms and conditions of the license. At the work site, the contractor(s) shall, whenever work is being performed, have on site and make available for inspection a copy of the license and the authorized plans.

3. **Work Commencement[1].** Not later than two (2) weeks prior to the commencement of any work authorized herein, the Licensee shall submit to DEEP.LWRDRegulatory@ct.gov, on the Work Commencement Form attached hereto, the name(s) and address(es) of all contractor(s) employed to conduct such work and the expected date for commencement and completion of such work, if any.
    - For water diversion activities authorized pursuant to 22a-377(c)-1 of the Regulations of Connecticut State Agencies, the Licensee shall also notify the Commissioner in writing two weeks prior to initiating the authorized diversion.
    - For emergency activities authorized pursuant Connecticut General Statutes Section 22a-6k, the Licensee shall notify the Commissioner, in writing, of activity commencement at least one (1) day prior to construction and of activity completion no later than five (5) days after conclusion.

4. **For Coastal Licenses Only - License Notice.** The Licensee shall post the first page of the License in a conspicuous place at the work area while the work authorized therein is undertaken.

5. **Unauthorized Activities.** Except as specifically authorized, no equipment or material, including but not limited to, fill, construction materials, excavated material or debris, shall be

[1] The Work Commencement condition and the need for a Work Commencement Form is not applicable to Flood Management Certification approvals.

deposited, placed or stored in any wetland or watercourse on or off-site. The Licensee may not conduct work within wetlands or watercourses other than as specifically authorized, unless otherwise authorized in writing by the Commissioner. Tidal wetlands means "wetland" as defined by section 22a-29 and "freshwater wetlands and watercourses" means "wetlands" and "watercourses" as defined by section 22a-38.

6. **Management of Materials.** Any materials removed from the site shall be managed in accordance with all federal, state, and local requirements, including Chapter 446K Water Pollution Control, Chapter 445 Hazardous Waste, and Chapter 446d Solid Waste of the Connecticut General Statutes.

7. **Unconfined Instream Work.** Unless otherwise noted in a condition of the license, the following conditions apply to projects in non-coastal waters:

   - Unconfined instream work is limited to the period June 1 through September 30.
   - Confinement of a work area by cofferdam techniques using sand bag placement, sheet pile installation (vibratory method only), portadam, or similar confinement devices is allowed any time of the year. The removal of such confinement devices is allowed any time of the year.
   - Once a work area has been confined, in-water work within the confined area is allowed any time of the year.
   - The confinement technique used shall completely isolate and protect the confined area from all flowing water. The use of silt boom/curtain or similar technique as a means for confinement is prohibited.

8. **For State Actions Only - Material or Equipment Storage in the Floodplain.** Unless approved by a Flood Management Exemption, the storage of any materials at the site which are buoyant, hazardous, flammable, explosive, soluble, expansive, radioactive, or which could in the event of a flood be injurious to human, animal or plant life, below the elevation of the five-hundred (500) year flood is prohibited. Any other material or equipment stored at the site below said elevation by the Licensee or the Licensee's contractor must be firmly anchored, restrained or enclosed to prevent flotation. The quantity of fuel stored below such elevation for equipment used at the site shall not exceed the quantity of fuel that is expected to be used by such equipment in one day. In accordance with the licensee's Flood Contingency Plan, the Licensee shall remove equipment and materials from the floodplain during periods when flood warnings have been issued or are anticipated by a responsible federal, state or local agency. It shall be the Licensee's responsibility to obtain such warnings when flooding is anticipated.

9. **Temporary Hydraulic Facilities for Water Handling.** If not reviewed and approved as a part of the license application, temporary hydraulic facilities shall be designed by a qualified professional and in accordance with the *Connecticut Guidelines for Soil Erosion and Sediment Control*, the *2004 Connecticut Stormwater Quality Manual*, or the *Department of Transportation's ConnDOT Drainage Manual,* as applicable. Temporary hydraulic facilities may include channels, culverts or bridges which are required for haul roads, channel relocations, culvert installations, bridge construction, temporary roads, or detours.

10. **Excavated Materials.** Unless otherwise authorized, all excavated material shall be staged and managed in a manner which prevents additional impacts to wetlands and watercourses.

11. **Best Management Practices.** The Licensee shall not cause or allow pollution of any wetlands or watercourses, including pollution resulting from sedimentation and erosion. In constructing or maintaining any authorized structure or facility or conducting any authorized activity, or in removing any such structure or facility, the Licensee shall employ best management practices to control storm water discharges, to prevent erosion and sedimentation, and to otherwise prevent pollution of wetlands and other waters of the State. For purposes of the license, "pollution" means "pollution" as that term is defined by CGS section 22a-423. Best Management Practices include, but are not limited, to practices identified in the *Connecticut Guidelines for Soil Erosion and Sediment Control* as revised, *2004 Connecticut Stormwater Quality Manual*, Department of Transportation's *ConnDOT Drainage Manual* as revised, and the Department of Transportation Standard Specifications as revised.

12. **In-Water Work Vessel Staging and Storage. (for Structures Dredging & Fill, Tidal *Wetlands*, *Certificate of Permission*, and *Long Island Sound General Permit* Licenses only).** For any barge, vessel, skiff or floating work platform ("work vessels") utilized in the execution of the work authorized herein, the Licensee shall ensure that such work vessels:
    - do not rest on, or come in contact with, the substrate at any time, unless specifically authorized in the license.
    - are not stored over intertidal flats, submerged aquatic vegetation or tidal wetland vegetation or in a location that interferes with navigation. In the event any work vessel is grounded, no dragging or prop dredging shall occur to free it.

13. **Work Site Restoration.** Upon completion of any authorized work, the Licensee shall restore all areas impacted by construction, or used as a staging area or accessway in connection with such work, to their condition prior to the commencement of such work.

14. **Inspection.** The Licensee shall allow any representative of the Commissioner to inspect the project location at reasonable times to ensure that work is being or has been conducted in accordance with the terms and conditions of this license.

15. **Change of Use. (Applies only if a use is specified within the License "*Project Description*")**
    a. The work specified in the license is authorized solely for the purpose set forth in the license. No change in purpose or use of the authorized work or facilities as set forth in the license may occur without the prior written approval of the Commissioner. The Licensee shall, prior to undertaking or allowing any change in use or purpose from that which is authorized by this license, request permission from the Commissioner for such change. Said request shall be in writing and shall describe the proposed change and the reason for the change.

    b. A change in the form of ownership of any structure authorized herein from a rental/lease commercial marina to a wholly-owned common interest community or dockominium may constitute a change in purpose as specified in paragraph (a) above.

16. **De Minimis Alteration.** The Licensee shall not deviate from the authorized activity without

prior written approval from the Commissioner. The Licensee may request a de minimis change to any authorized structure, facility, or activity. A de minimis alteration means a change in the authorized design, construction or operation that individually and cumulatively has minimal additional environmental impact and does not substantively alter the project as authorized.

- For diversion activities authorized pursuant to 22a-377(c)-2 of the Regulations of Connecticut State Agencies, a de minimis alteration means an alteration which does not significantly increase the quantity of water diverted or significantly change the capacity to divert water.

17. **Extension Request.** The Licensee may request an extension of the license expiration date. Such request shall be in writing and shall be submitted to DEEP.LWRDRegulatory@ct.gov at least thirty (30) days prior to the license expiration. Such request shall describe the work done to date, what work still needs to be completed, and the reason for such extension. The Commissioner may extend the expiration date of this license for a period of up to one year, in order for the Licensee to complete the authorized activities. It shall be at the Commissioner's sole discretion to grant or deny such request. No more than three (3) one-year extensions will be granted under this license.

18. **Compliance Certification.** Not later than 90 days after completion of the authorized work, the Licensee shall prepare and submit to DEEP.LWRDRegulatory@ct.gov, the attached Compliance Certification Form. Such Compliance Certification shall be completed, signed, and sealed by the Licensee and a Connecticut Licensed Design Professional. If non-compliance is indicated on the form, or the Commissioner has reason to believe the activities and/or structures were conducted in non-compliance with the license, the Commissioner may require the Licensee to submit as-built plans as a condition of this license.

19. **Maintenance.** The Licensee shall maintain all authorized structures or work in optimal condition or shall remove such structures or facility and restore the affected waters to their pre-work condition. Any such maintenance or removal activity shall be conducted in accordance with applicable law and any additional approvals required by law.

20. **No Work After License Expiration.** Work conducted after the license expiration date is a violation of the license and may subject the licensee to enforcement action, including penalties, as provided by law.

21. **License Transfer.** The license is not transferable without prior written authorization of the Commissioner. A request to transfer a license shall be submitted in writing and shall describe the proposed transfer and the reason for such transfer. The Licensee's obligations under the license shall not be affected by the passage of title to the license site to any other person or municipality until such time as a transfer is approved by the Commissioner.

22. **Document Submission.** Any document required to be submitted to the Commissioner under the license or any contact required to be made with the Commissioner shall, unless otherwise specified in writing by the Commissioner, be directed to:

    DEEP.LWRDRegulatory@ct.gov or

Regulatory Section
Land & Water Resources Division
Department of Energy and Environmental Protection
79 Elm Street
Hartford, Connecticut 06106-5127
860-424-3019

23. **Date of Document Submission.** The date of submission to the Commissioner of any document required by the license shall be the date such document is received by the Commissioner. The date of any notice by the Commissioner under the license, including but not limited to notice of approval or disapproval of any document or other action, shall be the date such notice is personally delivered or the date three (3) days after it is mailed by the Commissioner, whichever is earlier. Except as otherwise specified in the license, the word "day" as used in the license means calendar day. Any document or action which is required by the license to be submitted or performed by a date which falls on a Saturday, Sunday or a Connecticut or federal holiday shall be submitted or performed on or before the next day which is not a Saturday, Sunday, or a Connecticut or federal holiday.

24. **Certification of Documents.** Any document, including but not limited to any notice, which is required to be submitted to the Commissioner under the license shall be signed by the Licensee and by the individual or individuals responsible for actually preparing such document, each of whom shall certify in writing as follows: "I have personally examined and am familiar with the information submitted in this document and all attachments and certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief, and I understand that any false statement made in this document or its attachments may be punishable as a criminal offense."

25. **Accuracy of Documentation.** In evaluating the application for the license, the Commissioner has relied on information and data provided by the Licensee and on the Licensee's representations concerning site conditions, design specifications and the proposed work, including but not limited to representations concerning the commercial, public or private nature of the work or structures, the water-dependency of said work or structures, its availability for access by the general public, and the ownership of regulated structures or filled areas. If such information proves to be false, deceptive, incomplete or inaccurate, the license may be modified, suspended or revoked, and any unauthorized activities may be subject to enforcement action.

26. **Limits of Liability.** In granting the license, the Commissioner has relied on all representations of the Licensee, including information and data provided in support of the Licensee's application. Neither the Licensee's representations nor the issuance of the license shall constitute an assurance by the Commissioner as to the structural integrity, the engineering feasibility or the efficacy of such design.

27. **Reporting of Violations.** In the event that the Licensee becomes aware that they did not or may not comply, or did not or may not comply on time, with any provision of this license or of any document incorporated into the license, the Licensee shall immediately notify the

agency contact specified within the license and shall take all reasonable steps to ensure that any noncompliance or delay is avoided or, if unavoidable, is minimized to the greatest extent possible. In so notifying the agency contact, the Licensee shall provide, for the agency's review and written approval, a report including the following information:

a. the provision(s) of the license that has been violated;

b. the date and time the violation(s) was first observed and by whom;

c. the cause of the violation(s), if known;

d. if the violation(s) has ceased, the duration of the violation(s) and the exact date(s) and times(s) it was corrected;

e. if the violation(s) has not ceased, the anticipated date when it will be corrected;

f. steps taken and steps planned to prevent a reoccurrence of the violation(s) and the date(s) such steps were implemented or will be implemented; and

g. the signatures of the Licensee and of the individual(s) responsible for actually preparing such report.

If the violation occurs outside of normal business hours, the Licensee shall contact the Department of Energy and Environmental Protection Emergency Dispatch at 860-424-3333. The Licensee shall comply with any dates which may be approved in writing by the Commissioner.

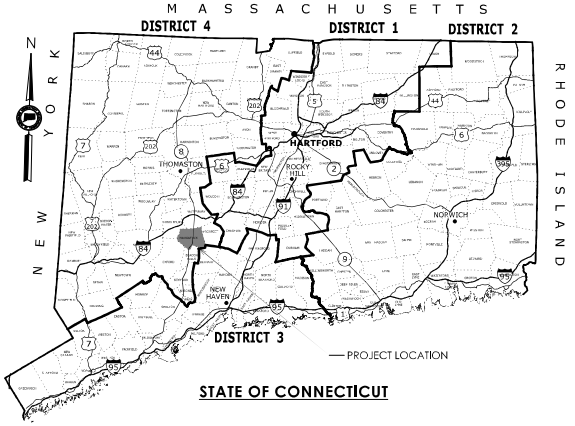
28. Revocation/Suspension/Modification. The license may be revoked, suspended, or modified in accordance with applicable law.

29. Other Required Approvals. License issuance does not relieve the Licensee of their obligations to obtain any other approvals required by applicable federal, state and local law.

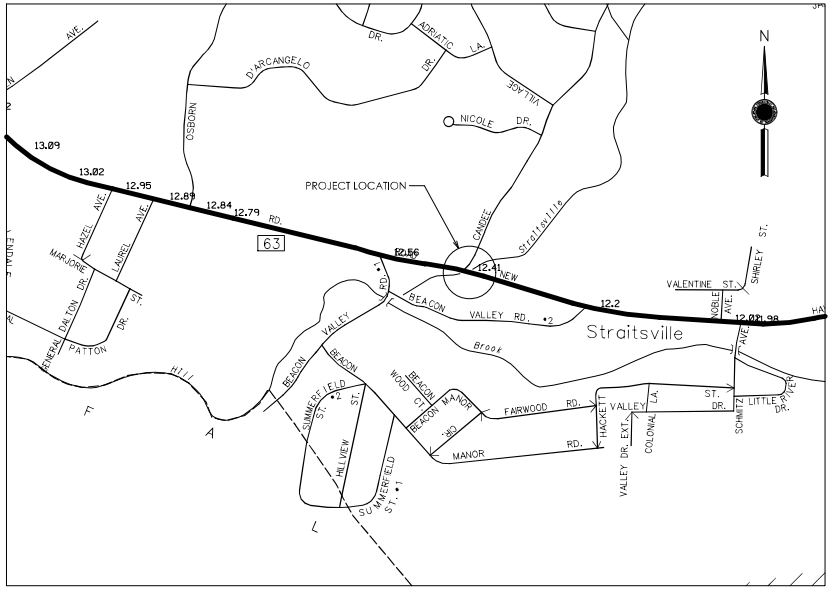
30. Rights. The license is subject to and does not derogate any present or future property rights or powers of the State of Connecticut, and conveys no property rights in real estate or material nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state or local laws or regulations pertinent to the property or activity affected hereby.

31. Condition Conflicts. In the case where a project specific special condition listed on the license differs from, or conflicts with, one of the general conditions listed herein, the project specific special condition language shall prevail. It is the licensee's responsibility to contact the agency contact person listed on the license for clarification if needed prior to conducting any further regulated activities.

ENVIRONMENTAL PERMIT PLANS
STATE PROJECT NO. 0087-0148
REHABILITATION OF BRIDGE NO. 06772
CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
IN THE TOWN OF NAUGATUCK, CT



STATE OF CONNECTICUT



LOCATION PLAN
1" = 500'-0"

GENERAL NOTES

1. THESE PLANS ARE NOT FOR CONSTRUCITON AND ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL EFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS, AND WETLAND SOILS, SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 1927 VERTICAL DATUM BASED ON NGVD OF 1929.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGES, FACILITIES AND INCIDENTAL CONSTRUCTION, FORM 818, SECTION 1.10 AND WILL ALSO FOLLOW REQUIRED BEST MANAGEMENT PRACTICES (BMP'S) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION AND SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	TITLE SHEET
PMT-02	GENERAL SITE PLAN
PMT-03	WETLAND/ WATERCOURSE IMPACT PLAN
PMT-04	ELEVATIONS AND SECTION PLAN
PMT-05	REVETMENT SECTION
PMT-06	STAGING AND WATER HANDLING PLAN
PMT-07	PERMIT PLANTING PLAN

ENVIRONMENTAL PERMIT PLANS
PLAN DATE: May 9, 2024

NO.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

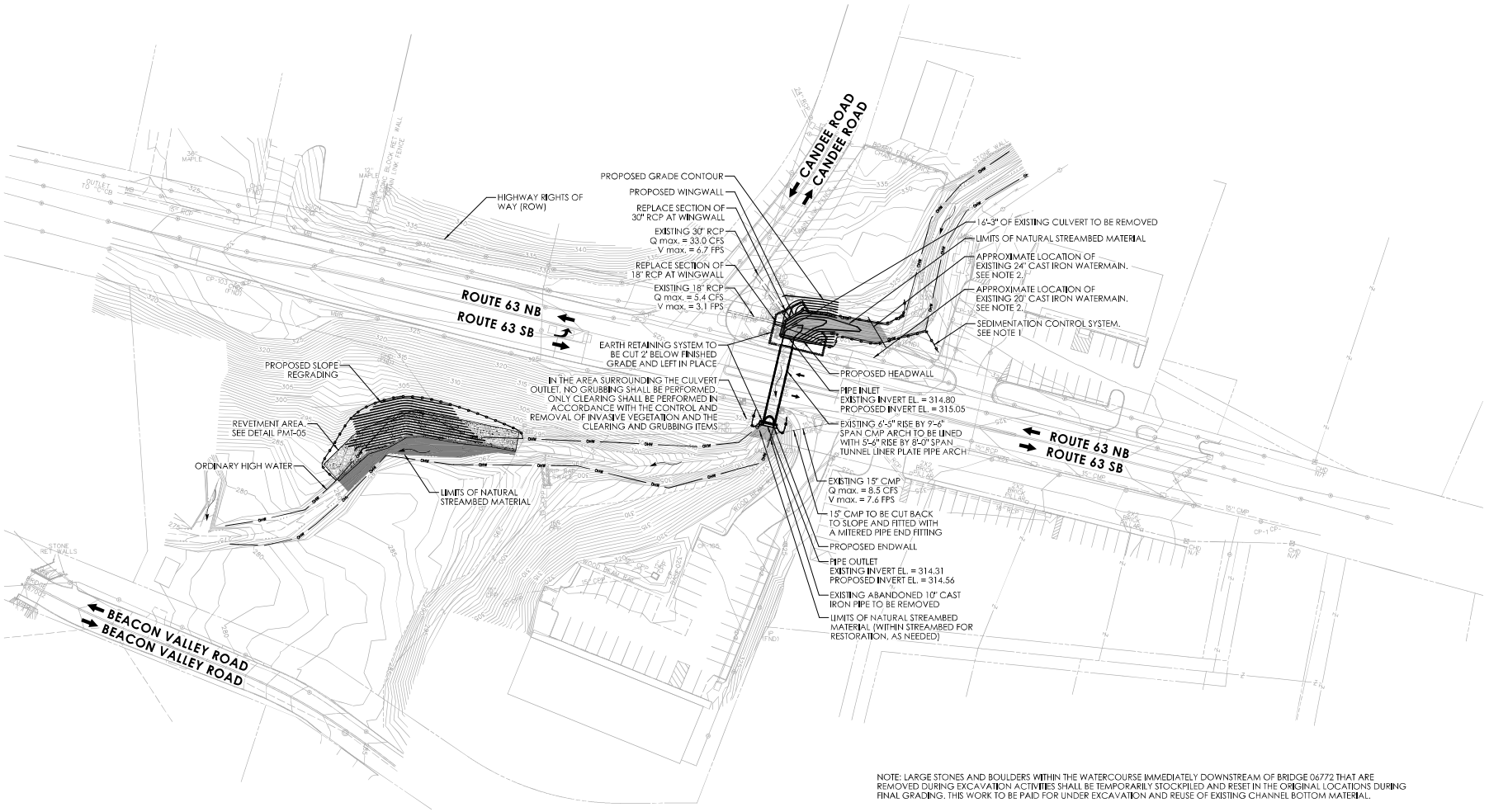
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: TITLE SHEET

DRAWING NO. PMT-01
SHEET NO.

LASTED SAVED BY: SallyJ **FILE NAME:** C:\Users\sallyj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-1_Title Sheet.dgn
PLOTTED DATE: 5/9/2024



NOTE: LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.

BRIDGE NO. 06772 GENERAL SITE PLAN

SCALE: 1" = 40'

LEGEND

- OHW — ORDINARY HIGH WATER
- SURVEYED EDGE OF WATER
- SEDIMENTATION CONTROL SYSTEM

NOTES:

1. APPROXIMATE LOCATION OF SEDIMENTATION CONTROL SYSTEM SHOWN AT FINAL CONDITION
2. LOCATION OF EXISTING WATERMAINS ARE UNKNOWN. IF ENCOUNTERED DURING CONSTRUCTION THE ABANDONED WATERMAINS WITHIN THE REGULATED AREA WILL BE REMOVED AND THE DISTURBED AREA WILL BE RESTORED WITH NATURAL STREAMBED MATERIAL.
3. SEDIMENTATION CONTROL SYSTEM TO BE PLACED AT CATCH BASIN(S) AS NEEDED OR AS DIRECTED BY THE ENGINEER

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

NO.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

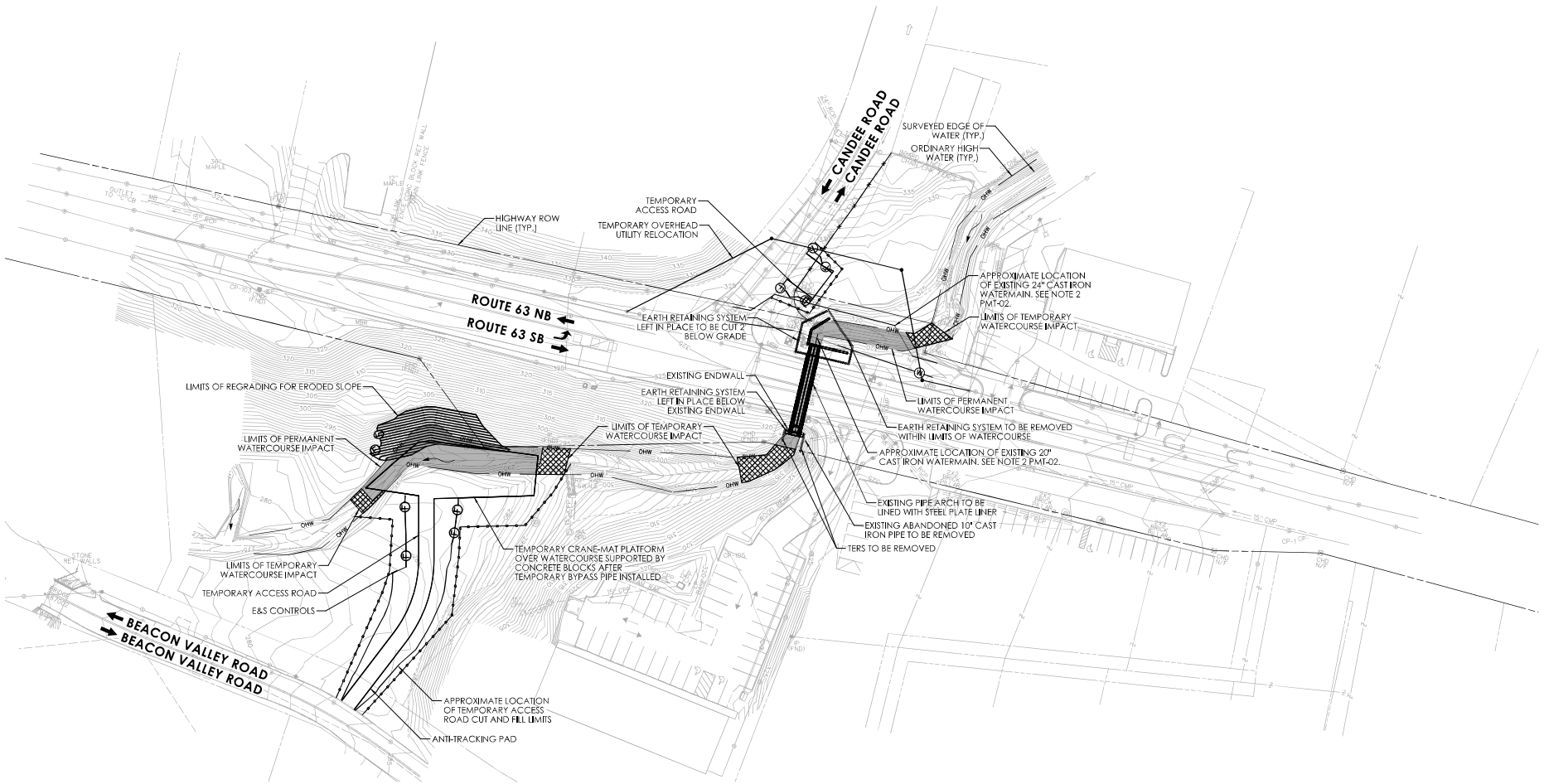
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: GENERAL SITE PLAN

DRAWING NO. PMT-02
SHEET NO.

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PLOTTED DATE: 5/9/2024



LEGEND

- TEMPORARY WETLAND/WATERCOURSE IMPACT
- PERMANENT WETLAND/WATERCOURSE IMPACT

NOTE:

THE CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WERLANDS AND WATERCOURSE. ALL DISTURBED AREAS SHALL BE RESTORED

BRIDGE NO. 06772 IMPACT PLAN

SCALE: 1" = 40'

WETLAND/WATERCOURSE IMPACT TABLE			
	WETLAND IMPACTS	WATERCOURSE IMPACTS	TOTAL
PERMANENT IMPACTS	0 S.F. (0 AC.)	5250 S.F. (0.121 AC)	5250 S.F. (0.121 AC)
TEMPORARY IMPACTS	0 S.F. (0 AC.)	1670 S.F. (0.038 AC)	1670 S.F. (0.038 AC)
TOTAL IMPACTS	0 S.F. (0 AC.)	6920 S.F. (0.159 AC)	6920 S.F. (0.159 AC)

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

NO.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: WATERCOURSE IMPACT PLAN

DRAWING NO. PMT-03
SHEET NO.

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PLOTTED DATE: 5/9/2024

HYDRAULIC DATA	
DRAINAGE AREA	0.69 SQ. MILE
DESIGN FREQUENCY	50 YEAR
DESIGN DISCHARGE	220 CFS
UPSTREAM AVERAGE DAILY FLOW ELEVATION	315.4 FT
DOWNSTREAM AVERAGE DAILY FLOW ELEVATION	308.9 FT
UPSTREAM DESIGN WATER SURFACE ELEVATION	320.6 FT
DOWNSTREAM DESIGN WATER SURFACE ELEVATION	311.4 FT

NATIVE STREAMBED MATERIAL NOTES:

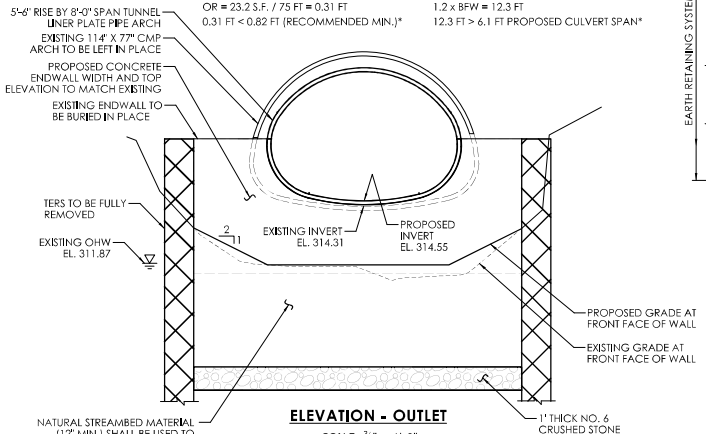
1. NATIVE STREAMBED MATERIAL EXCAVATED DURING THE PIPE RELINING, RIPRAP INSTALLATION AND CHANNEL REGRADING SHALL BE STOCKPILED AND THEN REPLACED OUTSIDE THE LIMITS OF THE RIPRAP AREAS AS NEEDED FOR REGRADING TO THE DEPTH SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH THE SPECIAL PROVISION "EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL."
2. ADDITIONAL STREAMBED MATERIAL, IF REQUIRED, SHALL BE IN ACCORDANCE WITH SPECIAL PROVISION "SUPPLEMENTAL STREAMBED CHANNEL MATERIAL."
3. THE STOCKPILE SHALL BE LOCATED OUTSIDE THE WETLAND LIMITS AND PROTECTED WITH SEDIMENTATION CONTROL SYSTEM.
4. LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.

OPENNESS RATIO (OR):

OR = OPEN AREA / STRUCTURE LENGTH
OR = 23.2 S.F. / 75 FT = 0.31 FT
0.31 FT < 0.82 FT (RECOMMENDED MIN.)*

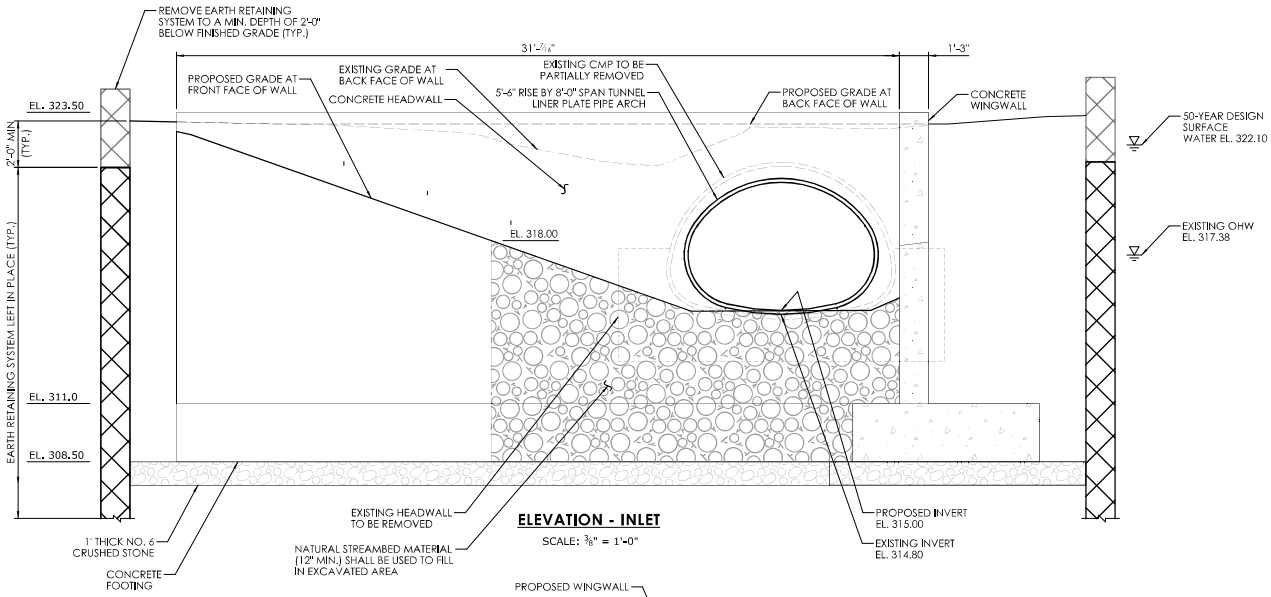
BANKFULL WIDTH (BFW):

BFW = 10.2 FT
1.2 x BFW = 12.3 FT
12.3 FT > 6.1 FT PROPOSED CULVERT SPAN*



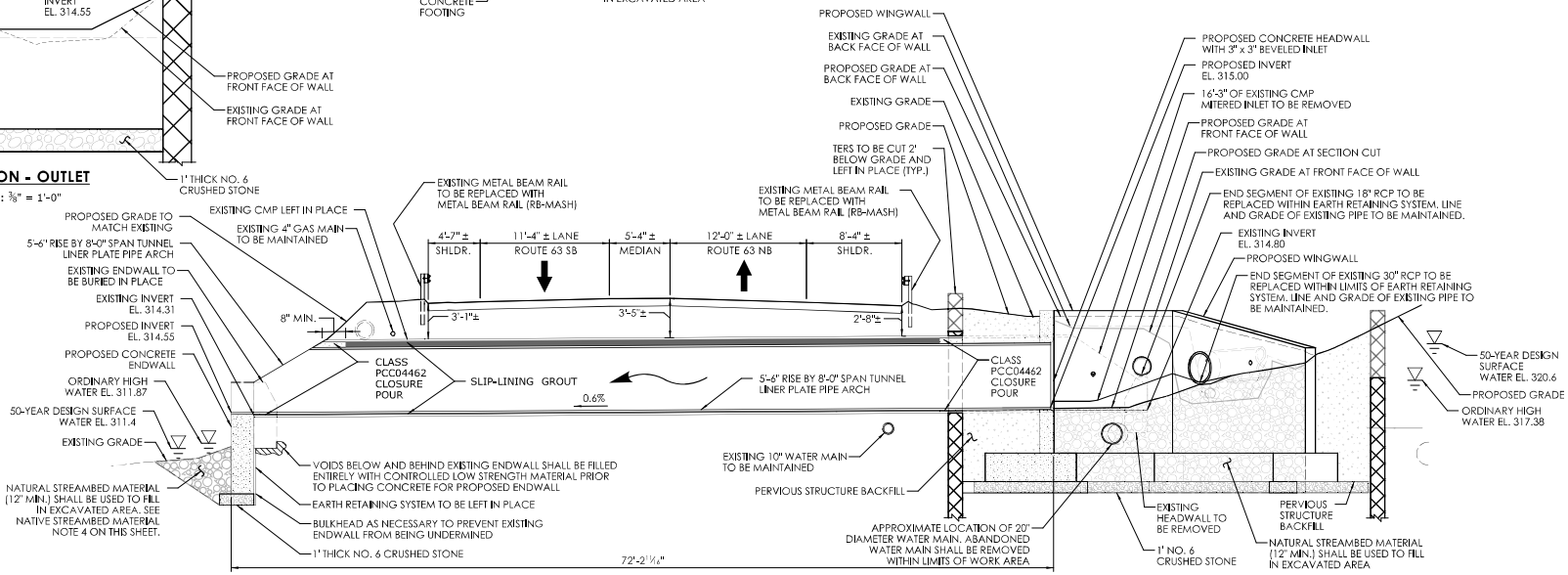
ELEVATION - OUTLET

SCALE: ⅜" = 1'-0"



ELEVATION - INLET

SCALE: ⅜" = 1'-0"



SECTION - INLET

SCALE: 3/16" = 1'-0"

NOTES:
IF LEDGE IS ENCOUNTERED PRIOR TO REACHING DEPTH OF EXCAVATION AS SHOWN ON THIS SHEET, LEDGE NEED NOT BE REMOVED AND PROPOSED ENDWALL SHALL BE CAST DIRECTLY AGAINST LEDGE.

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

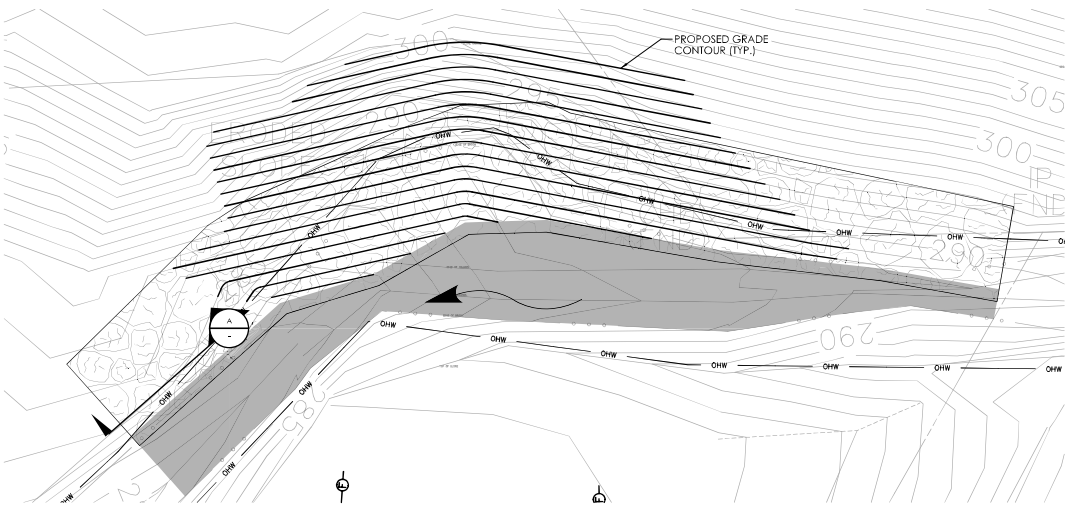
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION

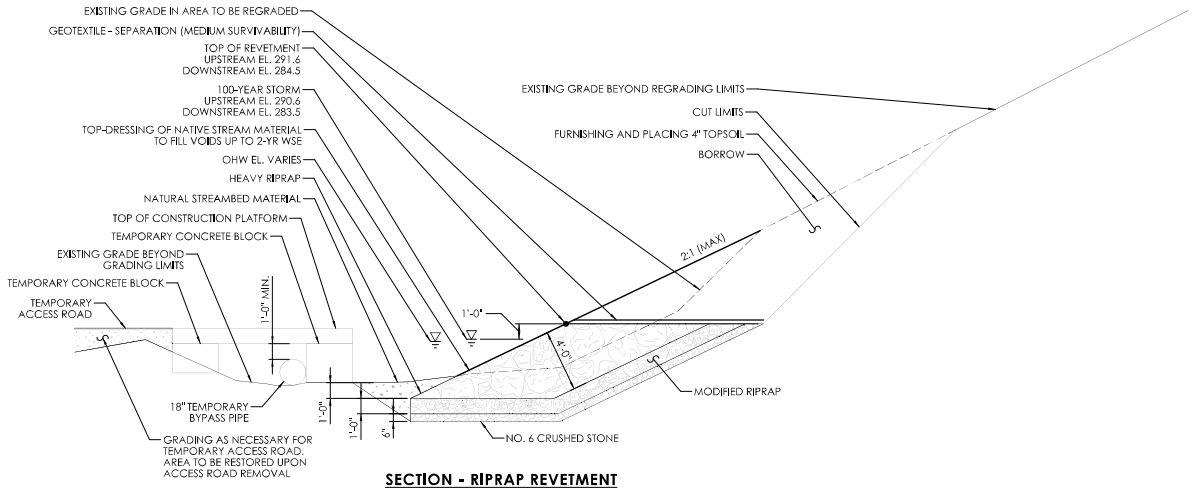
PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: ELEVATION AND SECTION PLAN

DRAWING NO. PMT-04
SHEET NO.

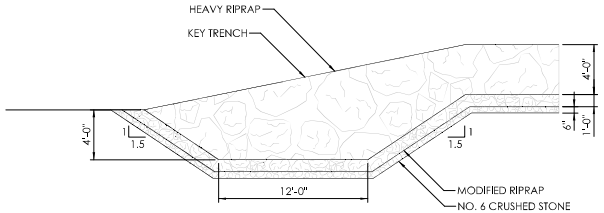
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PLOTTED DATE: 5/9/2024



REVETMENT PLAN
SCALE: 1" = 10'



SECTION - RIPRAP REVETMENT
SCALE: N.T.S.



SECTION - REVETMENT KEY-IN (A / -)
SCALE: 1" = 5'

ENVIRONMENTAL PERMIT PLANS
PLAN DATE: May 9, 2024

NO.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: CHECKED BY:

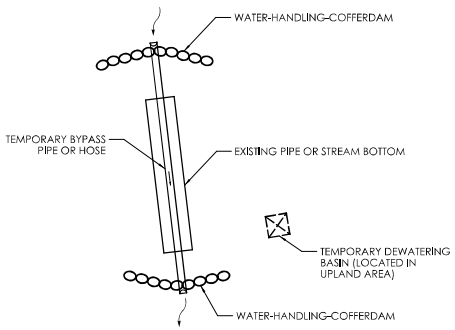
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

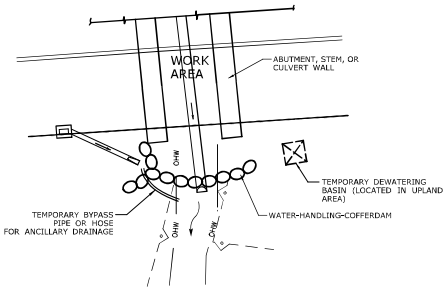
PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: REVETMENT SECTION

DRAWING NO. PMT-05
SHEET NO.

LASTED SAVED BY: SallyJ **FILE NAME:** C:\Users\sallyj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-5_RevetmentSection.dgn
PLOTTED DATE: 5/9/2024

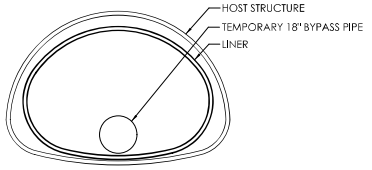


TEMPORARY PIPE
(NOT TO SCALE)



ANCILLARY STORM DRAINAGE NEAR WORK AREA
(NOT TO SCALE)

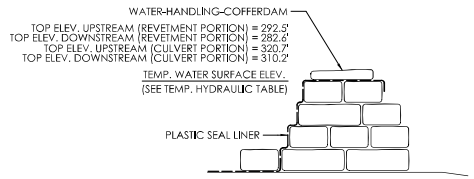
NOTE: ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING OR PROPOSED STORM DRAINAGE SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREAS. THE CONTRACTOR SHALL SUBMIT THE MEANS AND METHODS OF HANDLING STORM DRAINAGE TO THE ENGINEER FOR APROVAL.



WATER HANDLING
SCALE: N.T.S.

TEMPORARY HYDRAULIC DATA	
AVERAGE DAILY FLOW	1.3 CFS
AVERAGE SPRING FLOW	2.5 CFS
2-YEAR FREQUENCY DISCHARGE	45 CFS
TEMPORARY DESIGN FREQUENCY	3 X A.S.F.
LOW FLOW PUMPING TEMPORARY DESIGN DISCHARGE	7.5 CFS
GRAVITY FLOW BYPASS PIPE TEMPORARY DESIGN DISCHARGE	7.5 CFS
UPSTREAM WATER SURFACE ELEVATION (CULVERT PORTION)	319.7 FT
DOWNSTREAM WATER SURFACE ELEVATION (CULVERT PORTION)	309.2 FT
UPSTREAM WATER SURFACE ELEVATION (REVETMENT PORTION)	291.5 FT
DOWNSTREAM WATER SURFACE ELEVATION (REVETMENT PORTION)	280.5 FT

NOTES:
1. TABLE IS APPLICABLE FOR BOTH CULVERT AND REVETMENT WATER HANDLING
2. VALUES AND ELEVATIONS MAY VARY SLIGHTLY FROM THE CONTRACT PLANS



WATER-HANDLING-COFFERDAM TYPICAL SECTION
SCALE: NOT TO SCALE

SUGGESTED CONSTRUCTION SEQUENCE - SLOPE REVETMENT

1. INSTALL SEDIMENTATION CONTROL SYSTEM.
2. PERFORM CLEARING AND GRUBBING AND CONTROL AND REMOVAL OF INVASIVE VEGETATION.
3. CONSTRUCT TEMPORARY ACCESS ROAD FROM BEACON VALLEY ROAD TO THE WORK AREA.
4. INSTALL TEMPORARY WATER HANDLING SYSTEM INCLUDING WATER-HANDLING-COFFERDAMS AND TEMPORARY BYPASS PIPE.
5. DIVERT WATER THROUGH THE TEMPORARY BYPASS PIPE TO DRY THE WORK AREA.
6. CONSTRUCT ACCESS PLATFORM WITH CRANE MATS AND CONCRETE BLOCKS TO SPAN THE TEMPORARY BYPASS PIPE AS NEEDED FOR ACCESS TO THE DOWNSTREAM REVETMENT WORK AREA.
7. CONSTRUCT SLOPE REVETMENT.
8. REMOVE TEMPORARY ACCESS ROADS, CRANE MATS, AND PERFORM FINAL GRADING.
9. REMOVE TEMPORARY WATER-HANDLING-COFFERDAMS AND BYPASS PIPE.
10. CONSERVATION SEEDING FOR SLOPES. PERMIT PLANTINGS. REMOVE SEDIMENTATION CONTROL SYSTEMS UPON FINAL STABILIZATION.

SUGGESTED CONSTRUCTION SEQUENCE - PIPE RELINING

1. RELOCATE OVERHEAD UTILITIES TEMPORARILY.
2. INSTALL SEDIMENTATION CONTROL SYSTEM.
3. PERFORM CLEARING AND GRUBBING AND CONTROL AND REMOVAL OF INVASIVE VEGETATION.
4. CONSTRUCT TEMPORARY ACCESS ROAD FROM CANDEE ROAD TO CULVERT INLET.
5. INSTALL TEMPORARY WATER HANDLING SYSTEM INCLUDING WATER-HANDLING-COFFERDAMS AND TEMPORARY BYPASS PIPE.
6. DIVERT WATER THROUGH THE TEMPORARY BYPASS PIPE TO DRY THE HOST STRUCTURE.
7. REMOVE SEDIMENT AND REGRADE AREA AT HOST STRUCTURE INLET.
8. CLEAN HOST STRUCTURE BY HAND THROUGH REMOVAL OF DEBRIS. THE CULVERT CLEANING AND THE GROUTING PROCESS SHALL NOT CAUSE TURBIDITY OF THE EXISTING WATER COURSE.
9. GROUT ALL VOIDS AND PERFORATIONS TO ENSURE FULL BEARING OF MATERIAL TO THE EXTRADOS OF THE EXISTING PIPE ARCH.
10. PLACE TEMPORARY EARTH RETAINING SYSTEM. REMOVE END SECTION OF EXISTING STRUCTURE AT THE INLET. REPLACE END SECTIONS OF 30" RCP AND 18" RCP AT INLET WINGWALL.
11. INSTALL TUNNEL LINER PLATE SECTIONS WITHIN THE HOST STRUCTURE. THE CONTRACTOR SHALL TAKE THE NECESSARY MEANS TO ENSURE THAT DEBRIS DOES NOT ENTER THE CULVERT SYSTEM DURING INSTALLATION OF THE CORRUGATED STEEL STRUCTURAL PLATE LINER.
12. INSTALL PCC00462 BULKHEADS AT THE INLET AND OUTLET.
13. PLACE SLIP-LINING GROUT.
14. EXCAVATE AND CONSTRUCT WINGWALLS, HEADWALL, AND ENDWALL ON NO. 6 CRUSHED STONE. REMOVE ABANDONED WATER MAINS IF ENCOUNTERED. CUT LEFT IN PLACE EARTH RETAINING SYSTEM AT 2 FEET BELOW GRADE. BACKFILL AND REMOVE REMAINING TEMPORARY EARTH RETAINING SYSTEM.
15. PLACE NATURAL STREAMBED MATERIAL AND PERFORM FINAL GRADING. LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.
16. REMOVE TEMPORARY WATER-HANDLING-COFFERDAMS AND BYPASS PIPE AT BOTH INLET AND OUTLET. RETURN FLOW TO HOST STRUCTURE.
17. REMOVE TEMPORARY ACCESS ROAD AND RESTORE IMPACTED AREAS.
18. CONSERVATION SEEDING FOR SLOPES. PERMIT PLANTINGS. REMOVE SEDIMENTATION CONTROL SYSTEMS UPON FINAL STABILIZATION.
19. RELOCATE OVERHEAD UTILITIES TO FINAL POSITIONING.

WATER HANDLING NOTES:

1. THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE TEMPORARY GRAVITY FLOW BYPASS PIPE (OR PUMP AND HOSE SYSTEM DESIGNED BY THE CONTRACTOR) AS SHOWN ON THIS SHEET DURING CLEANING AND REPAIR OF THE HOST STRUCTURE. GROUTING OF THE ANNULAR SPACE BETWEEN THE HOST STRUCTURE AND THE LINER AND DURINGESTABLISHMENT OF FINAL GRADES AS REQUIRED BY THE STAGE CONSTRUCTION SEQUENCES.
2. A DEWATERING BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. THE LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.
3. TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF AN APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA. SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND SHALL CONFORM TO PERMITS.

   ANY WATER HANDLING SCHEME DEPICTED WITHIN THE DEPARTMENT'S 'HANDLING WATER TYPICAL SCHEMATICS' MAY BE UTILIZED UNLESS SPECIFICALLY PROHIBITED. A MEANS AND METHOD FOR WATER HANDLING SYSTEM SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR APPROVAL.
4. WATER HANDLING MEASURES SHALL NOT EXCEED IMPACT AREAS SHOWN ON THE WETLAND SHEET OF THE PERMIT PLANS.
5. ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING OR PROPOSED STORM DRAINAGE PIPES SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREAS. PUMPS/PIPES SHALL BE SIZED BY THE CONTRACTOR TO HANDLE THE EXPECTED FLOWS AND BE DISCHARGED TO A STABLE LOCATION. THE CONTRACTOR SHALL SUBMIT THE MEANS AND METHODS OF HANDLING STORM DRAINAGE TO THE ENGINEER FOR APPROVAL AND IS INCLUDED AS PART OF WATER HANDLING.
6. IF A SHORT DURATION PUMP SYSTEM IS PROPOSED DURING LOW FLOW CONDITIONS, THE PUMP SYSTEM SHALL BE DESIGNED BY THE CONTRACTOR AND HAVE A MINIMUM CAPACITY AS SHOWN IN THE TEMPORARY HYDRAULIC TABLE. PUMP SYSTEM PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

   BASED UPON FIELD CONDITIONS, WORK DURATION, AND EXPECTED WEATHER CONDITIONS, THE ENGINEER MAY APPROVE A WATER HANDLING PLAN WITH LOWER PUMPING FLOWS, PROVIDED THAT THIS INCLUDES A CONTINGENCY PLAN, WHICH MINIMIZES NEGATIVE IMPACTS AND SAFELY CONVEYS LARGER FLOWS THROUGH THE WORK AREA.

UNCONFINED IN-STREAM WORK BMP NOTE:

ANY UNCONFINED IN-STREAM WORK WITHIN THE WATERCOURSE SHALL BE RESTRICTED TO THE PERIOD FROM JUNE 1 TO SEPTEMBER 30, INCLUSIVE. UNLESS OTHERWISE INCLUDED AS A SPECIAL PROVISION OF THE LICENSE, THE CONDITION SHALL APPLY TO PROJECTS IN NON-COASTAL WATERS.

THE DEPARTMENT WILL REVIEW AND MAY APPROVE THE METHODS OF UNCONFINED IN-WATER WORK WITH CONSIDERATION OF THE FOLLOWING:

- PROPOSED SCHEDULE FOR WORK OPERATIONS
- ALL UNCONFINED IN-WATER WORK SHALL BE MINOR IN NATURE
- DISTURBANCE SHALL BE LIMITED TO AREAS THAT HAVE BEEN APPROVED FOR TEMPORARY AND PERMANENT IMPACT
- BEST MANAGEMENT PRACTICE SHALL BE UTILIZED WHEREVER POSSIBLE TO MINIMIZE TURBIDITY/SEDIMENT TRANSPORT DOWNSTREAM
- DISTURBED AREAS AND THE DURATION OF DISTURBANCE SHALL BE MINIMIZED TO THE EXTENT POSSIBLE
- INSTREAM WORK SHALL BE DONE DURING PERIODS OF LOW FLOW

ENVIRONMENTAL PERMIT PLANS
PLAN DATE: May 9, 2024

NO.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

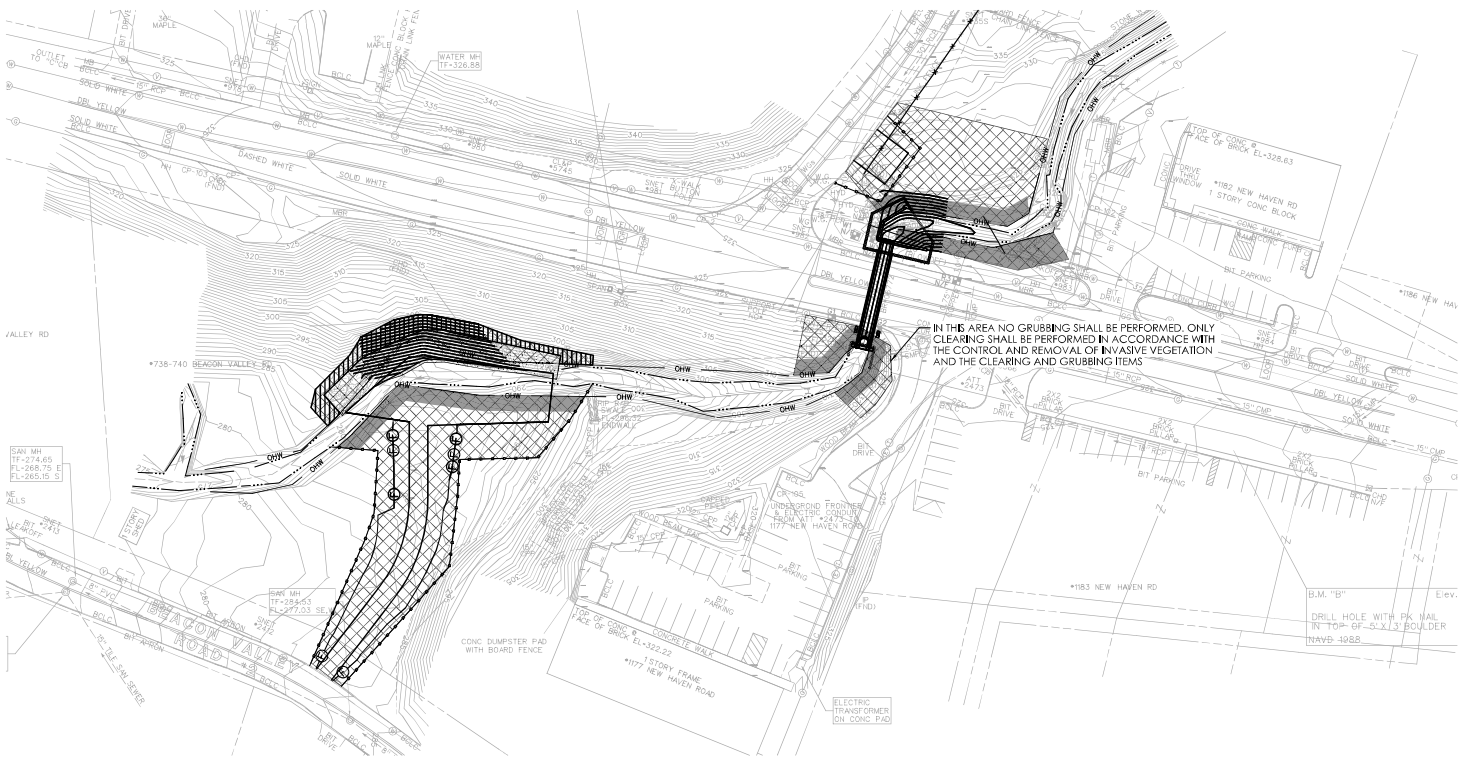
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: STAGING AND WATER HANDLING

DRAWING NO. PMT-06
SHEET NO.

LASTED SAVED BY: SollyJ FILE NAME: C:\Users\sollyj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-6_StagingWaterHandling.dgn
PLOTTED DATE: 5/9/2024



CONTROL AND REMOVAL OF INVASIVE VEGETATION
SEE NOTE 7

SLOPE STABILIZATION PLANTINGS
TOTAL PLANTS = 56
TOTAL PLANTING AREA = 1800 S.F.

AREA TO BE RESTORED WITH PLANTINGS
TOTAL PLANTS = 238
TOTAL PLANTING AREA = 5060 S.F.

PERMIT PLANTING PLAN

SCALE: 1" = 40'

NOTES

1. PLANTINGS ON THIS SHEET ARE FOR ENVIRONMENTAL PERMITTING. ANY SUBSTITUTIONS TO THE PERMIT PLANTINGS SHALL BE COORDINATED WITH THE DEPARTMENT'S OFFICE OF ENVIRONMENTAL PLANNING (OEP).

2. PROPOSED PLANTINGS TO BE FIELD LOCATED BY CTDOT OEP OR THEIR DESIGNATED REPRESENTATIVE.

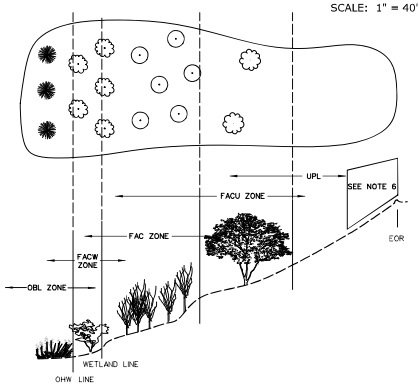
3. WOOD CHIP MULCH SHALL NOT BE PLACED IN THE WETLAND AREA.

4. DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH WETLAND GRASS ESTABLISHMENT. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE SEEDED WITH CONSERVATION SEEDING FOR SLOPES, OR OTHER SEED MIX AS SPECIFIED. ALL AREAS SHALL BE RESTORED.

5. ALL PLANT MATERIAL SHALL BE NURSERY GRADE STRAIGHT SPECIES, CONFORMING TO SECTION 3 OF THE AMERICAN STANDARDS FOR NURSERY STOCK. CTDOT OEP WILL REVIEW AND APPROVE PROPOSED PLANTINGS.

6. NO PLANTINGS SHALL BE PLACED IN MOW AREA.

7. AREA TO BE TREATED FOR INVASIVES AND PROPERLY PREPARED FOR FINAL PLANTING, SEEDING, AND RESTORATION.



SCHEMATIC PLANTING

LANDSCAPE ITEMS

KEY	BOTANICAL NAME	COMMON NAME	SIZE	QTY.	SPACING	WETLAND INDICATOR
A.a.	Aronia arbutifolia	Red Chokeberry	18"- 24" HT. B.B.	9	5' On Center	FACW
C.r.	Cornus racemosa	Gray Dogwood	2' - 3' HT. B.B.	14	5' On Center	FAC
H.v.	Hamamelis virginiana	Witch Hazel	2' - 3' HT. B.B.	11	5' On Center	FACU
V.a.	Viburnum acerifolia	Mapleleaf Viburnum	2' - 3' HT. B.B.	12	5' On Center	UPL
V.d.	Viburnum dentatum	Arrowwood Viburnum	24"- 36" HT. NO. 3 Container	10	5' On Center	FAC

NOTE: FOR INFORMATION ONLY. CONTRACTOR SHALL REFER TO THE CONTRACT PLANS FOR BIDDING PURPOSES.
NOTE: LANDSCAPE ITEMS FOR SLOPE STABILIZATION PLANTINGS TO BE FIELD LOCATED BY DOT LANDSCAPE DESIGN

PERMIT PLANT LIST

BOTANICAL NAME	COMMON NAME AND SIZE	QTY.	SPACING	WETLAND INDICATOR
ACER RUBRUM	RED MAPLE 2"-2½" CAL. BB	8	FIELD LOCATE	FAC
ACER RUBRUM	RED MAPLE 3'-4' HT 1 GAL. CONT.	20	FIELD LOCATE	FAC
ACER RUBRUM	RED MAPLE 6'-8' HT 3 GAL. CONT.	20	FIELD LOCATE	FAC
LINDERA BENZOIN	COMMON SPICEBUSH 2'-3' HT BB	50	5'	FACW
CLETHRA ALNIFOLIA	SWEET PEPPERBUSH 3'-4' HT BB	50	5'	FAC
CORNUS RACEMOSA	GRAY DOGWOOD 3'-4' HT BB	50	5'	FAC
ALNUS INCANA	SPECKLED ALDER 4'-5' HT BB	40	5'	FACW
ASCLEPIAS TUBEROSA	BUTTERFLY MILKWEED 1 GALLON CONTAINER	40	1'-6" ON CENTER	NI
CONSERVATION SEEDING				
CONTROL AND REMOVAL OF INVASIVE VEGETATION		25970 SF	SEE HATCHING AND NOTE 7	

NOTE: ACER RUBRUM 3'-4' HT 1 GAL. CONT. AND ACER RUBRUM 6'-8' HT 3 GAL. CONT. TO BE PAID FOR UNDER ITEM #0949875A - WETLAND PLANTINGS

ENVIRONMENTAL PERMIT PLANS
PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNED/DRAFTED: CHECKED BY:

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: PERMIT PLANTING PLAN

DRAWING NO. PMT-07
SHEET NO.

LASTED SAVED BY: SallyJ **FILE NAME:** C:\Users\sallyj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-7_PermitPlantingPlan.dgn
PLOTTED DATE: 5/9/2024

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

Bureau of Water Protection & Land Reuse
Land & Water Resources Division

79 Elm Street • Hartford, CT 06106-5127 portal.ct.gov/DEEP Affirmative Action/Equal Opportunity Employer

LWRD Work Commencement Form

To: DEEP.LWRDRegulatory@ct.gov or
Regulatory Section
Department of Energy and Environmental Protection
Land & Water Resources Division
79 Elm Street
Hartford, CT 06106-5127

Licensee Name: Connecticut Department of Transportation
Municipality in which the project is occurring: _Naugatuck__
DEEP License No(s): 202407001-IW

CONTRACTOR(s):

1 Name: _____
Address: _____
Telephone: _____
E-mail: _____

2 Name: _____
Address: _____
Telephone: _____
E-mail: _____

3 Name: _____
Address: _____
Telephone: _____
E-mail: _____

Date Contractor(s) received a copy
of the license and approved plans: _____

EXPECTED DATE OF COMMENCEMENT OF WORK: _____

EXPECTED DATE OF COMPLETION OF WORK: _____

LICENSEE: _____ _____
(Signature) (Date)

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 portal.ct.gov/DEEP Affirmative Action/Equal Opportunity Employer

Compliance Certification Form

The following certification must be signed by the licensee working in consultation with a Connecticut-licensed design professional and must be submitted to the address indicated at the end of this form within ninety (90) days of completion of the authorized work.

1. Licensee Name: Connecticut Department of Transportation

   DEEP License Number(s): 202407001-IW

   Municipality in which project is occurring: Naugatuck

2. **Check one:**

   (a) ☐ "I certify that the final site conditions and / or structures are in general conformance with the approved site plans". Identify and describe any deviations and attach to this form.

   (b) ☐ "The final site conditions and / or structures are not in general conformance with the approved site plans. The enclosed "as-built" plans note the modifications".

3. "I understand that any false statement in this certification is punishable as a criminal offence under section 53a-157b of the General Statutes and under any other applicable law."

_____ _____
Signature of Licensee Date

_____
Name of Licensee (print or type)

_____ _____
Signature of CT-Licensed Design Professional Date

_____
Name of CT-Licensed Design Professional (print or type)

_____
Professional License Number (if applicable)

Affix Stamp Here

- As-built plans shall include: elevations or tidal datums, as applicable, and structures, including any proposed elevation views and cross sections included in the approved license plans. Such as-built plans shall be the original ones and be signed and sealed by an engineer, surveyor or architect, as applicable, who is licensed in the State of Connecticut.
- The Licensee will be notified by staff of the Land and Water Resources Division (LWRD) if further compliance review is necessary. Lack of response by LWRD staff does not imply compliance.

Submit this completed form to :
DEEP.LWRDRegulatory@ct.gov or
Regulatory Section
Department of Energy and Environmental Protection
Land & Water Resources Division
79 Elm Street
Hartford, CT 06106-5127

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

Regulatory and Enforcement Branch
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Attn: Dan Breen, Chief Transportation & Utilities Section

Re: 202407000-PCN, Concurrence of Eligibility
NAE-2022-00196
Route 63 over Straitsville Brook, Naugatuck, CT 06770

Dear Mr. Breen:

The above-referenced Pre-Construction Notification ("PCN") was submitted to the Connecticut Department of Energy and Environmental Protection ("DEEP") on June 6, 2024 by the Connecticut Department of Transportation, for eligibility screening under the Department of the Army Regional General Permit for the State of Connecticut ("CT RGP") dated December 15, 2021, and authorized and conditioned pursuant to Section 401 of the Federal Clean Water Act.

Project: The applicant proposes activities in Waters of the United States which will result in the following impacts, as shown on attached plans titled *"Environmental Permit Plans State Project No. 0087-0148: Rehabilitation of Bridge No. 06772 carrying Route 63 over Straitsville Brook in the Town of Naugatuck, CT,"* dated May 9, 2024, and prepared by the Connecticut Department of Transportation:

1. Slip lining the existing 9 ft span x 6 ft 5 inch rise corrugated steel arch culvert (length of 75 ft) with an 8 ft span x 5 ft 6 inch rise corrugated steel liner and secure with grout between the structures;
2. Regrading 60 linear ft of Straitsville Brook upstream of the culvert inlet by installing a minimum of 12" of natural streambed material over 12" of No. 6 crushed stone as depicted on plan sheet PMT-04;
3. Regrading 10 linear ft of Straitsville Brook downstream of the culvert outlet by installing a minimum of 12" of natural streambed material as depicted on plan sheet PMT-04;
4. Replacing the inlet headwalls and wingwalls, and outlet endwall with associated temporary stabilization measures (earth retaining system) as depicted on plan sheet PMT-04;
5. Installing a 140 ft rip rap revetment approximately 300 ft downstream from the culvert's outlet; and composed of 4 ft of heavy rip rap on 12" of modified rip rap, over 6" of No. 6 crushed stone, with top-dressing of natural streambed material up to the 2-year water surface elevation as depicted on plan sheet PMT-05;

6. Installing a temporary crane-mat platform over Straitsville Brook and temporary 18" diameter bypass pipe for water-handling during the rip rap revetment work as depicted on plan sheet PMT-05; and
7. Installing temporary cofferdams and a temporary 18" diameter bypass pipe for water-handling during the culvert rehabilitation work as depicted on plan sheet PMT-06.

	Waterway	Wetland	Total
Temporary:	1670 sf	0 sf	1670 sf
Permanent:	5250 sf	0 sf	5250 sf
Total:	6920 sf	0 sf	6920 sf

Adaptive Best Management Practices. The Best Management Practices described in Attachment A included with this letter were found to be insufficient to protect existing and designated uses of waters such as propagation of fish, shellfish and wildlife, recreation, public water supply, and agriculture, industrial use and navigation, and the water quality necessary for their protection. Therefore, the following adaptive best management practices shall also be employed to protect water quality and designated uses of waters:

1. **Discharge of Materials.** At no time shall the Project Proponent allow grout or low strength material to discharge into Straitsville Brook.
2. **Natural Streambed Material.** The Project Proponent shall stockpile and contain any natural streambed material with a sedimentation control system that is excavated during the pipe relining, rip rap installation, and channel regrading components of the project.
3. **Washing in of Natural Streambed Material.** The Project Proponent shall wash in natural streambed material up to the 2-year surface elevation within the proposed rip rap revetment as described above in Activity 5.
4. **Large Boulder Stockpiling.** The Project Proponent shall temporarily stockpile and restore large stones/boulders removed from the immediate downstream side of the bridge during Activity 3 as described above and on plan sheet PMT-04 of the site plan set.
5. **Invasive Species Management.** The Project Proponent shall manage invasive species within the clearing limits and impact areas, including but not limited to Japanese barberry (*Berberis thunbergia*), Japanese knotweed (*Reynoutria japonica*), Oriental bittersweet (*Celastrus orbiculatus*), mugwort (*Artemisia vulgaris*), and multiflora rose (*Rosa multiflora*), as depicted on plan sheet PMT-07 of the site plan set.
6. **Management of Materials.** All wastewaters produced from the cleaning, preparation, and/or installation for slip-lining shall be managed in accordance with all federal, state, and local requirements, including Chapter 446K Water Pollution Control, Chapter 445 Hazardous Waste, and Chapter 446d Solid Waste of the Connecticut General Statutes.
7. **Temporary Removal of Bypass Pipe.** For any storm (greater or equal to the 2-year event) predicted to occur on the project site, the Project Proponent shall halt all activities

within Straitsville Brook and remove the 18" temporary bypass pipe at both the existing arch culvert and proposed rip rap revetment locations to allow adequate flow to pass through the channel prior to the storm event. The Project Proponent shall also make sure that the proper sedimentation and erosion control measures are secured after removal of the temporary water-handling systems. The Project Proponent shall restore any damaged or compromised sedimentation and erosion controls after the storm event and then may resume construction.

Staff of the Land & Water Resources Division (the "Division") have reviewed the project and determined that the proposed regulated work is eligible for PCN coverage under CT RGP #19. Therefore, an individual application to DEEP is not required at this time, provided that the project receives approval from the U.S. Army Corps of Engineers under the CT RGP and that the authorized activities proceed as described in the PCN documentation provided to the Division in the above-referenced notification.

Please be advised that conducting regulated activities without the required state Section 401 Water Quality Certification (WQC) and federal Section 404 WQC is a violation of law and is subject to enforcement proceedings and legal action under 33 CFR Part 326 and citations thereunder.

If you have any questions or need additional information, please contact John Bator at 860-424-3562 or john.bator@ct.gov.

Jeff Caiola

Jeff Caiola, Assistant Director
Land and Water Resources Division
Bureau of Water Protection and Land Reuse

10/21/2024
Date

CC (via email):
Christine Xenelis, Christine.Xenelis@ct.gov
Amanda Saul, Amanda.Saul@ct.gov
William Sigmund, William.Sigmund@ct.gov
Tiffany Blancato, Tiffany.Blancato@ct.gov
Eva Szigeti, Eva.M.Szigeti@usace.army.mil
Kathleen Tucker, Kathleen.A.Tucker@usace.army.mil

ATTACHMENT A
GENERAL TERMS AND CONDITIONS

1. **Best Management Practices.** In constructing or maintaining the activities authorized herein, the permittee shall employ best management practices in accordancewithSection22a-426-1of the Regulations for Connecticut State Agencies, consistent with the terms and conditions of this certificate, to control storm water discharges and erosion and sedimentation and to prevent pollution. Such practices to be implemented by the permittee at the site include, but are not necessarily limited to:

   a. Prohibiting dumping of any quantity of oil, chemicals or other deleterious material on the ground;

   b. Immediately informing the Commissioner's Oil and Chemical Spill Response Division at (860) 424-3338 (24- hour phoneline) of any adverse impact or hazard to the environment, including any discharges, spillage, or loss of oil or petroleum or chemical liquids or solids, which occurs or is likely to occur as the direct or indirect result of the activities authorized herein;

   c. Separating staging areas at the site from the regulated areas by silt fences or straw/hay bales at all times;

   d. Prohibiting storage of any fuel and refueling of equipment within twenty-five (25) feet from any wetland or watercourse;

   e. Preventing pollution of wetlands and watercourses in accordance with the document "Connecticut Guidelines for Soil Erosion and Sediment Control" as revised. Said controls shall be inspected by the permittee for deficiencies at least once per week and immediately after each rainfall and at least daily during prolonged rainfall. The permittee shall correct any such deficiencies within 48 hours of said deficiencies being found;

   f. Stabilizing disturbed soils in a timely fashion to minimize erosion. If a grading operation at the site will be suspended for a period of thirty (30) or more consecutive days, the permittee shall, within the first seven (7) days of that suspension period, accomplish seeding and mulching or take such other appropriate measures to stabilize the soil involved in such grading operation. Within seven (7) days after establishing final grade in any grading operation at the site the permittee shall seed and mulch the soil involved in such grading operation or take such other appropriate measures to stabilize such soil until seeding and mulching can be accomplished.

   g. Prohibiting the storage of any materials at the site which are buoyant, hazardous, flammable, explosive, soluble, expansive, radioactive, or which could in the event of a flood be injurious to human, animal or plant life, below the elevation of the five hundred (500) year flood. Any other material or equipment stored at the site below said elevation by the permittee or the permittee's contractor must be firmly anchored, restrained or enclosed to prevent flotation. The quantity of fuel stored below such elevation for equipment used at the site shall not exceed the quantity of fuel that is expected to be used by such equipment in one da y.

   h. Immediately informing the Commissioner's Land & Water Resources Division at (860) 424-3019 and the U.S. Army Corps of Engineers' Permit Compliance Section at (617) 647-8674, of the occurrence of pollution or other environmental damage resulting from construction or maintenance of the authorized activity or any construction associated therewith in violation of this certificate. The permittee shall, no later than 48 hours after the permittee learns of a violation of this certificate, report same in writing to the Commissioner. Such report shall contain the

following information:

(i) the provision(s) of this certificate that has/have been violated;
(ii) the date and time the violation(s) was first observed and by whom;
(iii) the cause of the violation(s), if known
(iv) if the violation(s) has ceased, the duration of the violation(s) and the exact date(s) and times(s) it was corrected;
(v) if the violation(s) has not ceased, the anticipated date when it will be corrected;
(vi) steps taken and steps planned to prevent a reoccurrence of the violation(s) and the date(s) such steps were implemented or will be implemented;
(vii) the signatures of the permittee and of the individual(s) responsible for actually preparing such report, each of whom shall certify said report in accordance with condition 8 of this certificate.

For information and technical assistance, contact the Land & Water Resources Division at (860) 424-3019.

2. **Inspection of the Facility or Activity, Adaptive Best Management Practices & Compliance with Conditions**. The concurrence of eligibility letters for Pre- Construction Notifications will be considered the initial inspection of the facility or activity for the purpose of determining whether the discharge from the certified project may violate WQC-202108351 (Non-Tidal) of the Department of the Army Regional General Permit for the State of Connecticut. The concurrence of eligibility letters may also address the remedial actions necessary in order to be considered to be compliance with this certification.

   In the event that Best Management Practices employed to maintain compliance with the conditions of this Water Quality Certificate, as described in paragraph 1 above, have been found to be insufficient to protect existing and designated uses of waters such as propagation of fish, shellfish and wildlife, recreation, public water supply, and agriculture, industrial use and navigation, and the water quality necessary for their protection, such permittee shall employ additional or alternative adaptive best management practices to protect water quality.

   All work and all activities authorized herein conducted by the permittee at the site shall be consistent with the terms and conditions of this certificate. Upon initiation of the activities authorized herein, the permittee thereby accepts and agrees to comply with the terms and conditions of this Water Quality Certificate.

3. **Rights.** This certificate is subject to and does not derogate any present or future property rights or other rights or powers of the State of Connecticut and conveys no property rights in real estate or material nor any exclusive privileges and is further subject to any and all public and private rights and to any federal, state, or local laws or regulations pertinent to the property or activity affected hereby. This certification does not comprise the permits or approvals as may be required by Chapters 440, 446i, 446j and 446k of the Connecticut General Statutes.

4. **Expiration of Certificate.** The Section 401 Water Quality Certifications contained herein shall be valid until such time as the Department of the Army Regional General Permits for the State of Connecticut expires or is modified, suspended, revoked or reissued.

5. **Transfer of Certificate.** This authorization is not transferable without the written consent of the Commissioner

6. **Reliance on Application.** In evaluating the permittee's application, the Commissioner has relied on information provided by the permittee. If such information subsequently proves to be false, deceptive, and incomplete or in accurate, this certificate may be modified, suspended or revoked.

7. **Installation and Removal of Confining Structures.** Confinement of a work area by cofferdam techniques using sandbag placement, sheet pile installation (vibratory method only), portadam, or similar confinement devices is allowed any time of the year unless specifically prohibited by a permit condition. The removal of such confinement devices is allowed any time of the year unless specifically prohibited by a permit condition. Once a work area has been confined, in-water work within the confined area is allowed any time of the year. The confinement technique used shall completely isolate and protect the confined area from all flowing water. The use of silt boom/curtain or similar technique as a means for confinement is prohibited.

8. **Certification of Documents.** Any document, including but not limited to any notice, which is required to be submitted to the Commissioner under this certificate shall be signed by the permittee, a responsible corporate officer of the permittee, a general partner of the permittee, or a duly authorized representative of the permittee and by the individual or individuals responsible for actually preparing such document, each of whom shall certify in writing as follows:

   "I have personally examined and am familiar with the information submitted in this document and all attachments and certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief , and I understand that any false statement made in this document or its attachments may be punishable as a criminal offense in accordance with Section 22a-6 under Section 53a-157 of the Connecticut General Statutes."

9. **Submission of Documents.** The date of submission to the Commissioner of any document required by this certificate shall be the date such document is received by the Commissioner. Except as otherwise specified in this certificate, the word "day" as used in this certificate means the calendar day. Any document or action which falls on a Saturday, Sunday, or legal holiday shall be submitted or performed by the next business day thereafter.

   Any document or notice required to be submitted to the Commissioner under this certificate shall, unless otherwise specified in writing by the Commissioner, be directed to:

   Director, Land & Water Resources Division
   Bureau of Water Protection and Land Reuse
   Department of Energy & Environmental Protection
   79 Elm Street
   Hartford, Connecticut 06106-5127

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

Bureau of Water Protection & Land Reuse
Land & Water Resources Division

79 Elm Street • Hartford, CT 06106-5127 portal.ct.gov/DEEP Affirmative Action/Equal Opportunity Employer

LWRD Work Commencement Form

To: DEEP.LWRDRegulatory@ct.gov or
Regulatory Section
Department of Energy and Environmental Protection
Land & Water Resources Division
79 Elm Street
Hartford, CT 06106-5127

Licensee Name: Town of Naugatuck
Municipality in which the project is occurring: Naugatuck
DEEP License No(s): 202407000-PCN

CONTRACTOR(s):

1 Name: _____
Address: _____
Telephone: _____
E-mail: _____

2 Name: _____
Address: _____
Telephone: _____
E-mail: _____

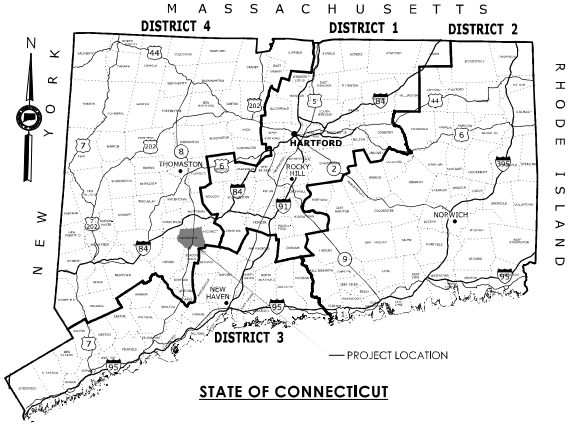
3 Name: _____
Address: _____
Telephone: _____
E-mail: _____

Date Contractor(s) received a copy
of the license and approved plans: _____

EXPECTED DATE OF COMMENCEMENT OF WORK: _____

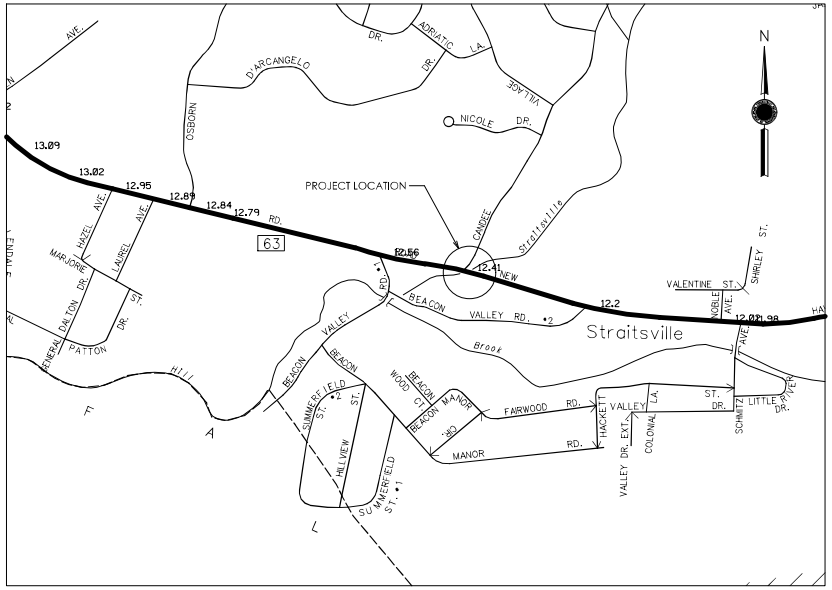
EXPECTED DATE OF COMPLETION OF WORK: _____

LICENSEE: _____ _____
(Signature) (Date)



STATE OF CONNECTICUT

ENVIRONMENTAL PERMIT PLANS
STATE PROJECT NO. 0087-0148
REHABILITATION OF BRIDGE NO. 06772
CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
IN THE TOWN OF NAUGATUCK, CT



LOCATION PLAN
1" = 500'-0"

GENERAL NOTES

1. THESE PLANS ARE NOT FOR CONSTRUCITON AND ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL EFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS, AND WETLAND SOILS, SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 1927 VERTICAL DATUM BASED ON NGVD OF 1929.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGES, FACILITIES AND INCIDENTAL CONSTRUCTION, FORM 818, SECTION 1.10 AND WILL ALSO FOLLOW REQUIRED BEST MANAGEMENT PRACTICES (BMP'S) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION AND SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	TITLE SHEET
PMT-02	GENERAL SITE PLAN
PMT-03	WETLAND/ WATERCOURSE IMPACT PLAN
PMT-04	ELEVATIONS AND SECTION PLAN
PMT-05	REVETMENT SECTION
PMT-06	STAGING AND WATER HANDLING PLAN
PMT-07	PERMIT PLANTING PLAN

ENVIRONMENTAL PERMIT PLANS
PLAN DATE: May 9, 2024

NO.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

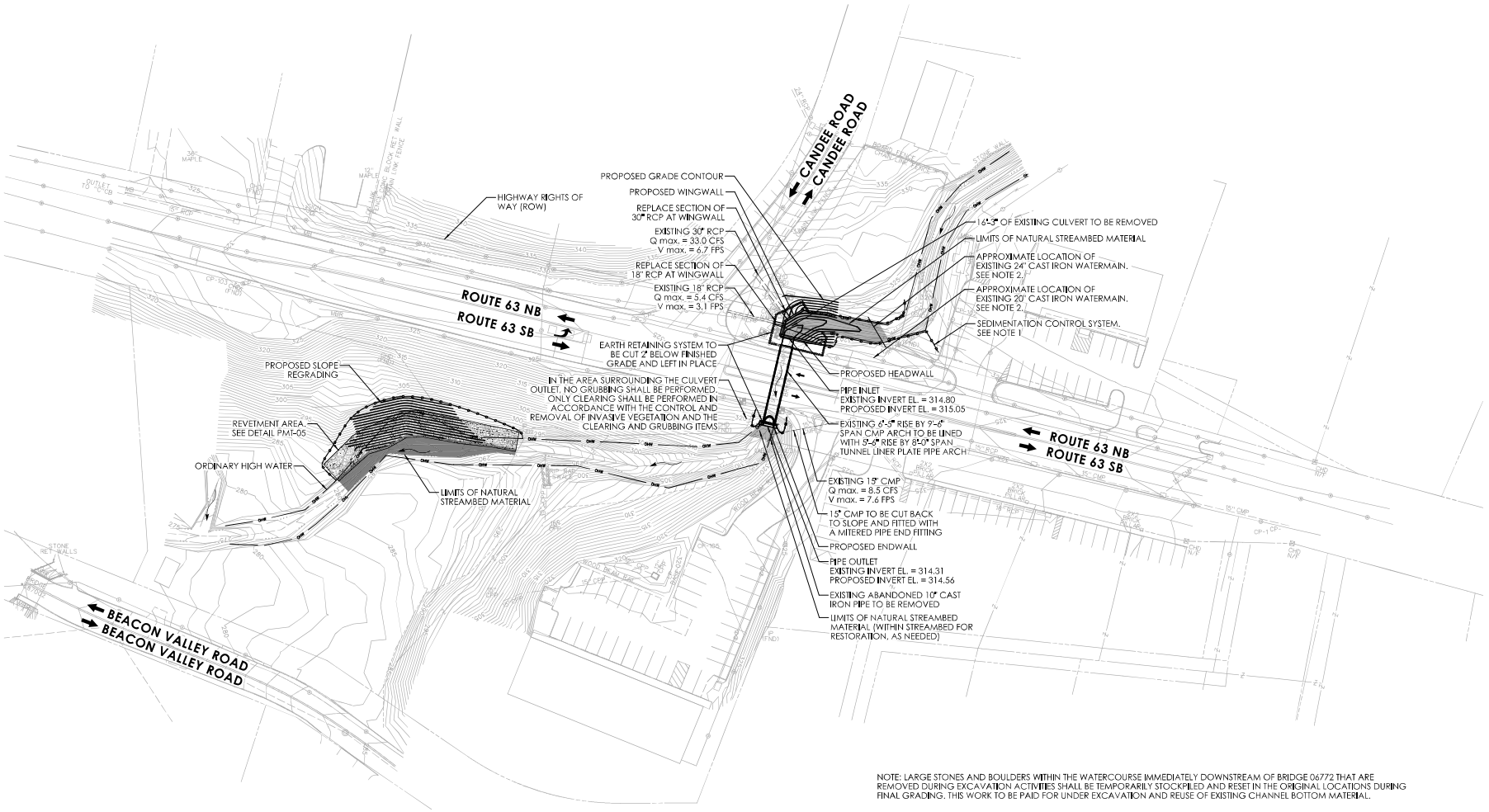
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: TITLE SHEET

DRAWING NO. PMT-01
SHEET NO.

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PLOTTED DATE: 5/9/2024



NOTE: LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.

BRIDGE NO. 06772 GENERAL SITE PLAN

SCALE: 1" = 40'

LEGEND

- OHW — ORDINARY HIGH WATER
- SURVEYED EDGE OF WATER
- SEDIMENTATION CONTROL SYSTEM

NOTES:

1. APPROXIMATE LOCATION OF SEDIMENTATION CONTROL SYSTEM SHOWN AT FINAL CONDITION
2. LOCATION OF EXISTING WATERMAINS ARE UNKNOWN. IF ENCOUNTERED DURING CONSTRUCTION THE ABANDONED WATERMAINS WITHIN THE REGULATED AREA WILL BE REMOVED AND THE DISTURBED AREA WILL BE RESTORED WITH NATURAL STREAMBED MATERIAL.
3. SEDIMENTATION CONTROL SYSTEM TO BE PLACED AT CATCH BASIN(S) AS NEEDED OR AS DIRECTED BY THE ENGINEER

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

NO.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

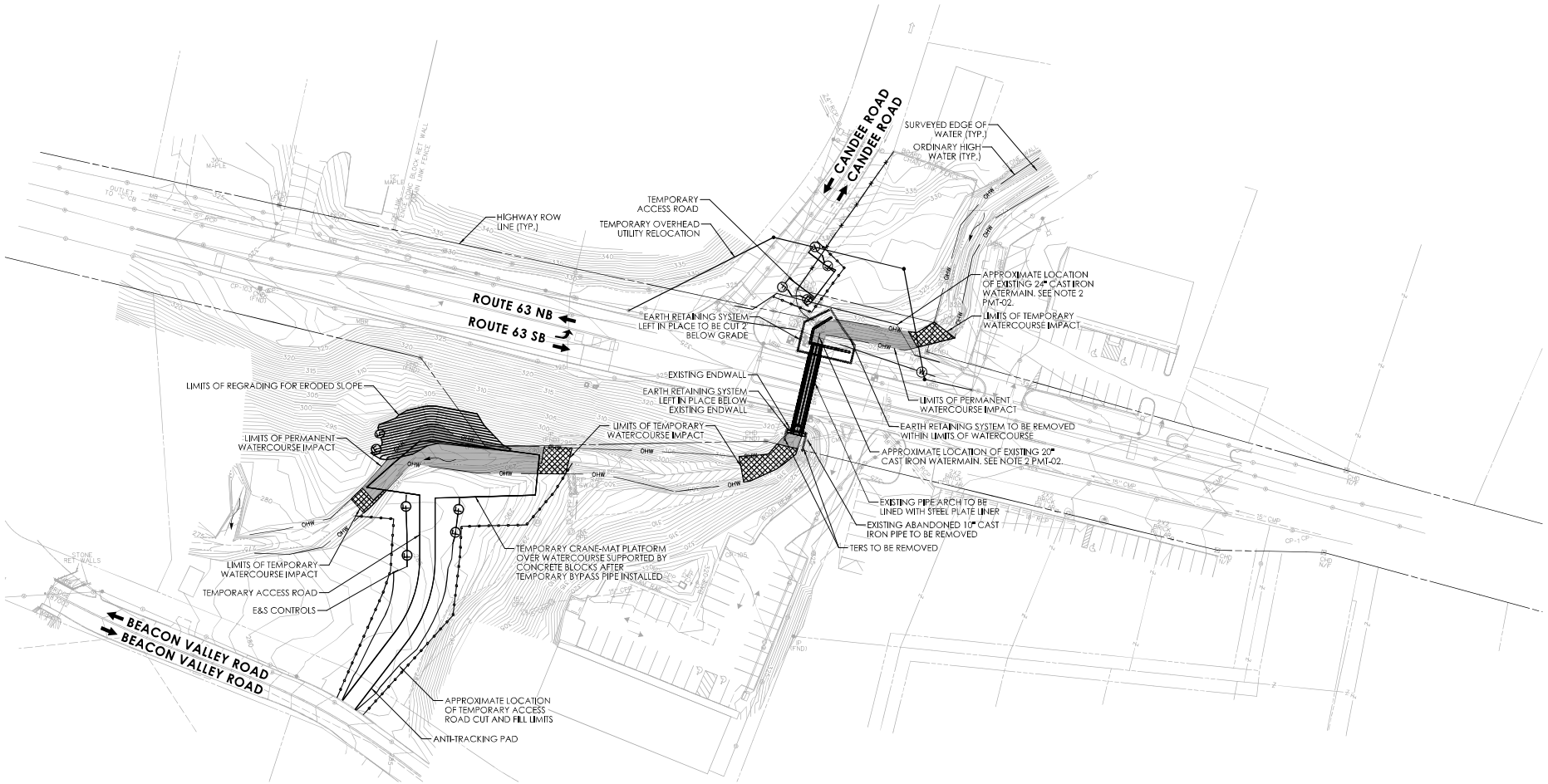
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STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: GENERAL SITE PLAN

DRAWING NO. PMT-02
SHEET NO.

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PLOTTED DATE: 5/9/2024



LEGEND

- TEMPORARY WETLAND/WATERCOURSE IMPACT
- PERMANENT WETLAND/WATERCOURSE IMPACT

NOTE:

THE CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WERLANDS AND WATERCOURSE. ALL DISTURBED AREAS SHALL BE RESTORED

BRIDGE NO. 06772 IMPACT PLAN

SCALE: 1" = 40'

WETLAND/WATERCOURSE IMPACT TABLE			
	WETLAND IMPACTS	WATERCOURSE IMPACTS	TOTAL
PERMANENT IMPACTS	0 S.F. (0 AC.)	5250 S.F. (0.121 AC)	5250 S.F. (0.121 AC)
TEMPORARY IMPACTS	0 S.F. (0 AC.)	1670 S.F. (0.038 AC)	1670 S.F. (0.038 AC)
TOTAL IMPACTS	0 S.F. (0 AC.)	6920 S.F. (0.159 AC)	6920 S.F. (0.159 AC)

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

NO.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: WATERCOURSE IMPACT PLAN

DRAWING NO. PMT-03
SHEET NO.

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PLOTTED DATE: 5/9/2024

HYDRAULIC DATA	
DRAINAGE AREA	0.69 SQ. MILE
DESIGN FREQUENCY	50 YEAR
DESIGN DISCHARGE	220 CFS
UPSTREAM AVERAGE DAILY FLOW ELEVATION	315.4 FT
DOWNSTREAM AVERAGE DAILY FLOW ELEVATION	308.9 FT
UPSTREAM DESIGN WATER SURFACE ELEVATION	320.6 FT
DOWNSTREAM DESIGN WATER SURFACE ELEVATION	311.4 FT

NATIVE STREAMBED MATERIAL NOTES:

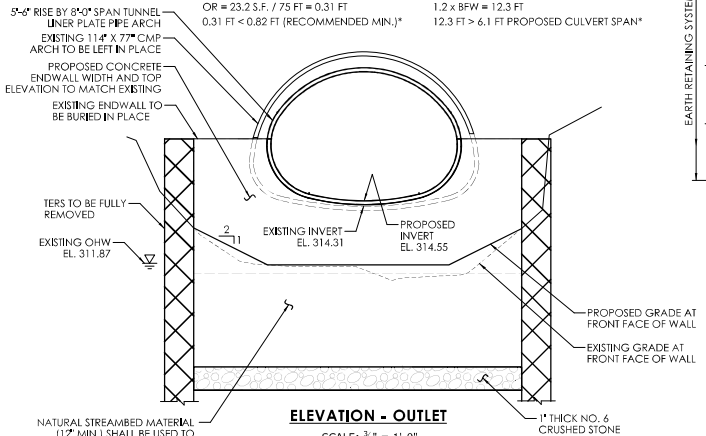
1. NATIVE STREAMBED MATERIAL EXCAVATED DURING THE PIPE RELINING, RIPRAP INSTALLATION AND CHANNEL REGRADING SHALL BE STOCKPILED AND THEN REPLACED OUTSIDE THE LIMITS OF THE RIPRAP AREAS AS NEEDED FOR REGRADING TO THE DEPTH SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH THE SPECIAL PROVISION "EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL."
2. ADDITIONAL STREAMBED MATERIAL, IF REQUIRED, SHALL BE IN ACCORDANCE WITH SPECIAL PROVISION "SUPPLEMENTAL STREAMBED CHANNEL MATERIAL."
3. THE STOCKPILE SHALL BE LOCATED OUTSIDE THE WETLAND LIMITS AND PROTECTED WITH SEDIMENTATION CONTROL SYSTEM.
4. LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.

OPENNESS RATIO (OR):

OR = OPEN AREA / STRUCTURE LENGTH
OR = 23.2 S.F. / 75 FT = 0.31 FT
0.31 FT < 0.82 FT (RECOMMENDED MIN.)*

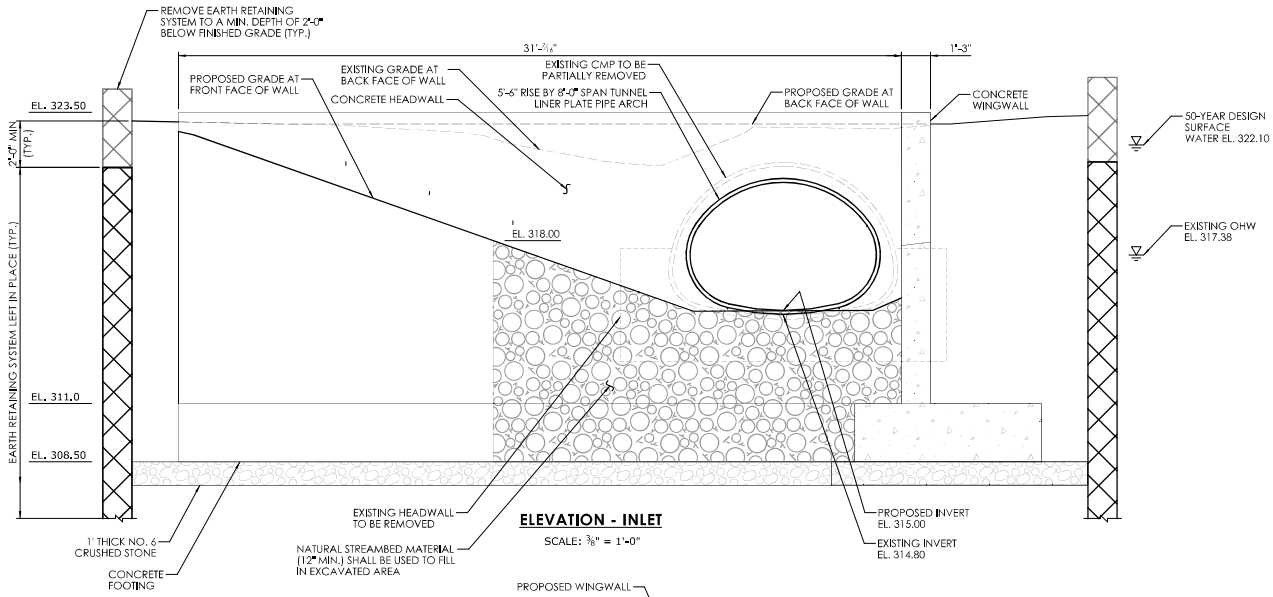
BANKFULL WIDTH (BFW):

BFW = 10.2 FT
1.2 x BFW = 12.3 FT
12.3 FT > 6.1 FT PROPOSED CULVERT SPAN*



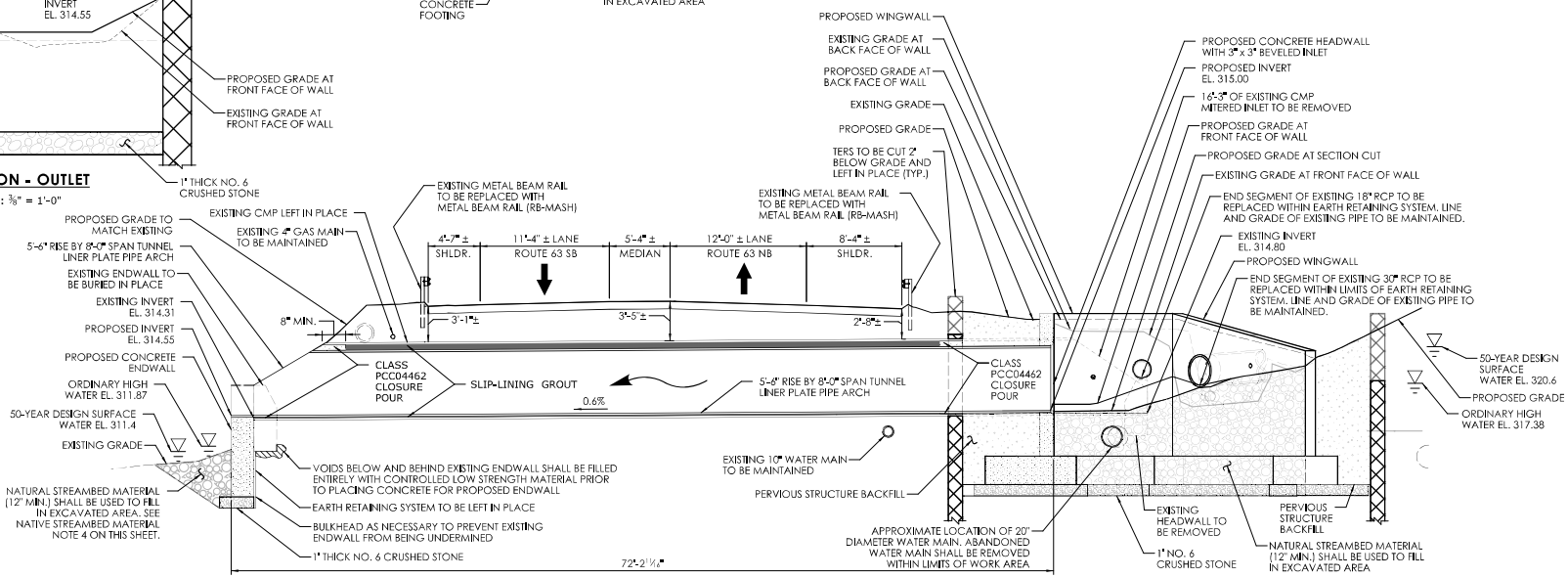
ELEVATION - OUTLET

SCALE: ⅜" = 1'-0"



ELEVATION - INLET

SCALE: ⅜" = 1'-0"



SECTION - INLET

SCALE: 3/16" = 1'-0"

NOTES:
IF LEDGE IS ENCOUNTERED PRIOR TO REACHING DEPTH OF EXCAVATION AS SHOWN ON THIS SHEET, LEDGE NEED NOT BE REMOVED AND PROPOSED ENDWALL SHALL BE CAST DIRECTLY AGAINST LEDGE.

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

NO.	DATE	REVISION DESCRIPTION

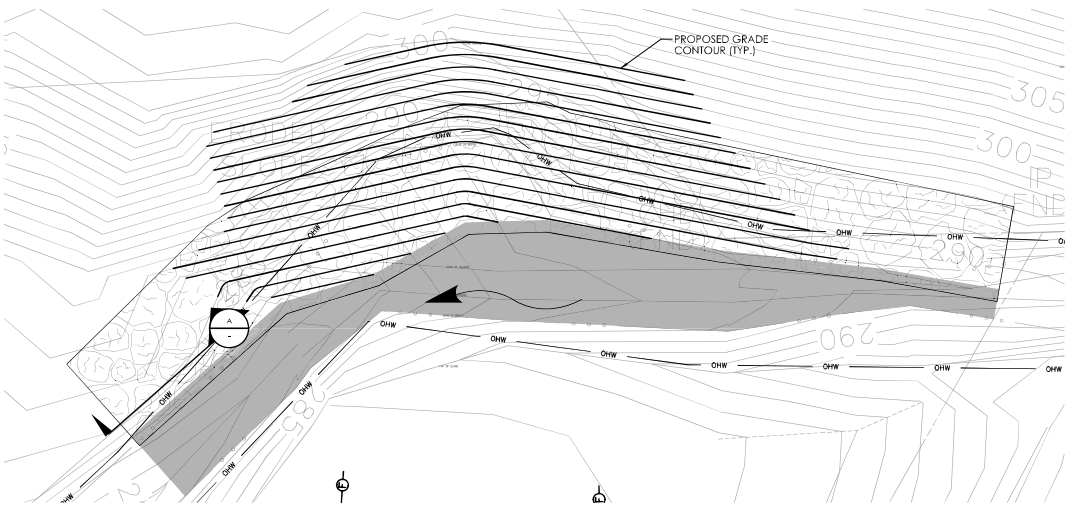
DESIGNER/DRAFTER: JJS CHECKED BY:
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

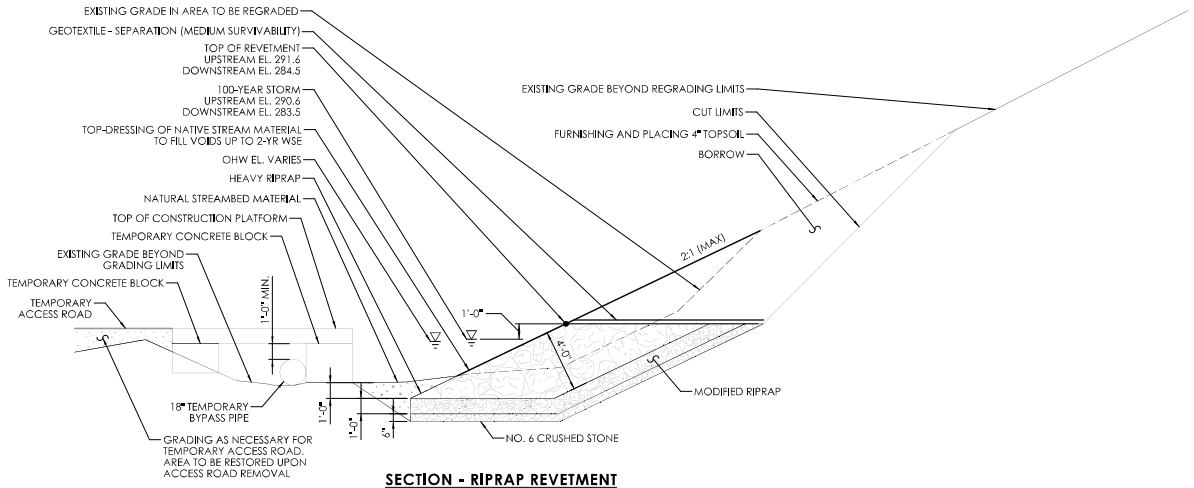
PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: ELEVATION AND SECTION PLAN

DRAWING NO. PMT-04
SHEET NO.

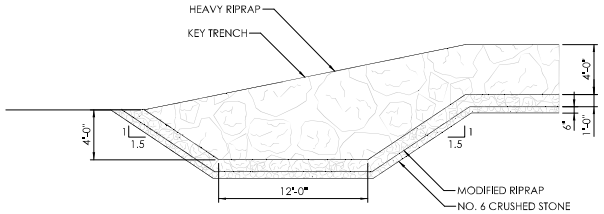
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PLOTTED DATE: 5/9/2024



REVETMENT PLAN
SCALE: 1" = 10'



SECTION - RIPRAP REVETMENT
SCALE: N.T.S.



SECTION - REVETMENT KEY-IN
SCALE: 1" = 5'

ENVIRONMENTAL PERMIT PLANS
PLAN DATE: May 9, 2024

NO.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: CHECKED BY:

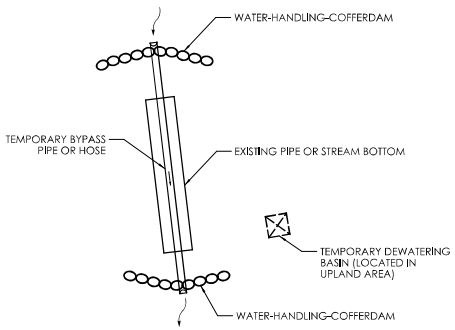
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

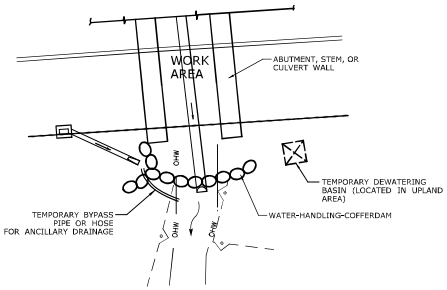
PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: REVETMENT SECTION

DRAWING NO. PMT-05
SHEET NO.

LASTED SAVED BY: SallyJ **FILE NAME:** C:\Users\sallyj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-5_RevetmentSection.dgn
PLOTTED DATE: 5/9/2024

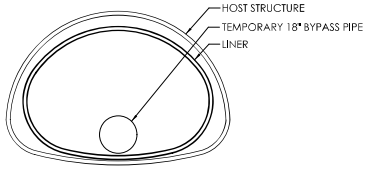


TEMPORARY PIPE
(NOT TO SCALE)



ANCILLARY STORM DRAINAGE NEAR WORK AREA
(NOT TO SCALE)

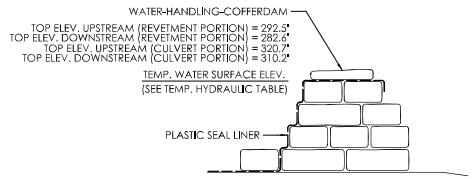
NOTE: ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING OR PROPOSED STORM DRAINAGE SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREAS. THE CONTRACTOR SHALL SUBMIT THE MEANS AND METHODS OF HANDLING STORM DRAINAGE TO THE ENGINEER FOR APROVAL.



WATER HANDLING
SCALE: N.T.S.

TEMPORARY HYDRAULIC DATA	
AVERAGE DAILY FLOW	1.3 CFS
AVERAGE SPRING FLOW	2.5 CFS
2-YEAR FREQUENCY DISCHARGE	45 CFS
TEMPORARY DESIGN FREQUENCY	3 X A.S.F.
LOW FLOW PUMPING TEMPORARY DESIGN DISCHARGE	7.5 CFS
GRAVITY FLOW BYPASS PIPE TEMPORARY DESIGN DISCHARGE	7.5 CFS
UPSTREAM WATER SURFACE ELEVATION (CULVERT PORTION)	319.7 FT
DOWNSTREAM WATER SURFACE ELEVATION (CULVERT PORTION)	309.2 FT
UPSTREAM WATER SURFACE ELEVATION (REVETMENT PORTION)	291.5 FT
DOWNSTREAM WATER SURFACE ELEVATION (REVETMENT PORTION)	280.5 FT

NOTES:
1. TABLE IS APPLICABLE FOR BOTH CULVERT AND REVETMENT WATER HANDLING
2. VALUES AND ELEVATIONS MAY VARY SLIGHTLY FROM THE CONTRACT PLANS



WATER-HANDLING-COFFERDAM TYPICAL SECTION
SCALE: NOT TO SCALE

SUGGESTED CONSTRUCTION SEQUENCE - SLOPE REVETMENT

1. INSTALL SEDIMENTATION CONTROL SYSTEM.
2. PERFORM CLEARING AND GRUBBING AND CONTROL AND REMOVAL OF INVASIVE VEGETATION.
3. CONSTRUCT TEMPORARY ACCESS ROAD FROM BEACON VALLEY ROAD TO THE WORK AREA.
4. INSTALL TEMPORARY WATER HANDLING SYSTEM INCLUDING WATER-HANDLING-COFFERDAMS AND TEMPORARY BYPASS PIPE.
5. DIVERT WATER THROUGH THE TEMPORARY BYPASS PIPE TO DRY THE WORK AREA.
6. CONSTRUCT ACCESS PLATFORM WITH CRANE MATS AND CONCRETE BLOCKS TO SPAN THE TEMPORARY BYPASS PIPE AS NEEDED FOR ACCESS TO THE DOWNSTREAM REVETMENT WORK AREA.
7. CONSTRUCT SLOPE REVETMENT.
8. REMOVE TEMPORARY ACCESS ROADS, CRANE MATS, AND PERFORM FINAL GRADING.
9. REMOVE TEMPORARY WATER-HANDLING-COFFERDAMS AND BYPASS PIPE.
10. CONSERVATION SEEDING FOR SLOPES. PERMIT PLANTINGS. REMOVE SEDIMENTATION CONTROL SYSTEMS UPON FINAL STABILIZATION.

SUGGESTED CONSTRUCTION SEQUENCE - PIPE RELINING

1. RELOCATE OVERHEAD UTILITIES TEMPORARILY.
2. INSTALL SEDIMENTATION CONTROL SYSTEM.
3. PERFORM CLEARING AND GRUBBING AND CONTROL AND REMOVAL OF INVASIVE VEGETATION.
4. CONSTRUCT TEMPORARY ACCESS ROAD FROM CANDEE ROAD TO CULVERT INLET.
5. INSTALL TEMPORARY WATER HANDLING SYSTEM INCLUDING WATER-HANDLING-COFFERDAMS AND TEMPORARY BYPASS PIPE.
6. DIVERT WATER THROUGH THE TEMPORARY BYPASS PIPE TO DRY THE HOST STRUCTURE.
7. REMOVE SEDIMENT AND REGRADE AREA AT HOST STRUCTURE INLET.
8. CLEAN HOST STRUCTURE BY HAND THROUGH REMOVAL OF DEBRIS. THE CULVERT CLEANING AND THE GROUTING PROCESS SHALL NOT CAUSE TURBIDITY OF THE EXISTING WATER COURSE.
9. GROUT ALL VOIDS AND PERFORATIONS TO ENSURE FULL BEARING OF MATERIAL TO THE EXTRADOS OF THE EXISTING PIPE ARCH.
10. PLACE TEMPORARY EARTH RETAINING SYSTEM. REMOVE END SECTION OF EXISTING STRUCTURE AT THE INLET. REPLACE END SECTIONS OF 30" RCP AND 18" RCP AT INLET WINGWALL.
11. INSTALL TUNNEL LINER PLATE SECTIONS WITHIN THE HOST STRUCTURE. THE CONTRACTOR SHALL TAKE THE NECESSARY MEANS TO ENSURE THAT DEBRIS DOES NOT ENTER THE CULVERT SYSTEM DURING INSTALLATION OF THE CORRUGATED STEEL STRUCTURAL PLATE LINER.
12. INSTALL PCC00462 BULKHEADS AT THE INLET AND OUTLET.
13. PLACE SLIP-LINING GROUT.
14. EXCAVATE AND CONSTRUCT WINGWALLS, HEADWALL, AND ENDWALL ON NO. 6 CRUSHED STONE. REMOVE ABANDONED WATER MAINS IF ENCOUNTERED. CUT LEFT IN PLACE EARTH RETAINING SYSTEM AT 2 FEET BELOW GRADE. BACKFILL AND REMOVE REMAINING TEMPORARY EARTH RETAINING SYSTEM.
15. PLACE NATURAL STREAMBED MATERIAL AND PERFORM FINAL GRADING. LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.
16. REMOVE TEMPORARY WATER-HANDLING-COFFERDAMS AND BYPASS PIPE AT BOTH INLET AND OUTLET. RETURN FLOW TO HOST STRUCTURE.
17. REMOVE TEMPORARY ACCESS ROAD AND RESTORE IMPACTED AREAS.
18. CONSERVATION SEEDING FOR SLOPES. PERMIT PLANTINGS. REMOVE SEDIMENTATION CONTROL SYSTEMS UPON FINAL STABILIZATION.
19. RELOCATE OVERHEAD UTILITIES TO FINAL POSITIONING.

WATER HANDLING NOTES:

1. THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE TEMPORARY GRAVITY FLOW BYPASS PIPE (OR PUMP AND HOSE SYSTEM DESIGNED BY THE CONTRACTOR) AS SHOWN ON THIS SHEET DURING CLEANING AND REPAIR OF THE HOST STRUCTURE. GROUTING OF THE ANNULAR SPACE BETWEEN THE HOST STRUCTURE AND THE LINER AND DURINGESTABLISHMENT OF FINAL GRADES AS REQUIRED BY THE STAGE CONSTRUCTION SEQUENCES.
2. A DEWATERING BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. THE LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.
3. TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF AN APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA. SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND SHALL CONFORM TO PERMITS.

   ANY WATER HANDLING SCHEME DEPICTED WITHIN THE DEPARTMENT'S 'HANDLING WATER TYPICAL SCHEMATICS' MAY BE UTILIZED UNLESS SPECIFICALLY PROHIBITED. A MEANS AND METHOD FOR WATER HANDLING SYSTEM SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR APPROVAL.
4. WATER HANDLING MEASURES SHALL NOT EXCEED IMPACT AREAS SHOWN ON THE WETLAND SHEET OF THE PERMIT PLANS.
5. ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING OR PROPOSED STORM DRAINAGE PIPES SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREAS. PUMPS/PIPES SHALL BE SIZED BY THE CONTRACTOR TO HANDLE THE EXPECTED FLOWS AND BE DISCHARGED TO A STABLE LOCATION. THE CONTRACTOR SHALL SUBMIT THE MEANS AND METHODS OF HANDLING STORM DRAINAGE TO THE ENGINEER FOR APPROVAL AND IS INCLUDED AS PART OF WATER HANDLING.
6. IF A SHORT DURATION PUMP SYSTEM IS PROPOSED DURING LOW FLOW CONDITIONS, THE PUMP SYSTEM SHALL BE DESIGNED BY THE CONTRACTOR AND HAVE A MINIMUM CAPACITY AS SHOWN IN THE TEMPORARY HYDRAULIC TABLE. PUMP SYSTEM PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

   BASED UPON FIELD CONDITIONS, WORK DURATION, AND EXPECTED WEATHER CONDITIONS, THE ENGINEER MAY APPROVE A WATER HANDLING PLAN WITH LOWER PUMPING FLOWS, PROVIDED THAT THIS INCLUDES A CONTINGENCY PLAN, WHICH MINIMIZES NEGATIVE IMPACTS AND SAFELY CONVEYS LARGER FLOWS THROUGH THE WORK AREA.

UNCONFINED IN-STREAM WORK BMP NOTE:

ANY UNCONFINED IN-STREAM WORK WITHIN THE WATERCOURSE SHALL BE RESTRICTED TO THE PERIOD FROM JUNE 1 TO SEPTEMBER 30, INCLUSIVE. UNLESS OTHERWISE INCLUDED AS A SPECIAL PROVISION OF THE LICENSE, THE CONDITION SHALL APPLY TO PROJECTS IN NON-COASTAL WATERS.

THE DEPARTMENT WILL REVIEW AND MAY APPROVE THE METHODS OF UNCONFINED IN-WATER WORK WITH CONSIDERATION OF THE FOLLOWING:

- PROPOSED SCHEDULE FOR WORK OPERATIONS
- ALL UNCONFINED IN-WATER WORK SHALL BE MINOR IN NATURE
- DISTURBANCE SHALL BE LIMITED TO AREAS THAT HAVE BEEN APPROVED FOR TEMPORARY AND PERMANENT IMPACT
- BEST MANAGEMENT PRACTICE SHALL BE UTILIZED WHEREVER POSSIBLE TO MINIMIZE TURBIDITY/SEDIMENT TRANSPORT DOWNSTREAM
- DISTURBED AREAS AND THE DURATION OF DISTURBANCE SHALL BE MINIMIZED TO THE EXTENT POSSIBLE
- INSTREAM WORK SHALL BE DONE DURING PERIODS OF LOW FLOW

ENVIRONMENTAL PERMIT PLANS
PLAN DATE: May 9, 2024

NO.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

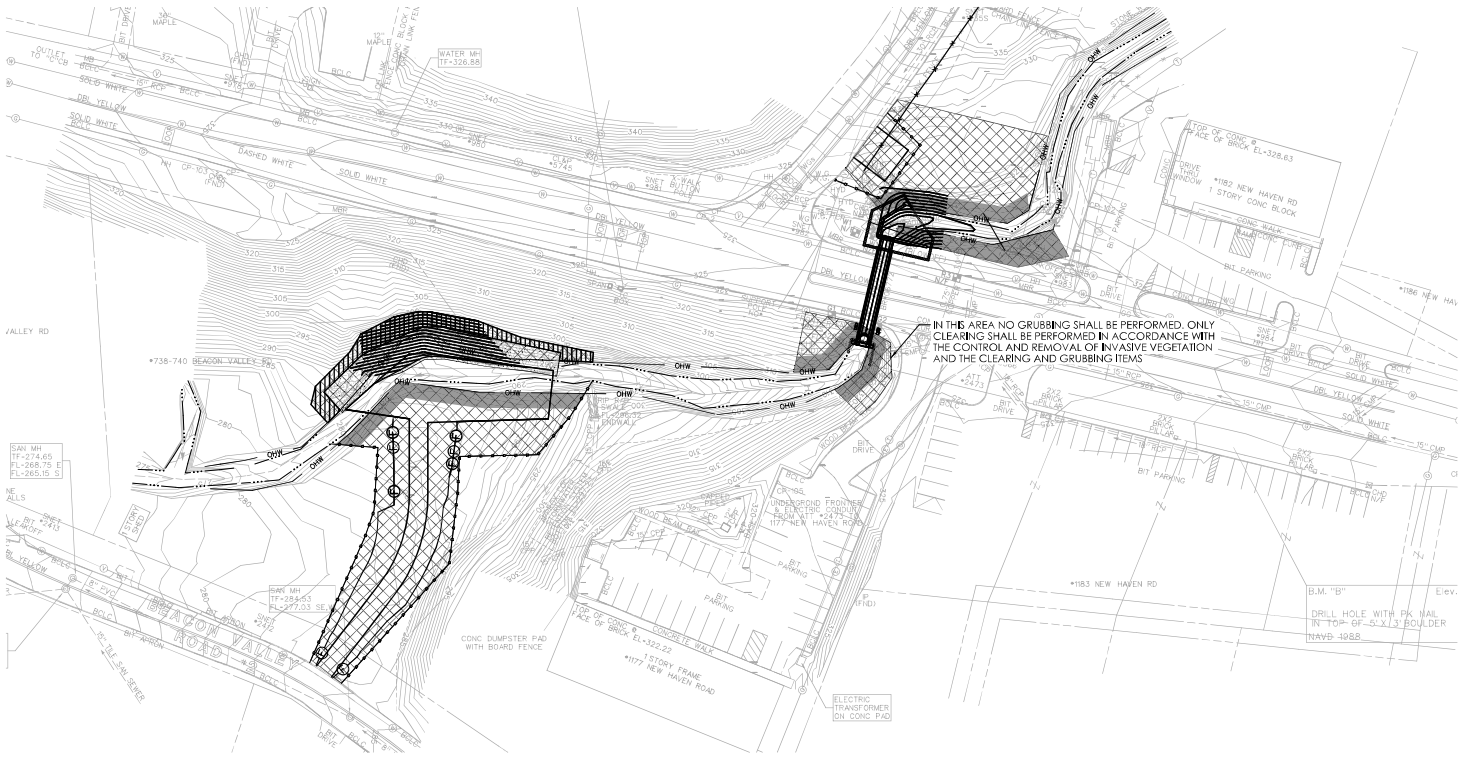
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STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: STAGING AND WATER HANDLING

DRAWING NO. PMT-06
SHEET NO.

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PLOTTED DATE: 5/9/2024



CONTROL AND REMOVAL OF INVASIVE VEGETATION
SEE NOTE 7

SLOPE STABILIZATION PLANTINGS
TOTAL PLANTS = 56
TOTAL PLANTING AREA = 1800 S.F.

AREA TO BE RESTORED WITH PLANTINGS
TOTAL PLANTS = 238
TOTAL PLANTING AREA = 5060 S.F.

PERMIT PLANTING PLAN

SCALE: 1" = 40'

NOTES

1. PLANTINGS ON THIS SHEET ARE FOR ENVIRONMENTAL PERMITTING. ANY SUBSTITUTIONS TO THE PERMIT PLANTINGS SHALL BE COORDINATED WITH THE DEPARTMENT'S OFFICE OF ENVIRONMENTAL PLANNING (OEP).

2. PROPOSED PLANTINGS TO BE FIELD LOCATED BY CTDOT OEP OR THEIR DESIGNATED REPRESENTATIVE.

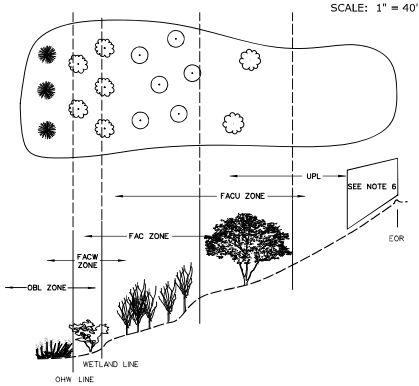
3. WOOD CHIP MULCH SHALL NOT BE PLACED IN THE WETLAND AREA.

4. DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH WETLAND GRASS ESTABLISHMENT. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE SEEDED WITH CONSERVATION SEEDING FOR SLOPES, OR OTHER SEED MIX AS SPECIFIED. ALL AREAS SHALL BE RESTORED.

5. ALL PLANT MATERIAL SHALL BE NURSERY GRADE STRAIGHT SPECIES, CONFORMING TO SECTION 3 OF THE AMERICAN STANDARDS FOR NURSERY STOCK. CTDOT OEP WILL REVIEW AND APPROVE PROPOSED PLANTINGS.

6. NO PLANTINGS SHALL BE PLACED IN MOW AREA.

7. AREA TO BE TREATED FOR INVASIVES AND PROPERLY PREPARED FOR FINAL PLANTING, SEEDING, AND RESTORATION.



SCHEMATIC PLANTING

LANDSCAPE ITEMS

KEY	BOTANICAL NAME	COMMON NAME	SIZE	QTY.	SPACING	WETLAND INDICATOR
A.a.	Aronia arbutifolia	Red Chokeberry	18" - 24" HT. B.B.	9	5' On Center	FACW
C.r.	Cornus racemosa	Gray Dogwood	2' - 3' HT. B.B.	14	5' On Center	FAC
H.v.	Hamamelis virginiana	Witch Hazel	2' - 3' HT. B.B.	11	5' On Center	FACU
V.a.	Viburnum acerifolia	Mapleleaf Viburnum	2' - 3' HT. B.B.	12	5' On Center	UPL
V.d.	Viburnum dentatum	Arrowwood Viburnum	24" - 36" HT. NO. 3 Container	10	5' On Center	FAC

NOTE: FOR INFORMATION ONLY. CONTRACTOR SHALL REFER TO THE CONTRACT PLANS FOR BIDDING PURPOSES.
NOTE: LANDSCAPE ITEMS FOR SLOPE STABILIZATION PLANTINGS TO BE FIELD LOCATED BY DOT LANDSCAPE DESIGN

PERMIT PLANT LIST

BOTANICAL NAME	COMMON NAME AND SIZE	QTY.	SPACING	WETLAND INDICATOR
ACER RUBRUM	RED MAPLE 2"-2½" CAL. BB	8	FIELD LOCATE	FAC
ACER RUBRUM	RED MAPLE 3'-4' HT 1 GAL. CONT.	20	FIELD LOCATE	FAC
ACER RUBRUM	RED MAPLE 6'-8' HT 3 GAL. CONT.	20	FIELD LOCATE	FAC
LINDERA BENZOIN	COMMON SPICEBUSH 2'-3' HT BB	50	5'	FACW
CLETHRA ALNIFOLIA	SWEET PEPPERBUSH 3'-4' HT BB	50	5'	FAC
CORNUS RACEMOSA	GRAY DOGWOOD 3'-4' HT BB	50	5'	FAC
ALNUS INCANA	SPECKLED ALDER 4'-5' HT BB	40	5'	FACW
ASCLEPIAS TUBEROSA	BUTTERFLY MILKWEED 1 GALLON CONTAINER	40	1'-6" ON CENTER	NI
CONSERVATION SEEDING				
CONTROL AND REMOVAL OF INVASIVE VEGETATION		25970 SF	SEE HATCHING AND NOTE 7	

NOTE: ACER RUBRUM 3'-4' HT 1 GAL. CONT. AND ACER RUBRUM 6'-8' HT 3 GAL. CONT. TO BE PAID FOR UNDER ITEM #0949875A - WETLAND PLANTINGS

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: CHECKED BY:

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: PERMIT PLANTING PLAN

DRAWING NO. PMT-07
SHEET NO.

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PLOTTED DATE: 5/9/2024

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Name	Last modified	Size
202407000 & 202407001 - Application Form & Attachments.pdf	6/6/2024, 10:47:43 AM	58.59 MB
202407000 & 202407001 - Hydraulic Data.zip	6/6/2024, 10:47:39 AM	2.72 MB
202407000 & 202407001 - Transmittal Form.pdf	6/6/2024, 10:47:39 AM	1.18 MB

Items: 3 | 62.50 MB

Uploading one file

Connecticut
Department of Energy &
Environmental Protection

79 Elm Street • Hartford, CT 06106-5127
portal.ct.gov/DEEP

CHRISTINE A. XENELIS
STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION
2800 BERLIN TPKE
PO BOX 317546
NEWINGTON, CT 06111-4113

6/06/2024

Dear Applicant:

This letter is to confirm the receipt of the following application package:

Applicant/Registrant: STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION

Permit Type: Pre-Construction Notification, USACE-GP

Site Name 0087-0148 - Project No. 0087-0148 proposes to rehabilitate Bridge No. 06772 over Straitsville Brook in Route 63 Naugatuck, CT 06770.

Your application has been assigned the following number: 202407000
Please include this number on all correspondence regarding this application.

As of today, the following materials have been received:

ITEM	REQUIRED FEE	FEE RECEIVED	RECEIVED ON
Application Package			6/05/2024
Application Fee	0.00		

To complete application submission:

a. Send an empty/blank email to DEEP.LWRDRegulatorySubmittals@ct.gov

b. An automated email response will contain instructions for uploading a PDF of the Transmittal Form and applicable Program Forms, management plans, or additional supporting documents of your application to the LWRD File Transfer Protocol (FTP) website.

c. Follow directions contained in the email for uploading the Transmittal and Application Forms.

If there are any questions regarding this notice, please feel free to contact the Central Permit Processing Unit at (860) 424-4004 or DEEP.CentralPermits@ct.gov

If you have specific technical questions regarding your application, please contact the Land and Water Resources Division at 860-424-3019

Please remember to check your security settings to be sure you can receive e-mails from (ct.gov) addresses. Also, please notify the department if your e-mail address changes.

Thank you.

Sincerely,

Central Permit Processing Unit

Connecticut
Department of Energy &
Environmental Protection

79 Elm Street • Hartford, CT 06106-5127
portal.ct.gov/DEEP

CHRISTINE A. XENELIS,
STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION
2800 BERLIN TPKE
PO BOX 317546
NEWINGTON, CT 06111-4113

6/06/2024

Dear Applicant:

This letter is to confirm the receipt of the following application package:

Applicant/Registrant: STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION

Permit Type: Inland Wetlands & Watercourses

Site Name 0087-0148 - Project No. 0087-0148 proposes to rehabilitate Bridge No. 06772 over Straitsville Brook in Route 63 Naugatuck, CT 06770.

Your application has been assigned the following number: 202407001
Please include this number on all correspondence regarding this application.

As of today, the following materials have been received:

ITEM	REQUIRED FEE	FEE RECEIVED	RECEIVED ON
Application Package			6/05/2024
Application Fee	0.00		

To complete application submission:

a. Send an empty/blank email to DEEP.LWRDRegulatorySubmittals@ct.gov

b. An automated email response will contain instructions for uploading a PDF of the Transmittal Form and applicable Program Forms, management plans, or additional supporting documents of your application to the LWRD File Transfer Protocol (FTP) website.

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Please remember to check your security settings to be sure you can receive e-mails from (ct.gov) addresses. Also, please notify the department if your e-mail address changes.

Thank you.

Sincerely,

Central Permit Processing Unit

INTERDEPARTMENTAL MESSAGE **STATE OF CONNECTICUT**

To	NAME, TITLE Central Permit Processing Unit, 1st Floor	DATE June 4, 2024
	AGENCY, ADDRESS Department of Energy and Environmental Protection, 79 Elm Street, Hartford, CT 06106	
From	NAME, TITLE Christine Xenelis Digitally signed by Christine Xenelis DN: C=US, E=christine.xenelis@ct.gov, O=Connecticut Department of Transportation, OU=Office of Environmental Planning, CN=Christine Xenelis Date: 2024.06.04 10:49:32-04'00' Christine A. Xenelis, Transportation Assistant Planning Director	TELEPHONE 860-594-2928
	AGENCY, ADDRESS Department of Transportation, 2800 Berlin Turnpike, Newington, CT 06131-7546	

Subject: **State Project No.** 0087-0148
Rehabilitation of Bridge No. 06772
Route 63 over Straitsville Brook
Town of Naugatuck

Attached is an original copy of the DEEP Land & Water Resources Division (LWRD) Transmittal Form associated with the above referenced project. The permits applications being submitted with this Transmittal Form include: DEEP Individual Inland Wetland & Watercourses and DEEP Pre-Construction Notification.

The project proponent hereby certifies that all information contained herein is true, accurate, and complete to the best of my knowledge and belief. The project proponent hereby requests that the certifying authority review and take action on this CWA 401 certification request within the applicable reasonable period of time.

For planning purposes, please be aware the project's Final Design Plan (FDP) milestone date is 06/18/2025. In order for the project to meet its bid, advertise and contract award dates, final permits should be issued by the FDP date. Meeting this date will ensure that the project's funds are expended within Federal and State contracting timeframes and the appropriate species and wildlife time of year restrictions can be incorporated as planned in the project schedule. Please consider this project's FDP relative to other pending permits under review. The respective LWRD supervisor has access to schedule updates from the DOT.

Any questions pertaining to this application may be directed to Amanda M. Saul, Transportation Supervising Planner, of my staff at amanda.saul@ct.gov or 860-594-2939.

Connecticut Department of Energy & Environmental Protection
Bureau of Water Protection & Land Reuse
Land & Water Resources Division

CPPU USE ONLY
App #s: _____
_____
_____ -DIV
_____ -FM/E
Doc #: _____
Check #: _____

LWRD License Application Transmittal Form

The Land & Water Resources Division (LWRD) License Application* consists of this Transmittal Form and the program-specific form. All application forms can be found on the Department of Energy & Environmental Protection (DEEP) website at Land Use Permits and General Permits (ct.gov). Submit application forms per instructions provided in Part VII of this transmittal form.

Part I: License Type and Fee Information

The table below lists various License types issued by DEEP LWRD. If more than one license is necessary for a project, complete only one Transmittal Form. Complete as many Program Forms as applicable for the project. Check the boxes below that correspond with the LWRD license(s) being requested.

Type of License	Program Form	Fee	DEEP USE ONLY
Licenses for Activities in Aquifer Protection Areas			
☐ **Aquifer Protection Area Registration** Check one: ☐ New ☐ Modification[1] of # _____ (no fee) ☐ Renewal of # _____	A	$625	[#996]
☐ **Aquifer Protection Area Permit** Check one: ☐ New ☐ Modification[1] of # _____(no fee) ☐ Renewal of # _____ [1] Note that if you are seeking a *modification*, you should consult the Aquifer Protection Program at 860-424-3019 prior to application submittal to determine whether a registration form is necessary.	B	$1,250	[#995]
Licenses for Activities in Tidal Waters			
☐ **Structures, Dredging & Fill[2]**	C	$660	[#439]
☐ **Structures, Dredging & Fill[2] and Tidal Wetlands (TW)**	C	$660	[#1058]
☐ **Structures, Dredging & Fill[2] and Section 401 Water Quality Certificate (WQC)[3]**	C	$660	[#1769]
☐ **Structures, Dredging & Fill[2]; TW; and Section 401 WQC[3]**	C	$660	[#1772]
☐ **Certificate of Permission (if applicable, WQC will be included)** [2] For projects larger than 825 square feet, provide Attachment A with an additional fee. Refer to the instructions (page 4) for fee calculations. [3] For activities requiring a Sec.404 Permit from United States Army Corps of Engineers (USACE).	D	$375	[#410]
General Permit Registration for Coastal Maintenance			
☐ **Marina and Mooring Field Reconfiguration**	E	$700	[#992]
☐ **Remedial Activities Required by Order**	F	$700	[#427]
☐ **Residential Modification to FEMA Standards**	G	$100	[#423]
☐ **Reconstruction of Permitted Structures**	H	$300	[#1741]
General Permit Registration for Minor Coastal Structures			
☐ **4/40 Docks/Access Stairs**	I	$700	[#426]
☐ **Non-Harbor Moorings**	J	$250	[#422]
General Permit Registration for Dolphin Cove			
☐ **Structures, Fill, Obstructions, or Encroachments in Dolphin Cove Lagoon, Stamford**	K	$100	[#420]

Part I: License Type and Fee Information (continued)

Type of License	Program Form	Fee	DEEP USE ONLY
For Federal Agency Activities Only:			
☐ **Section 401 Water Quality Certificate (Tidal)**	C	None	[#1186]
Licenses for Activities in Non-Tidal Waters			
☐ **Section 401 Water Quality Certificate (Individual)**[3]	L	None	[#1195]
☒ **Pre-Construction Notification, USACE General Permits for CT**[3]	L	None	[#1188]
☒ **Inland Wetlands and Watercourses**[4]	L	None	[#365]
☐ **Inland Wetlands and Watercourses**[4] **and WQC**[3]	L	None	[#2225]
[3] For activities requiring a Sec.404 Permit from USACE.			
[4] For State Agency Activities OR Activities Conducted on State Owned/Controlled Lands.			
For State Agency Activity Conducted on State Owned/Controlled Lands Only: **General Permit Registration for Water Resources Construction Activities**			
☐ **Activities 1-4: Maintenance Plans**	M	$2,500	[#2243]
☐ **Activities 5-7: Infrastructure and Public Works Projects**	N	$2,500	[#2244]
☐ **Activity 8: Activities Authorized Under a Corps General Permit** **(Must be submitted after receiving PCN approvals and Flood Management, if applicable.)**	O	$1,250	[#2245]
☐ **Activity 9: Conservation Activities**	O	$1,250	[#2246]
Additional Licenses for Activities **These licenses may be combined with Tidal or Non-Tidal Waters licenses.**			
Water Diversion – Non-consumptive			
☐ Watershed < 0.5 sq. mi.	L	$2,050	[#457]
☐ Watershed ≥ 0.5 sq. mi and < 2.0 sq. mi.	L	$4,000	[#456]
☐ Watershed ≥ 2.0 sq. mi.	L	$6,250	[#455]
For State Agency Activity/Activities Receiving Funding Through a State Agency:			
☐ **Flood Management Certification**	P	None	[#1185]
☐ **Flood Management Certification with Exemption Request**	P	None	[#1185]
Fee from Attachment A, if applicable	None		
Total	None		

*For processing purposes, the terms Application and Applicant are synonymous with the terms Registration and Registrant.

In addition to applicable boxes above, check here if your application is:

- ☐ eligible for a municipal 50% discount;
- ☐ for work in tidal waters and being submitted pursuant to CGS section 22a-361(a)(2)(d) to address a violation; or
- ☒ receiving state funding including federal funding administered by the state (to help determine need for Flood Management Certification); or
- ☒ being submitted by a state agency, therefore the fee will be paid by Inter-Agency Transfer of Funds. State Agencies should submit the registration or application package without the registration/application fee.

Part II: Project and Site Information

1a. Project: Provide a brief description of project/activity/work: **Project 0087-0148 proposes to rehabilitate Bridge No. 06772 over Straitsville Brook and stabilize 140 feet of eroded streambank along Straitsville Brook in Naugatuck**

1b. Site Name and Location

Name of Site: 0087-0148

Address of Site: Rte 63 City/Town: Naugatuck State: CT Zip Code: 06770

Parcel Location/Tax Assessor's Reference: Map N/A Block _____ Lot _____

GPS Coordinates/Latitude and Longitude: Provide the exact location of proposed activity, in degrees/minutes/seconds or in decimal degrees: Latitude: 41°28'11.03"N Longitude: -73°01'35.28"W

Parcel/Easement size: If the project is located on a parcel, indicate parcel acreage: N/A acres

If the project is located on a utility/transportation right-of-way or easement, indicate dimensions or acres: Please see permit plans

Part III: Applicant Information

- *If an applicant is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, they must be registered with the Secretary of State. If applicable, the applicant's name shall be stated **exactly** as it is registered with the Secretary of State. Please note, for those entities registered with the Secretary of State, the registered name will be the name used by DEEP. This information can be accessed at the Secretary of State's database (CONCORD) at portal.ct.gov/SOTS.*
- *If an applicant is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).*
- *Once an authorization has been received, if there are any changes or corrections to your company/facility or individual mailing or billing address or contact information, please complete and submit the Request to Change Company/Individual Information to the address indicated on the form.*

1. Applicant/Registrant* Information

Name: Connecticut Department of Transportation

Mailing Address: 2800 Berlin Turnpike

City/Town: Newington State: CT Zip Code: 06111

Business Phone: _____ Ext.: _____

Contact Person: Christine Xenelis Phone: 860-594-2928 Ext: _____

E-mail Address†: Christine.Xenelis@ct.gov

†Email is Required. By providing this e-mail address you are agreeing to receive official correspondence from DEEP, at this electronic address, concerning the subject application. Please remember to check your security settings to be sure you can receive e-mails from "ct.gov" addresses. Also, please notify DEEP if your e-mail address changes.

☐ **If co-applicant(s), check this box and attach co-applicant information as Attachment B following this form.**

a) Applicant Type (check one):

☐ individual ☐ federal agency ☒ state agency ☐ municipality ☐ tribal

☐ business entity (if a business entity, complete i through iii below):

i) business type: ☐ corporation ☐ limited liability company ☐ limited partnership ☐ limited liability partnership ☐ statutory trust ☐ Other: _____

ii) provide Secretary of the State business ID #:_____
This information can be accessed at database (CONCORD): portal.ct.gov/SOTS

iii) ☐ check here if your business is **NOT** registered with the Secretary of State's Office.

*For processing purposes, the terms Application and Applicant are synonymous with the terms Registration and Registrant.

Part III: Applicant Information (continued)

b) Applicant's interest in property at which the proposed activity is located:

☒ site owner ☐ option holder ☐ lessee ☐ facility owner

☐ easement holder ☐ operator ☐ other (specify): _____

2. List billing contact, if different than the applicant:

Name: _____

Mailing Address: _____

City/Town: _____ State: _____ Zip Code: _____

Business Phone: _____ Ext.: _____

Contact Person: _____ Title: _____

E-mail: _____

3. Primary contact for departmental correspondence and inquiries if different than applicant:

Name: _____

Mailing Address: _____

City/Town: _____ State: _____ Zip Code: _____

Business Phone: _____ Ext.: _____

Contact Person: _____ Title: _____

E-mail: _____

4. Site/Property Owner*, if different than applicant:

Name: _____

Mailing Address: _____

City/Town: _____ State: _____ Zip Code: _____

Business Phone: _____ Ext.: _____

Contact Person: _____ Title: _____

E-mail: _____

***If the applicant is not the owner, submit written permission from the owner as Attachment C**

5. Facility Owner, if different than applicant:

Name: _____

Mailing Address: _____

City/Town: _____ State: _____ Zip Code: _____

Business Phone: _____ Ext.: _____

Contact Person: _____ Title: _____

E-mail: _____

6. Facility Operator, if different than applicant:

Name: _____

Mailing Address: _____

City/Town: _____ State: _____ Zip Code: _____

Business Phone: _____ Ext.: _____

Contact Person: _____ Title: _____

E-mail: _____

Part III: Applicant Information (continued)

7. Attorney or other representative, if applicable.

Firm Name: _____

Mailing Address: _____

City/Town: _____ State: _____ Zip Code: _____

Business Phone: _____ Ext.: _____

Attorney: _____ Title: _____

E-mail: _____

8. Engineer(s), surveyor(s) and/or other consultant(s) employed or retained to assist in preparing the application and designing or constructing the activity.

Name: Department of Transportation

Mailing Address: 2800 Berlin Turnpike

City/Town: Newington State: CT Zip Code: 06111

Business Phone: 860-594-3609 Ext.: _____

Contact Person: Nicholas J. Martin Title: Project Engineer

E-mail: Nicholas.Martin@ct.gov

Service Provided: Project Designer

Part IV: Pre-Application Coordination

If pre-application coordination occurred, provide DEEP LWRD staff contact information:

Staff Name: Interagency Coordination Meeting Date: 12/16/21; 1/20/22; 3/21/24

Part V: Supporting Documents

As applicable, check the box by the attachments listed to indicate that they have been submitted. When submitting any supporting documents, please label the documents as indicated in this part (e.g., Attachment A, etc.) and be sure to include the applicant's name as indicated on this application form. Attach the materials below following this transmittal form.

- ☐ Attachment A Structures, Dredging and Fill fee calculation worksheet (if applicable)
- ☐ Attachment B Co-applicant information sheet (if applicable)
- ☐ Attachment C Written permission from land owner (if applicant is not the owner)
- ☐ Attachment D Additional signature sheet (if applicable)

Part VI: Applicant Certification

The applicant(s) *and* any individual(s) responsible for actually preparing the application must sign this section. An application will be considered insufficient unless *all* required signatures are provided.

"I have personally examined and am familiar with the information submitted in the LWRD application and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of the individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief.

I understand that a false statement in the submitted information may be punishable as a criminal offense, in accordance with section 22a-6 of the General Statutes, pursuant to section 53a-157b of the General Statutes, and in accordance with any other applicable statute.

I certify that the LWRD application is on complete and accurate forms as prescribed by the commissioner without alteration of the text.

I certify that I have complied with all notice requirements, if applicable, as listed in Section 22a-6g of the General Statutes."

Kimberly Lesay Digitally signed by Kimberly Lesay DN: cn=Kimberly Lesay, o=Connecticut Department of Transportation, ou=Bureau Chief of Policy & Planning, email=kimberly.lesay@ct.gov, c=US Date: 2024.06.04 21:42:54 -04'00'	6/4/2024
Signature of Applicant	Date
Kimberly C. Lesay	Bureau Chief, Policy and Planning
Name of Applicant (print or type)	Title (if applicable)
Michael J. Salter Digitally signed by Michael J. Salter DN: C=US, E=Michael.Salter@ct.gov, O=Connecticut Department of Transportation, OU="Bureau of Policy and Planning, Office of Environmental Planning", CN=Michael J. Salter Date: 2024.06.04 07:45:55-04'00'	6/4/2024
Signature of Preparer (if different than above)	Date
Michael J. Salter	Transportation Planner 2
Name of Preparer (print or type)	Title (if applicable)

☐ Check here if additional signatures are required. If so, please reproduce this sheet and attach signed copies to this sheet as Attachment D. You must include signatures of any person preparing any report or parts thereof required in this application (i.e., professional engineers, surveyors, soil scientists, consultants, etc.).

Part VII: Application Submission

Instructions for submitting an application to DEEP LWRD:

1. Please submit a hardcopy of **only** this completed License Application Transmittal Form and fee, to:

   CENTRAL PERMIT PROCESSING UNIT
   DEPARTMENT OF ENERGY & ENVIRONMENTAL PROTECTION
   79 ELM STREET
   HARTFORD, CT 06106-5127

   Applications will not be processed without the fee. Fee shall be non-refundable and shall be paid by check or money order to the Connecticut Department of Energy & Environmental Protection. State Agencies should submit the applicable registration/application package ***without*** the application fee and check the box in Part I to indicate the fee will be paid by Inter-Agency Transfer of Funds.

2. Upon receipt of the Transmittal Form and fee, the Central Permit Processing Unit (CPPU) will e-mail a confirmation receipt letter to you containing the DEEP assigned application number.
3. Upon receipt of the email from CPPU, electronically submit the full application package with the remaining required forms:
   a. Send an empty/blank email to DEEP.LWRDRegulatorySubmittals@ct.gov
   b. An automated email response will contain instructions for uploading this Transmittal Form and applicable Program Forms, management plans, or additional supporting documents of your application to the LWRD File Transfer Protocol (FTP) website.
   c. Follow directions contained in the email for uploading the application sections.

If you are not capable of submitting the application electronically or if you have other questions or concerns regarding application submittals, please contact LWRD staff at 860-424-3019.

Connecticut Department of
Energy & Environmental Protection
Bureau of Water Protection & Land Reuse
Land & Water Resources Division

LWRD License Application Form L

Check Application Type(s):

- ☐ **Section 401 Water Quality Certificate (WQC) (Non-Tidal)**
- ☒ **Pre-Construction Notification (PCN) - USACE General Permits for CT**
- ☒ **Inland Wetlands and Watercourses** ***(State Agency/State Lands only)***
- ☐ **Inland Wetlands and Watercourses and WQC** ***(State Agency/State Lands only)***
- ☐ **Non-Consumptive Water Diversion**

All sections of the LWRD License Application, when applicable, must be posted to the DEEP LWRD FTP site as instructed on Part VII of the LWRD Transmittal Form. See LWRD Application Instructions for general guidance.

Application Number (as assigned in CPPU e-mail): 202407000 & 202407001

Applicant Name (same name used on Part III of the LWRD Transmittal Form): Connecticut Department of Transportation

Part I: Pre-Submission Consultations

The application process requires preliminary coordination and input from other agencies/groups depending on the activity and the location. Consultations with other agencies must occur prior to application submission. Please allow 6-8 weeks for the necessary coordination. For this application, the applicant should start with these consultations, as applicable (See Part VII for further guidance).

Attachments:

20 NDDB
23 Fisheries

Part II: Notifications

1. **PUBLIC NOTICE OF APPLICATION – Attachment 1**
   (REQUIRED for Section 401 Water Quality Certification , Inland Wetlands and Watercourses, and Non-consumptive Diversion applications)

   One notice for any combination of these programs is acceptable. Please refer to the *Public Notice Requirements for Permit Applications* (DEEP-INST-005A). The public notice of application must be published prior to submitting an application, as required in CGS section 22a-6g. Refer to the LWRD Application Instructions for public notice language. A copy of the published notice of application and the completed Certification of Notice Form (DEEP-APP-005A) must be included as Attachment 1 to this application. Your application will not be processed if Attachment 1 is not included.

2. **PROJECTS LOCATED IN A PUBLIC SUPPLY WATERSHED – Attachment 5**
   (REQUIRED for Inland Wetland and Watercourse application)
   Provide proof of written notice to the water company of the filing of this application in accordance with CGS section 22a-42f as Attachment 5 following this form.

Part III: U.S. Army Corps of Engineers Coordination

(Section 401 WQC and PCN only)

1. Include a copy of the United States Army Corps of Engineers (USACE) application as Attachment 28 and provide the name of USACE Project Manager, if known:

USACE Project Manager: _____

2. For PCN Applications Only:

Check the applicable General Permit(s).

- ☐ GP2 Repair or maintenance of existing currently serviceable authorized or grandfathered structures & fill, removal of structures
- ☐ GP5 Boat ramps and marine railways
- ☐ GP6* Utility line activities
- ☐ GP9* Shoreline and bank stabilization projects
- ☐ GP10 Aquatic Habitat restoration, establishment and enhancement activities
- ☐ GP11 Fish and wildlife harvesting activities
- ☐ GP17 New/expanded developments and recreational facilities
- ☐ GP18* Linear transportation projects – wetland crossings only
- ☒ GP19* Stream, river and brook crossing (not including wetland crossings)
- ☐ GP21* Temporary fill not associated with any other GP activities

* If a town is receiving funding through the CTDOT, the applicant has to coordinate with the DOT program manager to arrange participation in an Interagency Coordination Meeting. Provide a copy of the meeting notes as Attachment 30.

Part IV: Site and Resource Information

1. SITE ADDRESS

Address of Site: Route 63 City/Town: Naugatuck State: CT Zip Code: 06770

2. MUNICIPAL ZONING

Is the proposed work consistent with municipal zoning requirements?

☐ Yes ☐ No If no, explain: Not applicable for State Projects

3. WATERBODY/WATERCOURSES/WETLANDS

List names of all waters impacted by the proposed activity: Straitsville Brook

4. INDIAN LANDS

Is the activity that is the subject of this application located on federally recognized Indian lands? ☐ Yes ☒ No

Part IV: Site and Resource Information (continued)

5. AQUIFER PROTECTION AREAS

Is the site located within a mapped Level A or Level B Aquifer Protection Area, as defined in CGS section 22a-354a through 22a-354bb?

☐ Yes ☒ No If yes, check one: ☐ Level A or ☐ Level B

If Level A, are any of the regulated activities, as defined in RCSA section 22a-354i-1(34), conducted on this site? ☐ Yes ☐ No If yes, and your business is **not** already registered with the Aquifer Protection Program, contact the aquifer protection agent or DEEP to take appropriate action.

For more information on the Aquifer Protection Area Program, contact the program at 860-424-3019 or visit the website at www.ct.gov/deep/aquiferprotection. See LWRD Application Instructions for further guidance.

6. CONSERVATION OR PRESERVATION RESTRICTIONS

Will the activity which is the subject of this application be located within a conservation or preservation restriction area? ☐ Yes ☒ No

If yes, provide proof of written notice of this application to the holder of such restriction, and/or or a letter from the holder of such restriction verifying that this application is in compliance with the terms of the restriction, as Attachment 8.

7. LICENSE HISTORY

Indicate the number and date of issuance of any previous state permits or certificates issued by DEEP or USACE which authorized work at the site, and the names to whom they were issued.

License/Permit/COP Authorization Number and Name of Agency	*Date Issued*	*Name of Permittee/ Certificate Holder*	*Brief Description of Work Authorized*

8. SOIL AND/OR GROUNDWATER REMEDIATION

Does the site work include soil and/or groundwater remediation? ☐ Yes ☒ No

If yes, please provide reference documentation including a) plan views of the site showing the area of contamination and b) a summary of remediation with chemical analysis, clean-up status, and remediation program identification, as Attachment 9.

9. ENFORCEMENT HISTORY

Is this application associated with a formal or informal enforcement action that is pending with DEEP?

☐ Yes ☒ No

If yes, please provide the enforcement action reference number and name of the DEEP staff contact:

Enforcement Action #: _____

DEEP Division/Program: _____

DEEP Staff Contact: _____

If the property was the subject of any historical enforcement actions known to the applicant, explain:

_____

Part IV: Site and Resource Information (continued)

10. RESOURCES IMPACTED

Check all that apply and complete Attachment 16, *Water Resource Impact Table*.

A. ☐ **Inland Wetland(s)**

☒ Check here to confirm that a Wetland Report (include functions and values, *USACE Wetland Determination Data Forms, Northcentral and Northeast Region*, and a description of any proposed impacts) is provided as Attachment 15. See LWRD Application Instructions for report requirements.

B. ☒ **Watercourses** – includes waterbodies (lakes, ponds, and impoundments)

Please be aware that any work involving construction, alteration or modification of a dam may require additional approvals from the DEEP Dam Safety Division (860-424-3704).

11. SPECIAL RESOURCE AREAS. If one of the following wetland types (see Table 1, p. 5 of 5 of the Department of the Army General Permits for the State of Connecticut) may be impacted by the proposed activity, please coordinate with LWRD staff (860-424-3019) to determine if an Individual Section 401 Water Quality Certification is necessary:

bog	calcareous seepage swamp
cedar swamp	fen
spruce swamp	vernal pool

12. MITIGATION

Regulated activities should be designed to avoid environmental impacts, and environmental impacts that are unavoidable should be minimized. Where unavoidable environmental impacts occur as a result of construction and/or operation of the proposed activity, mitigation for adverse impacts to wildlife and fish habitat, wetlands, watercourses, waterbodies and other natural resources should be incorporated into project plans.

☐ **Check here if mitigation was recommended through pre-application consultation with DEEP's Land & Water Resources Division, Fisheries Division, and/or Wildlife Division. Provide a mitigation plan with narrative as Attachment 17.**

Part V: Project Information

1. Describe the existing structures, conditions and uses at the site of the proposed work.
Provide photographs showing resources and existing site conditions as Attachment 10.

Please see attached sheet.

2a. Describe the proposed regulated work and activities in a detailed narrative, including the number and dimensions of structures and the volume and area of fill or excavations. See LWRD Application Instructions for required information.

Please see attached sheet.

Part V: Project Information (continued)

2b. Describe the construction activities involved for the project in detail, including methods, sequencing, equipment, and any alternative construction methods that might be employed.

Please see attahced sheet.

2c. Describe any erosion and sedimentation or turbidity control installation and maintenance schedule and plans in detail. Such plans should be prepared in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as revised, established pursuant to CGS section 22a-328.

E&S/ Turbidity Controls are depicted on project plans in Attachment 14.

2d. Anticipated date of project initiation: Spring 2025

Indicate the length of time needed to complete the project and identify any anticipated time restrictions:

The project is anticipated to be completed in two construction seasons.

3. For **new** structures, activities or encroachments, discuss project alternatives which were considered and indicate why they were rejected. After all measures to eliminate or minimize adverse resource impacts have been incorporated in the proposed project, describe why any adverse impacts that remain should be deemed acceptable by the Land & Water Resources Division. For projects involving stormwater management, low-impact development practices should be incorporated to the greatest extent practicable. Explain any reasons for not using a low-impact development practice. See LWRD Application Instructions for further guidance.

Please see attached sheet.

4. If the project includes hydraulic and drainage structures, provide *Hydraulics Summary* as Attachment 19 and include Attachment 18, *Engineering Report Cover Sheet*.

a. Identify the type of structure: (Check one below that applies)

☒ Culvert	☐ Detention/Retention Basin	☐ Infiltration Basin/Structure
☐ Drainage Outfall	☐ Drainage Swale	☐ Bridge
☐ Dam	☐ Dike	☐ Outlet Control Structure
☐ Weir	☐ Pipe/Conduit/Aqueduct	☒ Other: riprap revetment

b. For bridge/culvert structures, what is the openness ratio? 0.094 meters

The openness ratio is the X-sectional area of structure opening/ length of the structure parallel to the stream.)

c. What is the size of the contributing watershed to the structure? 442 Acres 0.69 Square Miles

Part VI: Engineering Support Documentation and Certification

Certain types of projects require documentation of engineering design. If you answer yes to one of the questions below, you must submit a completed *Engineering Report Cover Sheet* (DEEP-LWRD-APP-001R) as Attachment 18 along with the relevant engineering report(s).

1. Does the proposed activity include engineered structures such as bridges, culverts, stormwater management systems, detention basins, and/or flood & erosion control structures?

   ☒ Yes ☐ No

2. Is the proposed activity located in a FEMA-designated Riverine or Coastal Floodplain?

   ☐ Yes ☒ No

   If yes, provide documentation in the Engineering Report which demonstrates that the project is in compliance with FEMA's National Flood Insurance Program requirements and the local flood ordinance for the municipality.

   NOTE – Only the following activities in the Coastal Floodplain require engineering: buildings, flood and erosion control structures; public access facilities; and, tide regulating structures. See Engineering Report Cover Sheet for further guidance.

3. Is the proposed activity located in a FEMA-designated Floodway ☐ Yes ☒ No

   If yes, the Engineering Report must include a statement signed by a registered professional engineer that there is no-rise. This documentation must be supported by technical data that is derived from a standard step-backwater computer model utilizing source data from the Flood Insurance Rate Map (FIRM) or Flood Boundary and Floodway Map (FBFM). If a No-rise Certification form is available through the municipality, please include it in the Engineering Report. For further information on No-Rise Certification, see No-Rise Certification for Floodways | FEMA.gov

The *Engineering Report Cover Sheet* shall be signed and sealed by a Professional Engineer licensed in the State of Connecticut. Supporting documentation as identified in the checklist may consist of engineering studies and other documentation, as appropriate, in order to describe the hydrologic and hydraulic effects of the proposed actions.

Part VII: Supporting Documents

The following attachments correspond to Form L. **If the Attachment name is followed by "REQUIRED", the attachment must be submitted with every application.** When submitting any supporting documents, please label the documents as indicated in this part (e.g., Attachment 20, etc.) and be sure to include the same applicant name used on Page 1 of this application form. Please check the box next to the attachments listed to indicate that they have been submitted, and provide the applicable attachments following this form. NOTE: Attachment numbering is NOT consecutive as the attachments relate to multiple LWRD program applications.

Attachment I.D.	Attachment Description
☒ **Attachment 1**	**Notice of Permit Application** *(**REQUIRED** for Section 401 Water Quality Certification , Inland Wetlands and Watercourses, and Non-consumptive Diversion applications only)* A copy of the published notice of permit application, as described in the instructions, attached to a completed "*Certification of Notice Form- Notice of Application*" (DEEP-APP-005A)
☐ **Attachment 5**	**Water Company Notification** *(**REQUIRED** for Inland Wetland and Watercourse application only)* If the project is located in a public supply watershed, provide a certified mail receipt as proof of notice to the water company of the filing of this application in accordance with CGS section 22a-42f.
☒ **Attachment 7**	**Executive Summary REQUIRED** Summarize the information contained in the complete application which must include a description of the proposed regulated activities and a synopsis of the environmental and engineering analyses of the impact of such activities. Include a list of the titles of all plans, drawings, reports, studies, appendices, or other documentation which are attached as part of the application.

Part VII: Supporting Documents (continued)

☐ **Attachment 8** **Conservation or Preservation Restriction** Information, if applicable.

☐ **Attachment 9** **Remediation Documentation**, if applicable.

☒ **Attachment 10** **Photographs showing existing conditions of the site REQUIRED**

☒ **Attachment 14** **Project Plans**, use *Project Plan Checklist* for requirements **REQUIRED**

☒ **Attachment 15** **Wetland Report** as explained in Part IV, item 10A.

☐ **Attachment 16** ***Water Resource Impact Table*** (DEEP-LWRD-APP-001W) **REQUIRED**

☐ **Attachment 17** **Mitigation Plan (with narrative)** as coordinated with DEEP Staff.

☒ **Attachment 18** ***Engineering Report Cover Sheet*** (DEEP-LWRD-APP-001R)

☒ **Attachment 19** ***Hydraulics Summary*** (DEEP-LWRD-APP-001X)

☐ **Attachment 20** **Natural Diversity Data Base (NDDB)**
Completed NDDB Determination #:_____
If the proposed activity is within an NDDB area, complete and submit a *Request for NDDB State Listed Species Review Form* (DEEP-APP-007) to the address specified on the form, **prior** to submitting this application. For NDDB maps and more information, visit the DEEP website at www.ct.gov/deep/nddbrequest or call the NDDB staff at 860-424-3011.

Please note NDDB review generally takes 4 to 6 weeks and may require the applicant to produce additional documentation, such as ecological surveys, which must be completed prior to submitting this permit application. A copy of the NDDB Final Determination response letter that has not expired ***must*** be submitted as Attachment 20. Include a copy of any mitigation measures or management plan developed for this activity and approved by NDDB. Please DO NOT include a copy of the NDDB Review Request/Application. Be aware that you must renew your NDDB Determination if it expires before project work commences.

☒ **Attachment 23** **Fisheries Consultation Form**
If your project involves one or more of the following activities, check the applicable box(es) below and submit a completed *Fisheries Consultation Form* (DEEP-FISH-APP-007).

☐ new public/fishing access;

☒ activities in inland/non-tidal waterbodies and watercourses.

☒ **Attachment 28** **For 401 Water Quality Certification and Pre-Construction Notification only**, attach a copy of the USACE application, ENG FORM 4345 (form only, no attachments)

☒ **Attachment 30** **For Pre-Construction Notification projects with DOT funding**, attach a copy of the Interagency Coordination Meeting notes

☐ **Attachment 41** ***Applicant Compliance Information Form*** (DEEP-APP-002) **REQUIRED**

☐ **Attachment 42** ***Applicant Background Information Form*** (DEEP-APP-008) **REQUIRED**

☐ **Attachment 43** **Other Information:** Any other applicable information the applicant deems relevant or is required by DEEP.

LWRD License Application Form L
Part V, 1: Project Information – Existing Conditions

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
On Route 63 over Straitsville Brook
Town of Naugatuck

Bridge No 06772 is a single barrel, asphalt-coated corrugated steel arch culvert that supports Route 63 over Straitsville Brook in Naugatuck, CT. The current ADT is listed at 11,600 vehicles per day. The project area is located approximately two miles southeast of downtown Naugatuck and approximately 2 miles east of Route 8 Exit 26. The land surrounding the project location is mostly used for business and commercial purposes. The area to the north is residential property, the area to the northeast is commercial property, and the area to the southeast is currently a shopping plaza. New Haven Rd or CT-63 over Bridge No. 06772 is used for travel to these areas.

The existing structure has an overall length of 75 feet with a span of 9 feet 6 inches and a rise of 6 feet 5 inches. The existing structure includes a masonry wingwall extending northeast from the inlet. The most recent Routine Bridge Inspection Report (BIR) notes the existing bridge is buried under approximately 2 to 3 feet of fill and lacks formal endwalls. The steel for this culvert is rated in poor condition, the inlet wingwall and cutoff wall are in fair condition, scour is noted at the inlet, and the outlet is perched. The existing condition of the structure consists of many holes along the invert, large quantities of debris within the structure, and complete loss of the asphalt coating with moderate to heavy rust and perforations.

Approximately 300’ downstream of Bridge No. 06772 is an eroded embankment. The erosion has resulted in vegetation loss and the collapse of several large trees across the channel. Additionally, a dam is located approximately 2000 feet north on Candee Rd.

The project is located in sub-regional drainage basin Beacon Hill Brook (6918). Straitsville Brook has a drainage area of approximately 0.69 square miles and is rated Class A for surface water quality.

Overhead utilities run along the north side of Route 63 on the east side of the bridge, and support lines crossing the roadway on the west side of the bridge. There are three water mains within the Project limits owned by CT Water. One 10-inch diameter cast iron raw water main located within the Route 63 roadway, a 24-inch diameter cast iron distribution water main that crosses below Straitsville brook at the inlet side of Bridge 06772, and a 20-inch diameter cast iron distribution main that crosses below Bridge 06772 at the inlet side. The 24-inch and 20-inch lines will be combined into a single 16-inch diameter main by CT water before construction begins under Project 0087-0148. There is a 0.75-inch gas main that runs below ground perpendicular to the culvert. The gas main passes over the outlet of the structure just outside the edge of road. This gas line will be maintained and protected during construction activities.

The project area is not within a FEMA Flood Hazard Zone. The project is not located within a CT DEEP Natural Diversity Data Base (NDDB) area (Map date February 2024).

LWRD License Application Form L
Part V, 2a: Project Information – Proposed Regulated Work

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
On Route 63 over Straitsville Brook
Town of Naugatuck

The proposed project will rehabilitate Bridge No. 06772 by lining the existing structure with a corrugated steel tunnel plate liner. The proposed structure will have a span of 8 feet and a rise of 5 feet 6 inches. The invert of the liner will be set at 3 inches above the existing invert elevations, and the slope of the liner will match that of the existing structure. The existing inlet structures will be replaced with a cast-in-place concrete headwall and wingwalls. A 16 foot 3 inch portion of the existing structure will be cut back and the steel plate liner will extend 8 feet 3 inches past where the inlet of the existing structure will be partially removed. This will result in daylighting of 8 feet of watercourse at the inlet. The outlet endwall will be cast in front of the existing structure and the proposed liner will extend to the proposed endwall. There is an existing abandoned 10" cast iron pipe adjacent to the outlet that will be removed. There is an existing 15" corrugated metal pipe culvert adjacent to the outlet which will be cut back to the slope and fitted with a mitered pipe end fitting.

The existing 20 inch and 24 inch cast iron watermains below the upstream portion of the watercourse will be abandoned prior to the initiation of this project. If encountered during construction, they will be removed by the contractor within the limits of the watercourse and the area will be restored with natural streambed material.

Earth retaining systems will be required at both the inlet and outlet sides of the structure to support the roadway embankment during reconstruction of the inlet headwall and wingwalls as well as installation of the outlet endwall. The earth retaining systems outside of the watercourse will be cut 2 feet below finished grade and left in place after construction. Earth retaining systems within the watercourse upstream of the culvert will be removed in their entirety. The earth retaining system at the outlet will be left in place to prevent undermining of the existing endwall and is shown on PMT-04 of the Environmental Permit Plans in Attachment 14. All areas of temporary impact will be restored. An access road will be built from Candee Rd. to perform work at the inlet of the structure. The existing roadway and driveway southeast of the structure will be used to access the outlet.

The existing eroded embankment will be regraded starting approximately 300 feet downstream of Bridge No. 06772, and approximately 140 feet of the embankment will be stabilized with a riprap revetment. A temporary access road and temporary crane mat platform will be needed to access the work areas. The access road will constructed from Beacon Valley Road towards the eroded embankment and connect to a temporary crane-mat platform supported by concrete blocks over the watercourse. Construction of the access road will require clearing and grubbing.

The access road orientation is designed to minimize the required tree removal directly adjacent to Straitsville Brook. The access road and crate-mat platform will be removed, and the impacted areas will be restored and planted with native species upon construction completion. Plantings along the proposed revetment have been coordinated with DOT Landscape Design to ensure stability of the embankment. Natural streambed material will be washed into the proposed riprap up to the 2-year water surface elevation. All areas of temporary impact will be restored.

Temporary water-handling during the rehabilitation of Bridge 06772 will consist of temporary water-handling-cofferdams. Flow of the watercourse will be maintained through an 18 inch bypass pipe through the structure or by pumping around the work area. A secondary temporary water-handling system will be installed at the downstream eroded embankment using temporary water-handling-cofferdams. Flow of the watercourse will also be maintained through the work area by an 18 inch bypass pipe under a temporary crane-mat platform or by pumping around the work area.

There are no state and federally regulated wetlands within the project area, therefore the project will not result in temporary or permanent fill within state or federally regulated wetlands.

The project includes 5,250 s.f. of permanent watercourse impacts associated with pipe lining the existing culvert with a 8 foot span by 5 foot inch rise corrugated steel tunnel plate liner, replacement of headwall and wingwalls at the inlet, replacement of the endwall at the outlet, the earth retaining system to be left in place at culvert outlet, installation of 140 foot long riprap revetment, associated regrading of Straitsville Brook and placement of natural streambed material. In addition, the project includes 1,670 s.f. of temporary watercourse impacts associated with temporary water-handling to perform the work in the dry. Total watercourse impacts for this project is 6,920 s.f. All areas of temporary impact will be restored upon construction completion.

Permanent and temporary easements will be required to perform the proposed work for this project. The anticipated construction start is in Summer of 2025 and last two construction seasons, but in-water work is anticipated to take several weeks to a month to complete.

LWRD License Application Form L
Part V, 2b: Project Information – Construction Activities

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
On Route 63 over Straitsville Brook
Town of Naugatuck

Two sequences are provided to detail work to the slope revetment and the pipe relining. Work may be performed at both sites simultaneously or consecutively.

Bridge Rehabilitation

The rehabilitation of Bridge No. 06772 is anticipated to begin with the relocation of existing utilities and the construction of a temporary access road from Candee Rd to the culvert inlet. The existing roadway and driveway southeast of the culvert will be used to access the outlet. A sedimentation control system will be installed around the work area. The access road will be built entirely in the upland and impacts to wetlands are not anticipated as a result of proposed work. Tree removal and grading will be necessary for access road construction.

Temporary water-handling cofferdams will then be installed. Flow from Straitsville Brook will be conveyed through an 18 inch temporary bypass pipe through the existing structure or by pumping around the work area. Sediment will then be removed, and regrading will be done at the inlet of the structure. The existing structure will be cleaned and grout will be placed to fill voids and perforations within the strutcure. An earth retaining system will then be installed at the inlet and outlet. A 16 foot 3 inch portion of the structure will be removed from the inlet and the end sections of existing drainage pipes will be replaced. The tunnel liner plate sections will then be installed within the existing structure. The liner will extend 8 foot inches past where the inlet of the existing structure will be partially removed. Bulkheads will then be installed at the inlet and outlet and slip-lining grout will be placed between the existing structure and proposed liner. Construction of the inlet headwall and wingwalls will then take place including cutting and leaving the earth retaining system in place outside of the watercourse limits. The earth retaining system at the outlet will be entirely removed with the exception of a portion that will be cut behind the proposed endwall and left in place. Natural streambed material will be used to fill excavated areas at the inlet and outlet. Large stones and boulders immediately downstream of the structure will be removed and stockpiled prior to construction and reset in original locations after construction is complete. The water-handling system will be removed after construction is complete, and all areas of temporary impact will be restored. Existing overhead utilities will be relocated to final positioning.

Areas where tree removal is required for construction of the access road will be restored and revegetated with native plantings and seeding. Temporarily impacted areas shall be restored to existing conditions following construction.

Slope Revetment

The construction of the downstream slope revetment is anticipated to begin with constructing a temporary access road from Beacon Valley Rd to the existing eroded slope. A sedimentation control system will be installed around the work area. Temporary water-handling cofferdams will then be installed. Flow from Straitsville Brook will be conveyed through an 18 inch temporary bypass pipe within the channel or by pumping around the work area. A construction access platform will then be constructed over the watercourse using crane mats and concrete blocks across the watercourse. The 140 foot slope revetment will then be constructed, and riprap armoring will be placed. The temporary access platform will then be removed and final grading and placement of natural streambed material will be completed. Natural streambed material will be washed into proposed riprap to the 2-year water surface elevation. The temporary water handling and access road will be removed.

Areas where tree removal is required for construction of the access road shall be re-stabilized with clean soil and a ground cover. Appropriate trees and vegetation shall be reestablished through plantings and conservation seed mix. Temporarily impacted areas shall be restored to natural conditions following construction. Areas will be restored and revegetated with native plantings and seeding.

LWRD License Application Form L
Part V, 3: Project Information – Project Alternatives and Remaining Adverse Impacts

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
On Route 63 over Straitsville Brook
Town of Naugatuck

Alternatives that were considered for the culvert included:

- Replacement with a box culvert/three-sided frame. This alternative was eliminated due for various reasons including interference with underground water and raw water mains beneath the inlet that are unable to be cutoff, interference with an underground gas main above the structure, staged construction, increased environmental ROW impacts and high costs associated with the work. Additionally, a three-sided structure would require total stream reconstruction that would increase stream velocities.
- Replacement using pipe jacking. This alternative was eliminated due for various reasons including interference with underground water and raw water mains beneath the inlet that are unable to be cutoff, interference with an underground gas main above the structure, difficulties with jacking in rocky substrate, increased environmental ROW impacts and high costs associated with the work. Additionally, pipe-jacking a culvert of this size raised significant concern for damaging through direct conflict or vibration.
- Replacement culvert with skew to match natural channel alignment. This alternative was eliminated due to interference with overhead and underground utilities. Additionally, a replacement structure would require total stream reconstruction that would increase stream velocities.

The proposed project alternative using pipe-ling maintains hydraulic adequacy, reduces construction duration, reduces traffic impacts, reduces environmental and ROW impacts, reduces impacts to overhead and underground utilities, and it has a reduced cost compared to the other alternatives.

Alternatives for providing fish passage through the structure were investigated.

- Installation of step pools: Due to the steepness of the watercourse and the drop at the culvert outlet providing passage through the culvert would have required a step pool system extending 300 feet downstream of the culvert outlet with a 6 inch depth of riprap throughout the entire channel. CT DEEP Fisheries determined that the amount of disturbance downstream would not be beneficial due to existing natural upstream barriers to fish passage and limited habitat availability upstream of the culvert.
- Installation of an engineered concrete fishway: Providing a max 15% slope would require 150 foot engineered fishway extending downstream from the culvert outlet. CT DEEP Fisheries determined that the amount of disturbance downstream would not be beneficial due to existing natural upstream barriers

to fish passage and limited habitat availability upstream of the culvert.

Alternatives that were considered for access roads included:

- Installing an access road from Route 63 to access the eroded embankment and culvert outlet. Due to the steep slopes there were constructability concerns about placement of shoring to support the access road. Additionally, this would have required extensive clearing on the slope adjacent to Straitsville Brook and access to install the proposed revetment would be difficult.
- Installation of an access road from Beacon Valley Road to the culvert outlet. This alternative would have had an access road leading from the currently proposed access road along Straitsville Brook to the outlet of the culvert. This alternative would have resulted in significant clearing along Straitsville Brook. There were additional constructability concerns due to an existing underground stormwater detention system located adjacent to the slope for the existing commercial property.

The proposed access road from Beacon Valley Road and access to the outlet from Route 63 and the existing commercial driveway minimizes tree clearing along Straitsville Brook.

The project is not anticipated to have any adverse impacts. The project has been analyzed through the Department's MS4 Permit Program to document the use of low-impact development to the maximum extent practicable (MEP).

Pre-Construction Notification & Inland Wetlands and Watercourses Permit

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
Town of Naugatuck

List of Attachments

- Attachment 1: Notice of Permit Application
- Attachment 7: Executive Summary
- Attachment 10: Existing Site Photos
- Attachment 14: Project Plans
- Attachment 15: Wetland Report
- Attachment 18: Engineering Report Cover Sheet
- Attachment 19: Hydraulic Summary
- Attachment 23: CTDEEP Fisheries Sign-Off
- Attachment 28: Copy of USACE PCN application, ENG FORM 4345
- Attachment 30: Copy of Interagency Coordination Meeting Notes

Pre-Construction Notification & Inland Wetlands and Watercourses Permit

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
Town of Naugatuck

Attachment 1: Notice of Permit Application

Connecticut Department of
Energy & Environmental Protection

Certification of Notice Form - Notice of Application

DEEP USE ONLY
Division
Application No.

I , **Connecticut Department of Transportation**, certify that
(Name of Applicant)

the attached notice represents a true copy of the notice that appeared in **Waterbury Republican-American**
(Name of Newspaper)

on **May 16, 2024**
(Date)

I also certify that I have provided a copy of said notice to the chief elected municipal official listed below as required by section 22a-6g CGS.

N. Warren "Pete" Hess III	**Mayor**	
Name of Official	*Title of Official*	
229 Church Street		
Address		
Naugatuck	**CT**	**06770**
City/Town	*State*	*Zip Code*
Christine Xenelis Digitally signed by Christine Xenelis DN: C=US, E=christine.xenelis@ct.gov, CN=Christine Xenelis Date: 2024.05.22 11:18:37-04'00'	**May 22, 2024**	
Signature of Applicant	*Date*	
Christine A. Xenelis	**Tranportation Assistant Planning Director**	
Name of Applicant (print or type)	*Title (if applicable)*	

Notice of Permit Application

Notice of Permit Application

Town: Naugatuck

Notice is hereby given that the Connecticut Department of Transportation (the “applicant”) of 2800 Berlin Turnpike, Newington, CT 06131 will submit to the Department of Energy & Environmental Protection an application under Connecticut General Statutes Section 22a-39.

Specifically, the applicant proposes to rehabilitate Bride No. 06772 carrying Route 63 over Straitsville Brook in the Town of Naugatuck, Connecticut. The project involves lining the existing 144-inch by 77-inch culvert with a 96-inch by 66-inch liner. Temporary access will be from Candee Road and Route 63 will facilitate replacement of the wingwalls, headwall and endwall. Additionally, approximately 300 feet downstream of the culvert outlet, 140 feet of eroded streambank will be stabilized with a riprap revetment via a temporary access from Beacon Valley Road. The proposed activity will take place on Route 63 at the intersection of Candee Road and on Beacon Valley Road approximately 1500 feet west of the intersection with Route 63. The proposed activity will potentially affect aquatic resources and surface water associated with Straitsville Brook.

Interested persons may obtain copies of the application from Christine A. Xenelis, 2800 Berlin Turnpike, Newington, CT, 06131, Christine.Xenelis@ct.gov, 860-594-2928.

The application will be available for inspection at the Department of Energy & Environmental Protection, Land & Water Resources Division, 79 Elm Street, Hartford, CT 06106-5127, telephone 860-424-3019 from 8:30 to 4:30 Monday through Friday. Please call in advance to schedule review of the application.

R-A May 16, 2024

/ May 17, 2024 / Business

Pre-Construction Notification & Inland Wetlands and Watercourses Permit

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
Town of Naugatuck

Attachment 7: Executive Summary

Pre-Construction Notification & Inland Wetlands and Watercourses Permit
Attachment 7: Executive Summary

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
Town of Naugatuck

Bridge No. 06772 supports Route 63 over Straitsville Brook in Naugatuck, CT.

The existing structure is an asphalt corrugated steel arch pipe culvert with an overall length of 75 feet with a span of 9 feet 6 inches and a rise of 6 feet 5 inches. The existing structure includes a masonry wingwall extending northeast from the inlet. The existing structure is structurally inadequate due to loss of asphaltic coating and high presence of rust and perforations along the invert.

Upstream and downstream of Bridge No. 06772, the watercourse consists of a high gradient, boulder and cobble dominated riffle habitat. The embankment approximately 300 feet downstream of the structure and along the east side of Route 63 has been eroded. The eroded slope has resulted in the collapse of several large established trees.

The project is located in sub-regional drainage basin Beacon Hill Brook (6918). The drainage area of Straitsville Brook is approximately 0.69 square miles. The watercourse generally flows north to south through Bridge No 06772 and meets Beacon Hill Brook approximately 640 feet downstream then drains into the Naugatuck River.

The project area is not within a FEMA Flood Hazard Zone. The project area is not mapped within a CT DEEP Natural Diversity Data Base (NDDB) area for Naugatuck, CT.

The purpose of this project is to rehabilitate Bridge No. 06772 to a state of good repair, to maintain safe travel along Route 63 and to stabilize the downstream eroded embankment.

The proposed regulated activities will take place at the culvert and approximately 300 feet downstream at the eroded embankment. The proposed work to Bridge No. 06772 includes lining the existing structure with a corrugated steel tunnel plate liner. The proposed structure will have a span of 8 feet and a rise of 5 feet 6 inches. The invert of the liner will be set at 3 inches above the existing invert elevations, and the slope of the liner will match that of the existing structure. The existing inlet structures will be replaced with a cast-in-place concrete headwall and wingwalls. A 16 foot 3 inch portion of the existing structure will be cut back and the steel plate liner will extend 8 feet 3 inches past where the inlet of the existing structure will be partially removed. This will result in daylighting of 8 feet of watercourse at the inlet. The outlet endwall will be cast in front of the existing structure and the proposed liner will extend to the proposed endwall. There is an existing abandoned 10” cast iron pipe adjacent to the outlet that will be

removed. There is an existing 15” corrugated metal pipe culvert adjacent to the outlet which will be cut back to the slope and fitted with a mitered pipe end fitting.

The existing 20 inch and 24 inch cast iron watermains below the upstream portion of the watercourse will be abandoned prior to the initiation of this project. If encountered during construction, they will be removed by the contractor within the limits of the watercourse and the area will be restored with natural streambed material.

An access road is proposed at Candee Rd. to access the existing inlet of Bridge 06772. The existing roadway and driveway southeast of the bridge will be used to access and perform work at the outlet. In addition, temporary relocation of overhead utilities is anticipated.

The proposed work at the downstream embankment, approximately 300 feet downstream of the culvert outlet, includes the installation of a 140 foot riprap revetment. To complete this work, an access road will constructed from Beacon Valley Road towards the eroded embankment and connect to a temporary crane-mat platform supported by concrete blocks over the watercourse. Clearing and grubbing will be required to construct the access road.

Temporary water-handling during the rehabilitation of Bridge 06772 will consist of temporary water-handling-cofferdams. Flow of the watercourse will be maintained through an 18 inch bypass pipe through the structure or by pumping around the work area. A secondary temporary water-handling system will be installed at the downstream eroded embankment using temporary water-handling-cofferdams. Flow of the watercourse will also be maintained through the work area by an 18 inch bypass pipe under a temporary crane-mat platform or by pumping around the work area.

Field investigation has determined there are no inland wetlands present within the proposed project area. Therefore, no inland wetlands will be impacted by the proposed project.

The proposed activities will result in a total of 6,920 s.f. (0.159 ac) of permanent and temporary impacts to watercourse. Construction activities will result in approximately 5,250 s.f. (0.121 ac) of permanent watercourse impacts primarily associated with culvert lining, construction of the inlet headwall and wingwalls, construction of the outlet endwall, regrading of Straitsville Brook with natural streambed material, installation of the proposed riprap revetment, installation of temporary access roads, and the installation of temporary access platform. Additionally, permanent impacts are a result of the 16’3” partial removal of the existing culvert at the inlet. The proposed liner will extend 8’3” past where the inlet existing structure will be removed, and the channel will be regraded to provide better alignment for flow entering the culvert. The proposed project will result in approximately 1,670 s.f. (0.038 ac) of temporary watercourse impacts associated with the installation of water-handling cofferdams to provide a dry work area. Areas of temporary impact will be restored upon construction completion

Disturbed areas will be revegetated with native plants, and the channel will be reconstructed with natural streambed material. Site restoration will provide future stability and stabilization of actively eroding areas.

Construction is anticipated to begin in Summer 2025 and last two construction seasons, but in-water work is anticipated to take several weeks to a month to complete.

Project Impact Table

Impacts	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	5,250	5,250
Temporary	0	1,670	1,670
Total	0	6,920	6,920

This project is not within a FEMA Flood Hazard Zone; therefore, no floodplain impacts are proposed.

Pre-Construction Notification & Inland Wetlands and Watercourses Permit

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
Town of Naugatuck

Attachment 10: Existing Site Photos

North Elevation - Inlet



South Elevation – Outlet



Inlet – Looking Upstream



Outlet – Looking Downstream



Interior Looking North - Upstream



Interior Typical Holes in Invert



Streambank Erosion (300 feet downstream of culvert)
Looking West



Streambank Erosion (300 feet downstream of culvert)
Looking East



Streambank Erosion (300 feet downstream of culvert)
Looking North



Streambank Erosion (300 feet downstream of culvert)
Looking southwest



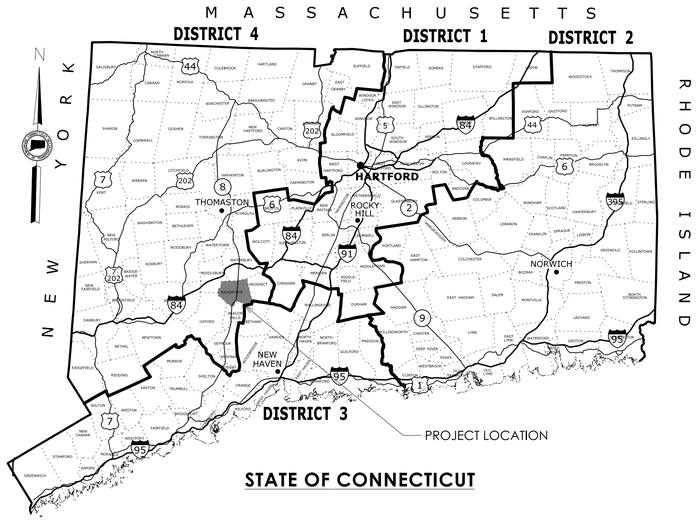
Pre-Construction Notification & Inland Wetlands and Watercourses Permit

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
Town of Naugatuck

Attachment 14: Project Plans

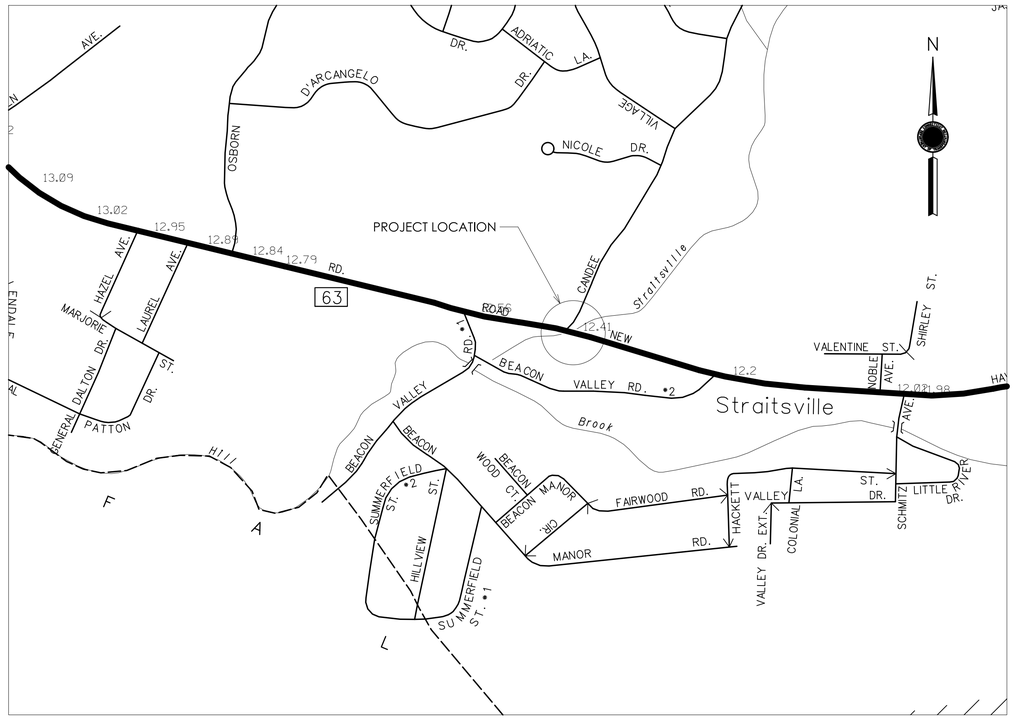
List of Drawings

- PMT-01 Title Sheet
- PMT-02 General Site Plan
- PMT-03 Wetland/Watercourse Impact Plan
- PMT-04 Elevation and Section Plan
- PMT-05 Revetment Section
- PMT-06 Staging and Water Handling Plan
- PMT-07 Permit Planting Plan



STATE OF CONNECTICUT

ENVIRONMENTAL PERMIT PLANS
STATE PROJECT NO. 0087-0148
REHABILITATION OF BRIDGE NO. 06772
CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
IN THE TOWN OF NAUGATUCK, CT



LOCATION PLAN

1" = 500'-0"

GENERAL NOTES

1. THESE PLANS ARE NOT FOR CONSTRUCITON AND ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL EFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS, AND WETLAND SOILS, SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 1927 VERTICAL DATUM BASED ON NGVD OF 1929.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGES, FACILITIES AND INCIDENTAL CONSTRUCTION, FORM 818, SECTION 1.10 AND WILL ALSO FOLLOW REQUIRED BEST MANAGEMENT PRACTICES (BMP's) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION AND SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	TITLE SHEET
PMT-02	GENERAL SITE PLAN
PMT-03	WETLAND/ WATERCOURSE IMPACT PLAN
PMT-04	ELEVATIONS AND SECTION PLAN
PMT-05	REVETMENT SECTION
PMT-06	STAGING AND WATER HANDLING PLAN
PMT-07	PERMIT PLANTING PLAN

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

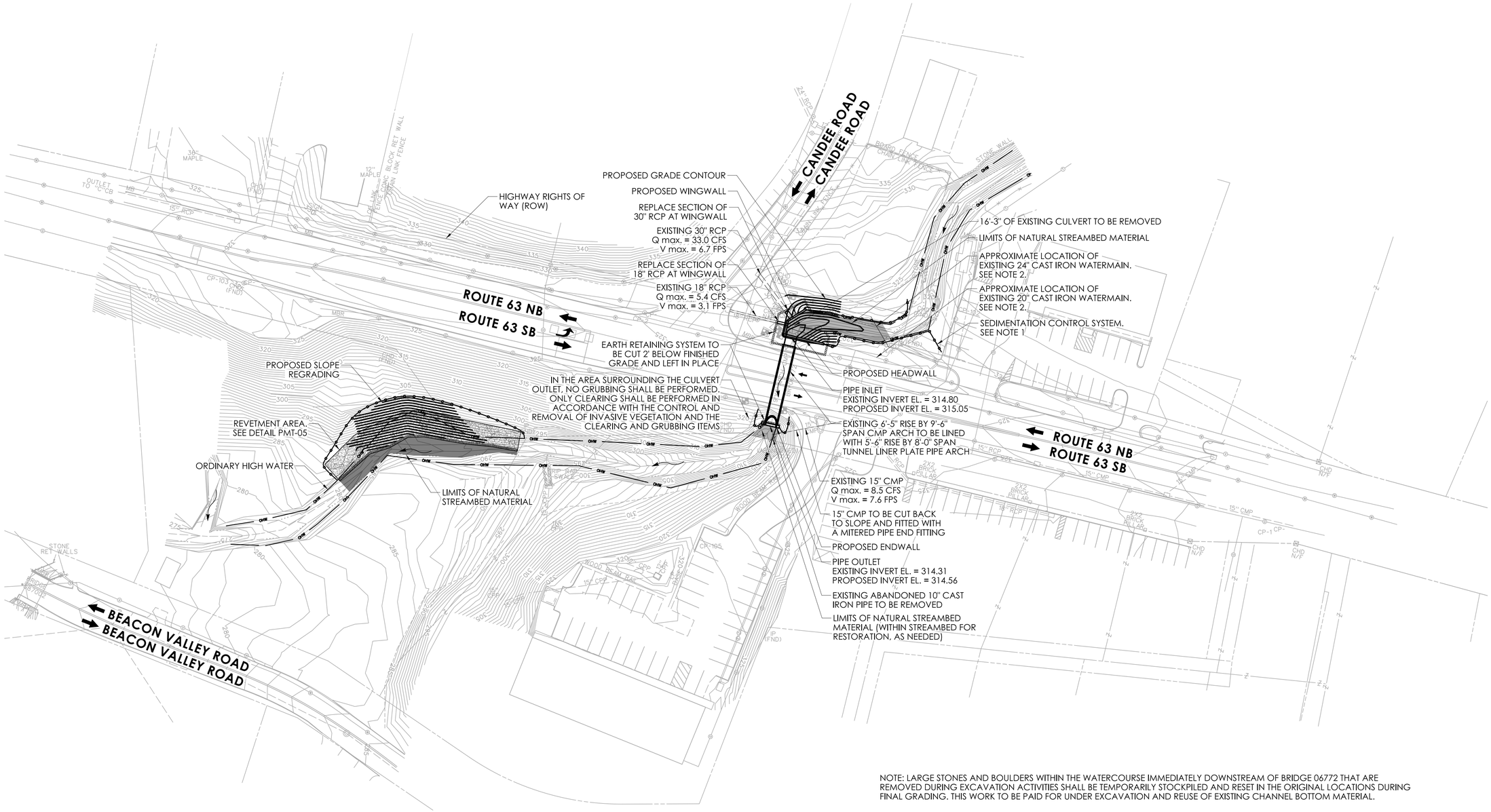
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: TITLE SHEET

DRAWING NO. PMT-01
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-1_Title Sheet.dgn
PLOTTED DATE: 5/9/2024



NOTE: LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.

BRIDGE NO. 06772 GENERAL SITE PLAN

SCALE: 1" = 40'

LEGEND

- OHW — ORDINARY HIGH WATER
- SURVEYED EDGE OF WATER
- SEDIMENTATION CONTROL SYSTEM

NOTES:

1. APPROXIMATE LOCATION OF SEDIMENTATION CONTROL SYSTEM SHOWN AT FINAL CONDITION
2. LOCATION OF EXISTING WATERMAINS ARE UNKNOWN. IF ENCOUNTERED DURING CONSTRUCTION THE ABANDONED WATERMAINS WITHIN THE REGULATED AREA WILL BE REMOVED AND THE DISTURBED AREA WILL BE RESTORED WITH NATURAL STREAMBED MATERIAL.
3. SEDIMENTATION CONTROL SYSTEM TO BE PLACED AT CATCH BASIN(S) AS NEEDED OR AS DIRECTED BY THE ENGINEER

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

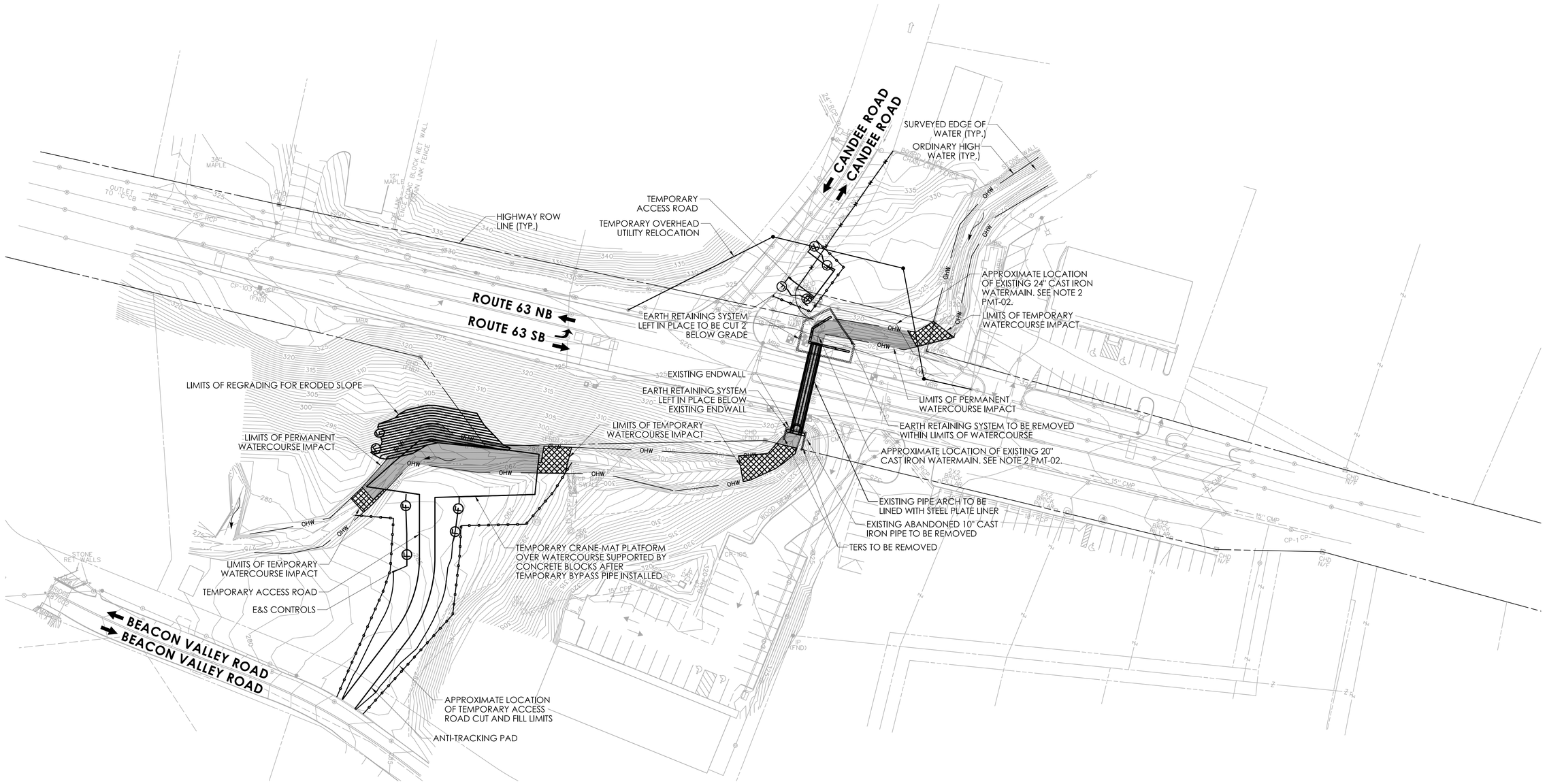
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: GENERAL SITE PLAN

DRAWING NO. PMT-02
SHEET NO.

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PLOTTED DATE: 5/9/2024



LEGEND

TEMPORARY WETLAND/WATERCOURSE IMPACT

PERMANENT WETLAND/WATERCOURSE IMPACT

NOTE:

THE CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WERLANDS AND WATERCOURSE. ALL DISTURBED AREAS SHALL BE RESTORED

BRIDGE NO. 06772 IMPACT PLAN

SCALE: 1" = 40'

WETLAND/WATERCOURSE IMPACT TABLE			
	WETLAND IMPACTS	**WATERCOURSE IMPACTS**	**TOTAL**
PERMANENT IMPACTS	0 S.F. (0 AC.)	5250 S.F. (0.121 AC)	5250 S.F. (0.121 AC)
TEMPORARY IMPACTS	0 S.F. (0 AC.)	1670 S.F. (0.038 AC)	1670 S.F. (0.038 AC)
TOTAL IMPACTS	0 S.F. (0 AC.)	6920 S.F. (0.159 AC)	6920 S.F. (0.159 AC)

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REVISION DESCRIPTION | DATE | REV.

DESIGNER/DRAFTER: JJS CHECKED BY:

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: WATERCOURSE IMPACT PLAN

DRAWING NO. PMT-03
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-3_WetlandImpactPlan.dgn
PLOTTED DATE: 5/9/2024

HYDRAULIC DATA	
DRAINAGE AREA	0.69 SQ. MILE
DESIGN FREQUENCY	50 YEAR
DESIGN DISCHARGE	220 CFS
UPSTREAM AVERAGE DAILY FLOW ELEVATION	315.4 FT
DOWNSTREAM AVERAGE DAILY FLOW ELEVATION	308.9 FT
UPSTREAM DESIGN WATER SURFACE ELEVATION	320.6 FT
DOWNSTREAM DESIGN WATER SURFACE ELEVATION	311.4 FT

NATIVE STREAMBED MATERIAL NOTES:

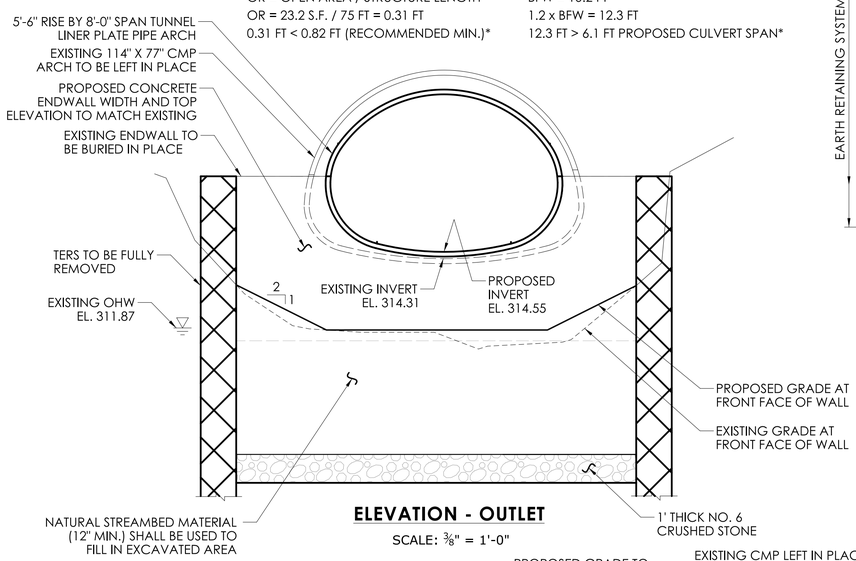
1. NATIVE STREAMBED MATERIAL EXCAVATED DURING THE PIPE RELINING, RIPRAP INSTALLATION AND CHANNEL REGRADING SHALL BE STOCKPILED AND THEN REPLACED OUTSIDE THE LIMITS OF THE RIPRAP AREAS AS NEEDED FOR REGRADING TO THE DEPTH SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH THE SPECIAL PROVISION "EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL."
2. ADDITIONAL STREAMBED MATERIAL, IF REQUIRED, SHALL BE IN ACCORDANCE WITH SPECIAL PROVISION "SUPPLEMENTAL STREAMBED CHANNEL MATERIAL."
3. THE STOCKPILE SHALL BE LOCATED OUTSIDE THE WETLAND LIMITS AND PROTECTED WITH SEDIMENTATION CONTROL SYSTEM.
4. LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.

OPENNESS RATIO (OR):

OR = OPEN AREA / STRUCTURE LENGTH
OR = 23.2 S.F. / 75 FT = 0.31 FT
0.31 FT < 0.82 FT (RECOMMENDED MIN.)*

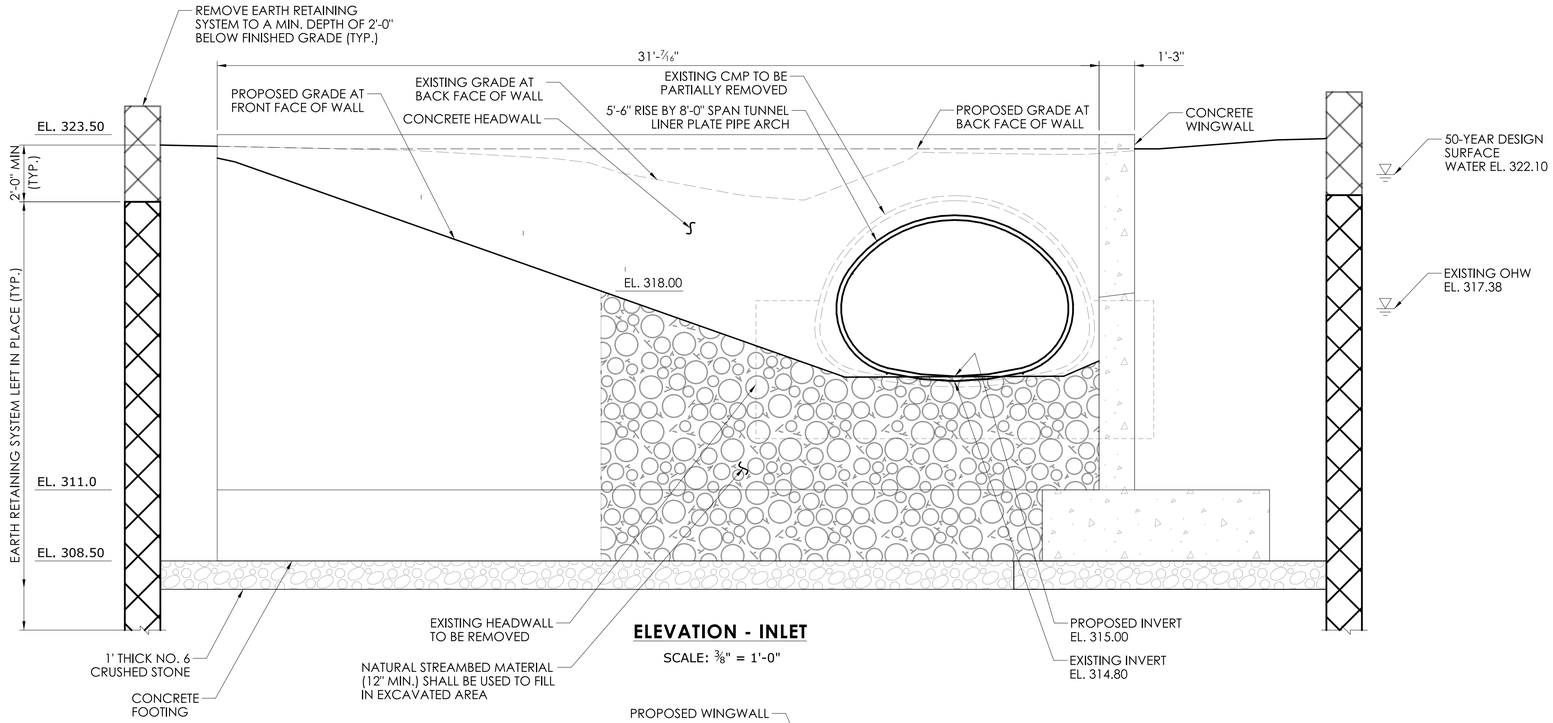
BANKFULL WIDTH (BFW):

BFW = 10.2 FT
1.2 x BFW = 12.3 FT
12.3 FT > 6.1 FT PROPOSED CULVERT SPAN*



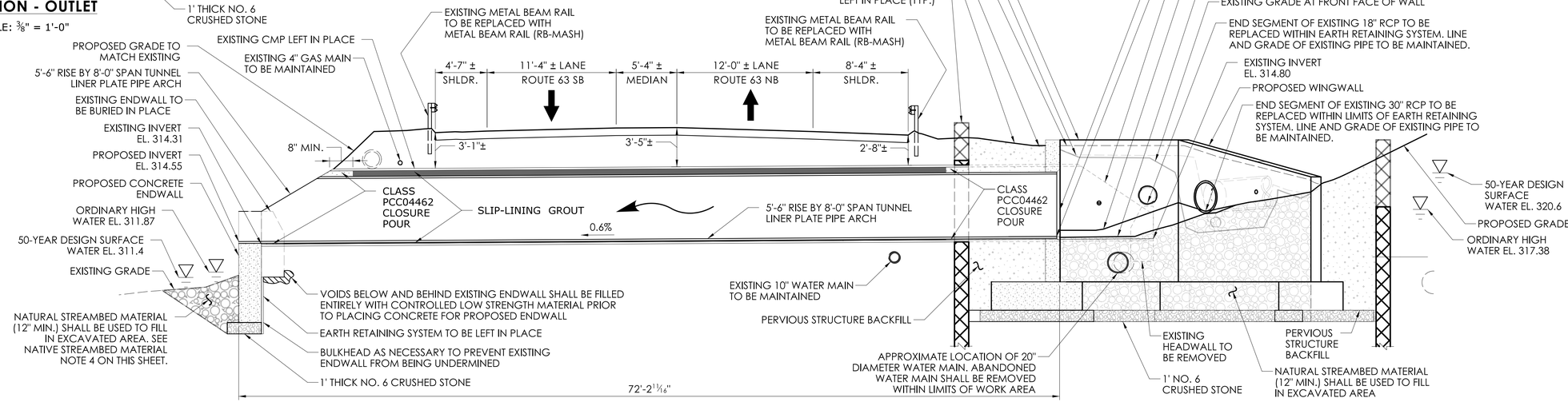
ELEVATION - OUTLET

SCALE: 3/8" = 1'-0"



ELEVATION - INLET

SCALE: 3/8" = 1'-0"



SECTION - INLET

SCALE: 3/16" = 1'-0"

NOTES:
IF LEDGE IS ENCOUNTERED PRIOR TO REACHING DEPTH OF EXCAVATION AS SHOWN ON THIS SHEET, LEDGE NEED NOT BE REMOVED AND PROPOSED ENDWALL SHALL BE CAST DIRECTLY AGAINST LEDGE.

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

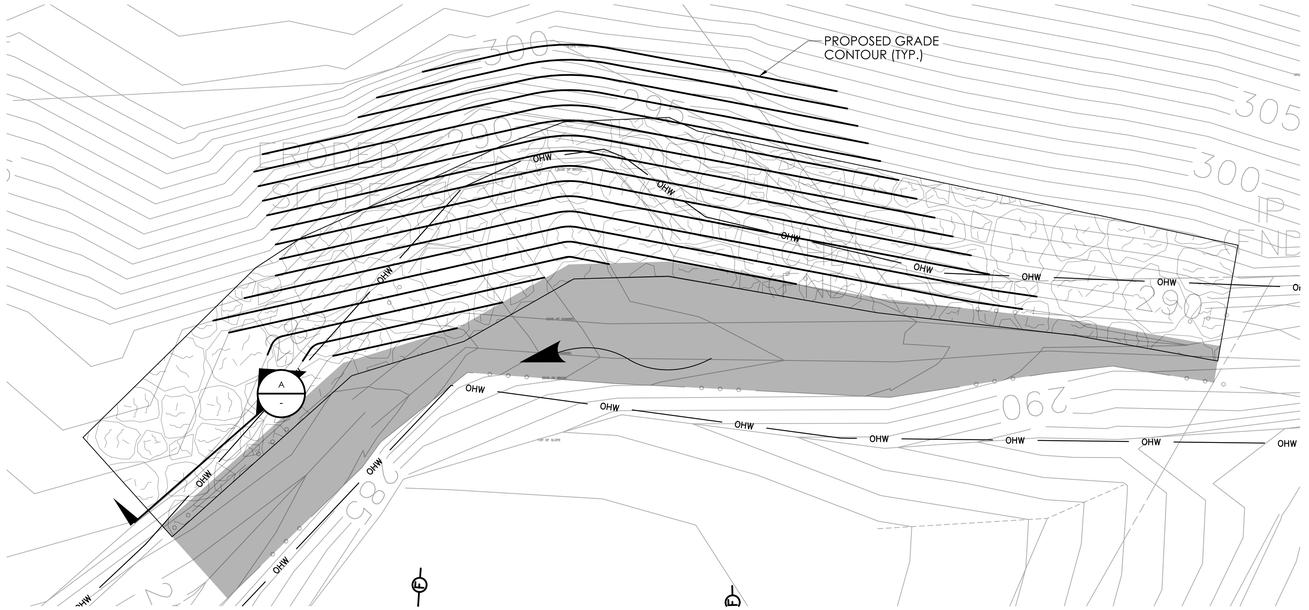
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: ELEVATION AND SECTION PLAN

DRAWING NO. PMT-04
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-4_ElevationSectionPlan.dgn
PLOTTED DATE: 5/9/2024



COORDINATE GRID

NAD 83(2011)

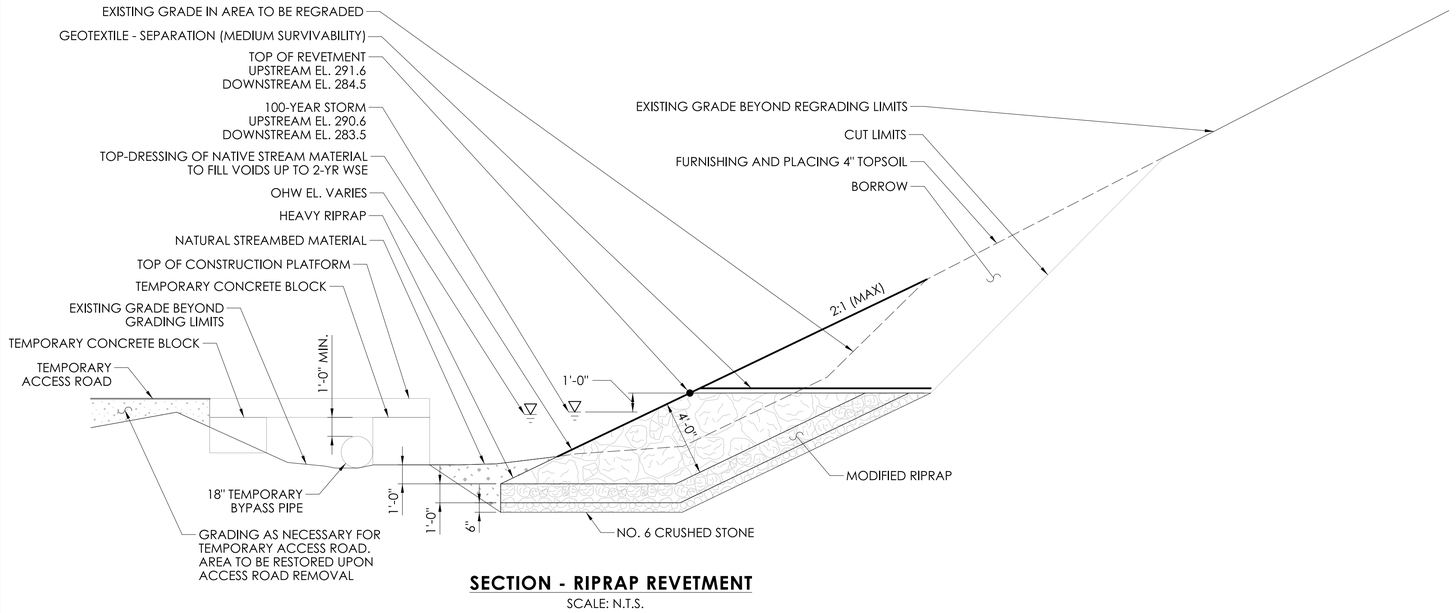
CONNECTICUT

4' HEAVY RIPRAP ON 1' MODIFIED RIPRAP, ON 6" NO. 6 CRUSHED STONE. NATURAL STREAMBED MATERIAL TO BE WASHED INTO RIPRAP UP TO 2-YR WSE.

NATURAL STREAMBED MATERIAL

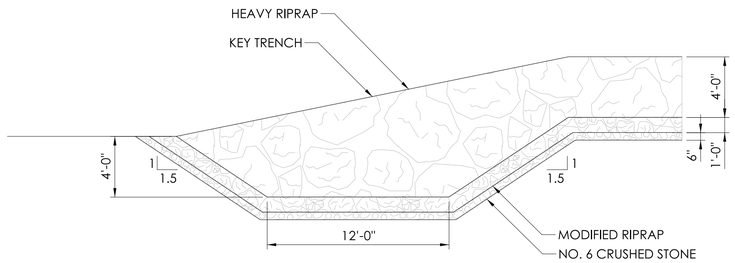
REVETMENT PLAN

SCALE: 1" = 10'



SECTION - RIPRAP REVETMENT

SCALE: N.T.S.



SECTION - REVETMENT KEY-IN

A
-

SCALE: 1" = 5'

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: CHECKED BY:

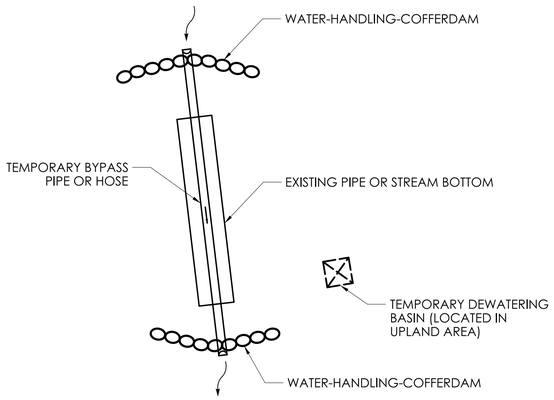
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: REVETMENT SECTION

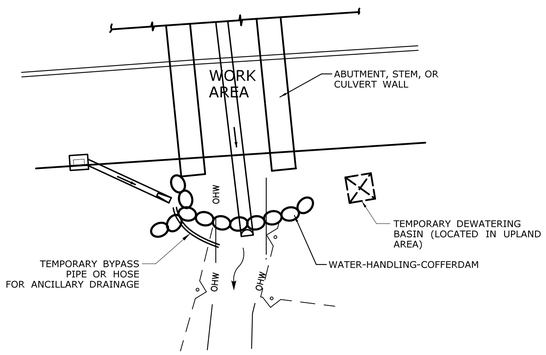
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LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-5_RevetmentSection.dgn
PLOTTED DATE: 5/9/2024



TEMPORARY PIPE

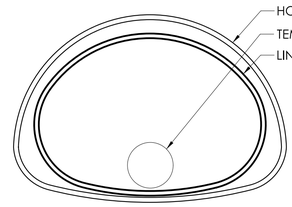
(NOT TO SCALE)



ANCILLARY STORM DRAINAGE NEAR WORK AREA

(NOT TO SCALE)

NOTE: ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING OR PROPOSED STORM DRAINAGE SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREAS. THE CONTRACTOR SHALL SUBMIT THE MEANS AND METHODS OF HANDLING STORM DRAINAGE TO THE ENGINEER FOR APROVAL.

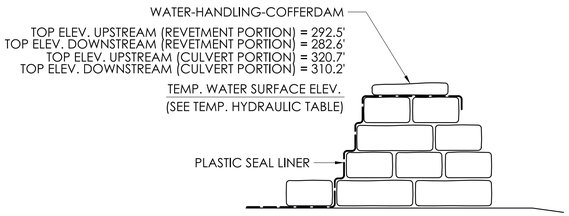


WATER HANDLING

SCALE: N.T.S.

TEMPORARY HYDRAULIC DATA	
AVERAGE DAILY FLOW	1.3 CFS
AVERAGE SPRING FLOW	2.5 CFS
2-YEAR FREQUENCY DISCHARGE	45 CFS
TEMPORARY DESIGN FREQUENCY	3 X A.S.F.
LOW FLOW PUMPING TEMPORARY DESIGN DISCHARGE	7.5 CFS
GRAVITY FLOW BYPASS PIPE TEMPORARY DESIGN DISCHARGE	7.5 CFS
UPSTREAM WATER SURFACE ELEVATION (CULVERT PORTION)	319.7 FT
DOWNSTREAM WATER SURFACE ELEVATION (CULVERT PORTION)	309.2 FT
UPSTREAM WATER SURFACE ELEVATION (REVETMENT PORTION)	291.5 FT
DOWNSTREAM WATER SURFACE ELEVATION (REVETMENT PORTION)	280.5 FT

NOTES:
1. TABLE IS APPLICABLE FOR BOTH CULVERT AND REVETMENT WATER HANDLING
2. VALUES AND ELEVATIONS MAY VARY SLIGHTLY FROM THE CONTRACT PLANS



WATER-HANDLING-COFFERDAM TYPICAL SECTION

SCALE: NOT TO SCALE

SUGGESTED CONSTRUCTION SEQUENCE - SLOPE REVETMENT

1. INSTALL SEDIMENTATION CONTROL SYSTEM.
2. PERFORM CLEARING AND GRUBBING AND CONTROL AND REMOVAL OF INVASIVE VEGETATION.
3. CONSTRUCT TEMPORARY ACCESS ROAD FROM BEACON VALLEY ROAD TO THE WORK AREA.
4. INSTALL TEMPORARY WATER HANDLING SYSTEM INCLUDING WATER-HANDLING-COFFERDAMS AND TEMPORARY BYPASS PIPE.
5. DIVERT WATER THROUGH THE TEMPORARY BYPASS PIPE TO DRY THE WORK AREA.
6. CONSTRUCT ACCESS PLATFORM WITH CRANE MATS AND CONCRETE BLOCKS TO SPAN THE TEMPORARY BYPASS PIPE AS NEEDED FOR ACCESS TO THE DOWNSTREAM REVETMENT WORK AREA.
7. CONSTRUCT SLOPE REVETMENT.
8. REMOVE TEMPORARY ACCESS ROADS, CRANE MATS, AND PERFORM FINAL GRADING.
9. REMOVE TEMPORARY WATER-HANDLING-COFFERDAMS AND BYPASS PIPE.
10. CONSERVATION SEEDING FOR SLOPES, PERMIT PLANTINGS. REMOVE SEDIMENTATION CONTROL SYSTEMS UPON FINAL STABILIZATION.

SUGGESTED CONSTRUCTION SEQUENCE - PIPE RELINING

1. RELOCATE OVERHEAD UTILITIES TEMPORARILY.
2. INSTALL SEDIMENTATION CONTROL SYSTEM.
3. PERFORM CLEARING AND GRUBBING AND CONTROL AND REMOVAL OF INVASIVE VEGETATION.
4. CONSTRUCT TEMPORARY ACCESS ROAD FROM CANDEE ROAD TO CULVERT INLET.
5. INSTALL TEMPORARY WATER HANDLING SYSTEM INCLUDING WATER-HANDLING-COFFERDAMS AND TEMPORARY BYPASS PIPE.
6. DIVERT WATER THROUGH THE TEMPORARY BYPASS PIPE TO DRY THE HOST STRUCTURE.
7. REMOVE SEDIMENT AND REGRADE AREA AT HOST STRUCTURE INLET.
8. CLEAN HOST STRUCTURE BY HAND THROUGH REMOVAL OF DEBRIS. THE CULVERT CLEANING AND THE GROUTING PROCESS SHALL NOT CAUSE TURBIDITY OF THE EXISTING WATER COURSE.
9. GROUT ALL VOIDS AND PERFORATIONS TO ENSURE FULL BEARING OF MATERIAL TO THE EXTRADOS OF THE EXISTING PIPE ARCH.
10. PLACE TEMPORARY EARTH RETAINING SYSTEM. REMOVE END SECTION OF EXISTING STRUCTURE AT THE INLET. REPLACE END SECTIONS OF 30" RCP AND 18" RCP AT INLET WINGWALL.
11. INSTALL TUNNEL LINER PLATE SECTIONS WITHIN THE HOST STRUCTURE. THE CONTRACTOR SHALL TAKE THE NECESSARY MEANS TO ENSURE THAT DEBRIS DOES NOT ENTER THE CULVERT SYSTEM DURING INSTALLATION OF THE CORRUGATED STEEL STRUCTURAL PLATE LINER.
12. INSTALL PCC00462 BULKHEADS AT THE INLET AND OUTLET.
13. PLACE SLIP-LINING GROUT.
14. EXCAVATE AND CONSTRUCT WINGWALLS, HEADWALL, AND ENDWALL ON NO. 6 CRUSHED STONE. REMOVE ABANDONED WATER MAINS IF ENCOUNTERED. CUT LEFT IN PLACE EARTH RETAINING SYSTEM AT 2 FEET BELOW GRADE. BACKFILL AND REMOVE REMAINING TEMPORARY EARTH RETAINING SYSTEM.
15. PLACE NATURAL STREAMBED MATERIAL AND PERFORM FINAL GRADING. LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.
16. REMOVE TEMPORARY WATER-HANDLING-COFFERDAMS AND BYPASS PIPE AT BOTH INLET AND OUTLET. RETURN FLOW TO HOST STRUCTURE.
17. REMOVE TEMPORARY ACCESS ROAD AND RESTORE IMPACTED AREAS.
18. CONSERVATION SEEDING FOR SLOPES, PERMIT PLANTINGS. REMOVE SEDIMENTATION CONTROL SYSTEMS UPON FINAL STABILIZATION.
19. RELOCATE OVERHEAD UTILITIES TO FINAL POSITIONING.

WATER HANDLING NOTES:

1. THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE TEMPORARY GRAVITY FLOW BYPASS PIPE (OR PUMP AND HOSE SYSTEM DESIGNED BY THE CONTRACTOR) AS SHOWN ON THIS SHEET DURING CLEANING AND REPAIR OF THE HOST STRUCTURE, GROUTING OF THE ANNULAR SPACE BETWEEN THE HOST STRUCTURE AND THE LINER AND DURINGESTABLISHMENT OF FINAL GRADES AS REQUIRED BY THE STAGE CONSTRUCTION SEQUENCES.
2. A DEWATERING BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. THE LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.
3. TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF AN APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND SHALL CONFORM TO PERMITS.

   ANY WATER HANDLING SCHEME DEPICTED WITHIN THE DEPARTMENT'S 'HANDLING WATER TYPICAL SCHEMATICS' MAY BE UTILIZED UNLESS SPECIFICALLY PROHIBITED. A MEANS AND METHOD FOR WATER HANDLING SYSTEM SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR APPROVAL.
4. WATER HANDLING MEASURES SHALL NOT EXCEED IMPACT AREAS SHOWN ON THE WETLAND SHEET OF THE PERMIT PLANS.
5. ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING OR PROPOSED STORM DRAINAGE PIPES SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREAS. PUMPS/PIPES SHALL BE SIZED BY THE CONTRACTOR TO HANDLE THE EXPECTED FLOWS AND BE DISCHARGED TO A STABLE LOCATION. THE CONTRACTOR SHALL SUBMIT THE MEANS AND METHODS OF HANDLING STORM DRAINAGE TO THE ENGINEER FOR APPROVAL AND IS INCLUDED AS PART OF WATER HANDLING.
6. IF A SHORT DURATION PUMP SYSTEM IS PROPOSED DURING LOW FLOW CONDITIONS, THE PUMP SYSTEM SHALL BE DESIGNED BY THE CONTRACTOR AND HAVE A MINIMUM CAPACITY AS SHOWN IN THE TEMPORARY HYDRAULIC TABLE. PUMP SYSTEM PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

   BASED UPON FIELD CONDITIONS, WORK DURATION, AND EXPECTED WEATHER CONDITIONS, THE ENGINEER MAY APPROVE A WATER HANDLING PLAN WITH LOWER PUMPING FLOWS, PROVIDED THAT THIS INCLUDES A CONTINGENCY PLAN, WHICH MINIMIZES NEGATIVE IMPACTS AND SAFELY CONVEYS LARGER FLOWS THROUGH THE WORK AREA.

UNCONFINED IN-STREAM WORK BMP NOTE:

ANY UNCONFINED IN-STREAM WORK WITHIN THE WATERCOURSE SHALL BE RESTRICTED TO THE PERIOD FROM JUNE 1 TO SEPTEMBER 30, INCLUSIVE. UNLESS OTHERWISE INCLUDED AS A SPECIAL PROVISION OF THE LICENSE, THE CONDITION SHALL APPLY TO PROJECTS IN NON-COASTAL WATERS.

THE DEPARTMENT WILL REVIEW AND MAY APPROVE THE METHODS OF UNCONFINED IN-WATER WORK WITH CONSIDERATION OF THE FOLLOWING:

- PROPOSED SCHEDULE FOR WORK OPERATIONS
- ALL UNCONFINED IN-WATER WORK SHALL BE MINOR IN NATURE
- DISTURBANCE SHALL BE LIMITED TO AREAS THAT HAVE BEEN APPROVED FOR TEMPORARY AND PERMANENT IMPACT
- BEST MANAGEMENT PRACTICE SHALL BE UTILIZED WHEREVER POSSIBLE TO MINIMIZE TURBIDITY/SEDIMENT TRANSPORT DOWNSTREAM
- DISTURBED AREAS AND THE DURATION OF DISTURBANCE SHALL BE MINIMIZED TO THE EXTENT POSSIBLE
- INSTREAM WORK SHALL BE DONE DURING PERIODS OF LOW FLOW

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

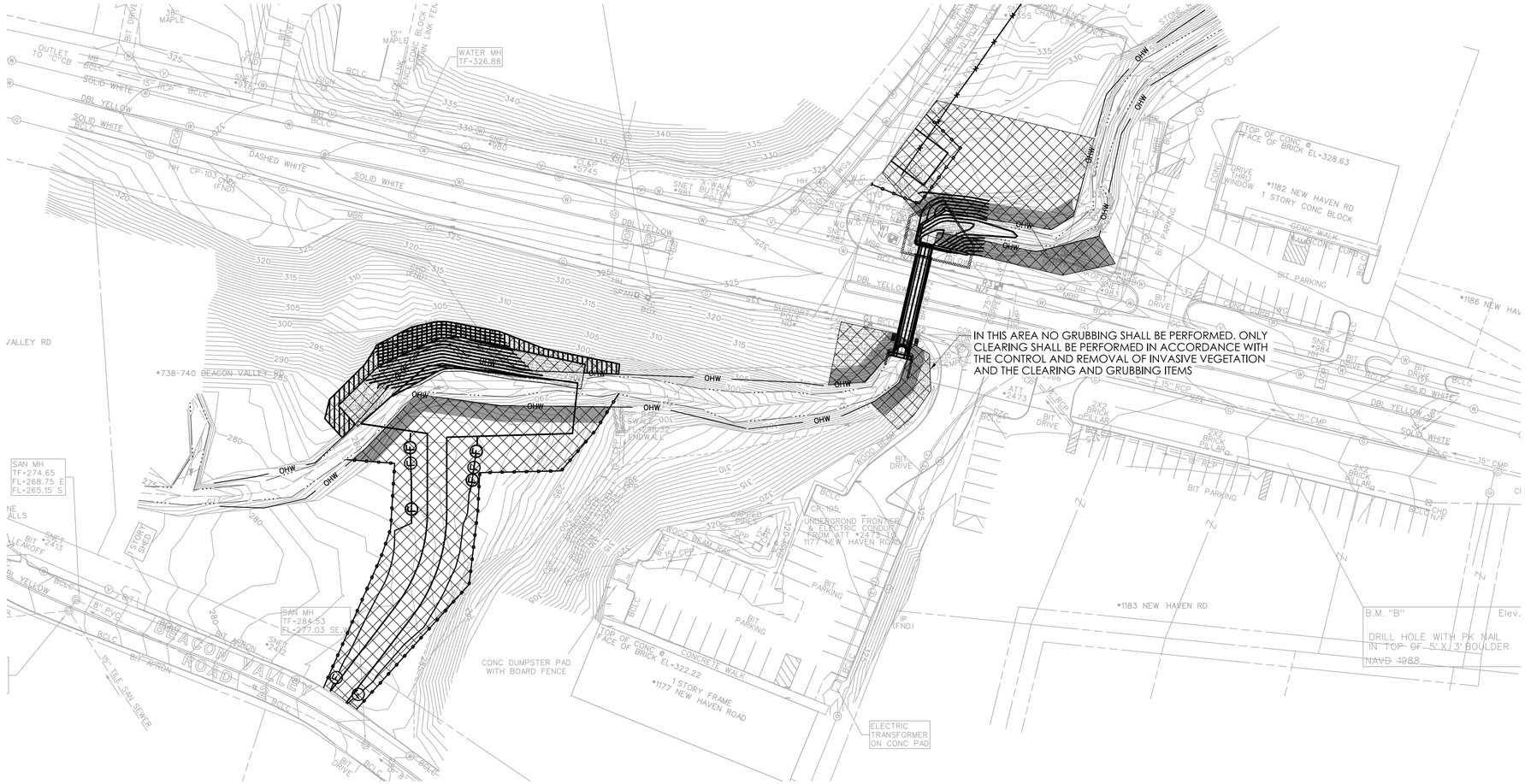
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: STAGING AND WATER HANDLING

DRAWING NO. PMT-06
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-6_StagingWaterHandling.dgn
PLOTTED DATE: 5/9/2024



CONTROL AND REMOVAL OF INVASIVE VEGETATION
SEE NOTE 7

SLOPE STABILIZATION PLANTINGS

TOTAL PLANTS = 56
TOTAL PLANTING AREA = 1800 S.F.

AREA TO BE RESTORED WITH PLANTINGS

TOTAL PLANTS = 238
TOTAL PLANTING AREA = 5060 S.F.

PERMIT PLANTING PLAN

SCALE: 1" = 40'

NOTES

1. PLANTINGS ON THIS SHEET ARE FOR ENVIRONMENTAL PERMITTING. ANY SUBSTITUTIONS TO THE PERMIT PLANTINGS SHALL BE COORDINATED WITH THE DEPARTMENT'S OFFICE OF ENVIRONMENTAL PLANNING (OEP).

2. PROPOSED PLANTINGS TO BE FIELD LOCATED BY CTDOT OEP OR THEIR DESIGNATED REPRESENTATIVE.

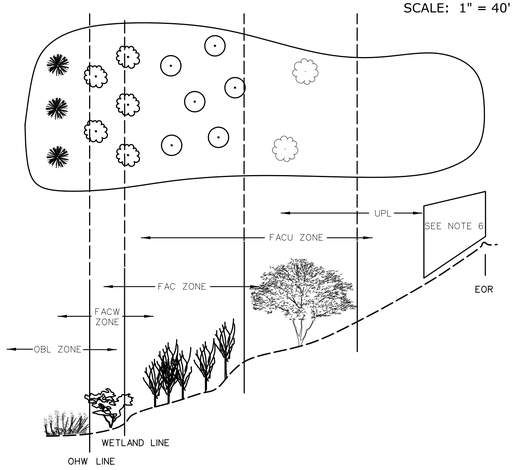
3. WOOD CHIP MULCH SHALL NOT BE PLACED IN THE WETLAND AREA.

4. DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH WETLAND GRASS ESTABLISHMENT. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE SEEDED WITH CONSERVATION SEEDING FOR SLOPES, OR OTHER SEED MIX AS SPECIFIED. ALL AREAS SHALL BE RESTORED.

5. ALL PLANT MATERIAL SHALL BE NURSERY GRADE STRAIGHT SPECIES, CONFORMING TO SECTION 3 OF THE AMERICAN STANDARDS FOR NURSERY STOCK. CTDOT OEP WILL REVIEW AND APPROVE PROPOSED PLANTINGS.

6. NO PLANTINGS SHALL BE PLACED IN MOW AREA.

7. AREA TO BE TREATED FOR INVASIVES AND PROPERLY PREPARED FOR FINAL PLANTING, SEEDING, AND RESTORATION.



SCHEMATIC PLANTING

LANDSCAPE ITEMS

KEY	BOTANICAL NAME	COMMON NAME	SIZE	QTY.	SPACING	WETLAND INDICATOR
A.a.	Aronia arbutifolia	Red Chokeberry	18" - 24" HT. B.B.	9	5' On Center	FACW
C.r.	Cornus racemosa	Gray Dogwood	2' - 3' HT. B.B.	14	5' On Center	FAC
H.v.	Hamamelis virginiana	Witch Hazel	2' - 3' HT. B.B.	11	5' On Center	FACU
Vi.a.	Viburnum acerifolia	Mapleleaf Viburnum	2' - 3' HT. B.B.	12	5' On Center	UPL
V.d.	Viburnum dentatum	Arrowwood Viburnum	24" - 36" HT. NO. 3 Container	10	5' On Center	FAC

NOTE: FOR INFORMATION ONLY. CONTRACTOR SHALL REFER TO THE CONTRACT PLANS FOR BIDDING PURPOSES.
NOTE: LANDSCAPE ITEMS FOR SLOPE STABILIZATION PLANTINGS TO BE FIELD LOCATED BY DOT LANDSCAPE DESIGN

PERMIT PLANT LIST

BOTANICAL NAME	COMMON NAME AND SIZE	QTY.	SPACING	WETLAND INDICATOR
ACER RUBRUM	RED MAPLE 2"-2½" CAL. BB	8	FIELD LOCATE	FAC
ACER RUBRUM	RED MAPLE 3'-4' HT 1 GAL. CONT.	20	FIELD LOCATE	FAC
ACER RUBRUM	RED MAPLE 6'-8' HT 3 GAL. CONT.	20	FIELD LOCATE	FAC
LINDERA BENZOIN	COMMON SPICEBUSH 2'-3' HT BB	50	5'	FACW
CLETHRA ALNIFOLIA	SWEET PEPPERBUSH 3'-4' HT BB	50	5'	FAC
CORNUS RACEMOSA	GRAY DOGWOOD 3'-4' HT BB	50	5'	FAC
ALNUS INCANA	SPECKLED ALDER 4'-5' HT BB	40	5'	FACW
ASCLEPIAS TUBEROSA	BUTTERFLY MILKWEED 1 GALLON CONTAINER	40	1'-6" ON CENTER	NI
CONSERVATION SEEDING				
CONTROL AND REMOVAL OF INVASIVE VEGETATION		25970 SF	SEE HATCHING AND NOTE 7	

NOTE: ACER RUBRUM 3'-4' HT 1 GAL. CONT. AND ACER RUBRUM 6'-8' HT 3 GAL. CONT. TO BE PAID FOR UNDER ITEM #0949875A - WETLAND PLANTINGS

ENVIRONMENTAL PERMIT PLANS
PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: CHECKED BY:

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: PERMIT PLANTING PLAN

DRAWING NO. PMT-07
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-7_PermitPlantingPlan.dgn
PLOTTED DATE: 5/9/2024

Pre-Construction Notification & Inland Wetlands and Watercourses Permit

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
Town of Naugatuck

Attachment 15: Wetland Report

Wetland Report

State Project 0087-0148
Rehabilitation of Bridge No. 06772 carrying
Route 63 over Straitsville Brook
Naugatuck, Connecticut

Introduction:
Prepared for the Connecticut Department of Transportation, May 31, 2024

- The project is located at Bridge No. 06772, Route 63 over Straitsville Brook in Naugatuck, CT.
- The purpose of this project is to rehabilitate Bridge No. 06772 due to the structure being rated as structurally inadequate due to loss of asphaltic coating and high presence of rust and holes and perforations along the invert. The proposed activities include lining the existing structure with an 8' span by 5'6" steel plate pipe-arch, replacement of the existing headwall and wingwalls at the inlet, and replacement of the endwall at the outlet. The project also includes slope stabilization of an eroded embankment 300 feet downstream of Bridge No. 06772 with the installation of a 140 foot long riprap revetment.

Delineation Methodology: Inland wetlands were delineated by identifying soil types defined by Connecticut General Statute Section 22a-38(2). Watercourses were identified as defined in Connecticut General Statute Section 22a-38(16). Federal wetlands were delineated in accordance with the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (version 2.0).



Figure 1: Inlet of Bridge No 06772 Looking Upstream

Delineation Results: Field investigation has determined there are no inland wetlands present within the proposed project area. Therefore, no inland wetlands will be impacted by the proposed project. All regulated impacts associated with the proposed project are associated watercourse impacts below the Ordinary High Water (OHW) elevation.

Upland Area:
* *Denotes an invasive species*

The upland area downstream of the culvert contains steep and rocky slopes. There are no species present in the tree stratum. In the sapling stratum, Multiflora Rose (*Rosa multiflora*)*, Silky Dogwood (*Cornus amomum*), and Sugar Maple (*Acer saccharum*) are the dominant species. In the herb stratum, Japanese Knotweed (*Reynoutria japonica*)* is dominant, and Jewelweed (*Impatiens capensis*) is also present. The woody vine stratum is dominated by Fox Grape (*Vitis labrusca*).

The upland area upstream of the culvert has a dominant tree stratum containing Sugar Maple

(*Acer saccharum*) and Black Locust (*Robinia pseudoacacia*)*. Black Cherry (*Prunus serotina*) is also present. The sapling stratum is dominated by Sugar Maple (*Acer saccharum*) and Japanese Barberry (*Berberis thunbergia*) *. American Elm (*Ulmus americana)* and Tree of Heaven (*Ailanthus altissima*)* are also present. The herb stratum is dominated by Japanese Knotweed (*Reynoutria japonica*)*, Garlic Mustard (*Alliaria petiolate*)*, and Common Wormwood *(Artemisia vulgaris*)*. Jewelweed (*Impatiens capensis*) is also present. The woody vine stratum is dominated by Virginia Creeper (*Parthenocissus quinquefolia*), Oriental Bittersweet (*Celastrus orbiculatus*)*, and Fox Gape (*Vitis labrusca*).

The upland area adjacent to the eroded embankment has a slope around 15 percent. This location has a tree stratum that is dominated by Red Maple (*Acer rubrum*), Sugar Maple (*Acer saccharum*), Northern Red Oak (*Quercus rubra*), Yellow Birch (*Betula alleghaniensis*), and Pignut Hickory (*Carya glabra*). American Elm (*Ulmus americana*) is also present. The sapling stratum is dominated by Japanese Barberry (*Berberis thunbergia*)*. Northern Spicebush (*Lindera benzoin*), White Oak (*Quercus alba*), Winged Euonymus (*Euonymus alatus*)*, White Ash (*Fraxinus americana*), and Multiflora Rose (*Rosa multiflora*)* are also present. The herb stratum is dominated by White Wood Aster (*Eurybia divaricate*) with Wrinkleleaf Goldenrod (*Solidago rugosa*) is also present. There are no species present in the woody vine stratum in this area.



Figure 2: Looking downstream of Straitsville Brook from culvert outlet.

<u>Watercourse Description:</u>
Straitsville Brook is a perennial stream that is approximately 0.8 miles long and generally flows north to south. Straitsville Brook is rated Class A for water quality according to the CT DEEP 2018 Water Quality Classification Map. The approximate bankfull width is 10.2 feet. The watercourse is not within a FEMA Flood Hazard Zone.

The watercourse flows through Bridge No. 06772 and meets Beacon Hill Brook approximately 640 feet downstream then drains into the Naugatuck River. The existing stream channel is mainly comprised of boulders and cobbles with some sands and gravels with steep slopes. Upstream and downstream of the crossing, the watercourse consists of a high gradient, boulder and cobble dominated riffle. Straitsville Brook has a drainage area of approximately 0.69 square miles.

The streambank approximately 300 feet downstream of Bridge No. 06772 exhibits erosion and vegetation loss. This eroded embankment supports Route 63.

<u>Existing Conditions:</u> The project is located in sub-regional drainage basin Beacon Hill Brook #6918. The project affects Straitsville Brook, which generally flows north to south. The project is not within a FEMA Flood Hazard Zone or DEEP NBBD area (CT DEEP June 2022 data).

Soils at the eastern portion of the project area include Udorthents-Urban Land Complex with steep slopes, and soils in the western area of the project are classified as Hinckley Gravelly Sandy Loam with steep slopes. An evaluation done by CTDOT Office of Environmental

Planning indicated that extensive soil disturbances and reconfiguration of the landscape have taken place within the project area over time. Some disturbances include clearing, filling, grading, and development of abutting properties. More information on soils at this location can be found in the attached NRCS Web Soil Survey Report.

Bridge No. 06772 carries Straitsville Brook. The existing structure is a corrugated steel arch pipe culvert (ACCMP) that has an overall length of 75 feet with a span of 114" and a rise of 77". Upstream and downstream of the crossing, the watercourse consists of a high gradient, boulder and cobble dominated riffle. Comments from DEEP Fisheries concluded that the current structure is a barrier for upstream fish passage due to the shallow water conditions in the culvert and the 4-foot drop at the outlet. Additionally, DEEP Fisheries has determined that fish passage is not warranted at this site due to lack of available habitat upstream.

Approximately 300' downstream of Bridge No. 06772 there is an embankment supporting Route 63. This embankment is heavily eroded and exhibits vegetation loss including the collapse of several large trees.

The project area is located approximately two miles southeast of downtown Naugatuck and approximately 2 miles east of Route 8 Exit 26. The land surrounding the project location is mostly used for business and commercial purposes. The area to the north is residential property, the area to the northeast is commercial property, and the area to the southeast is currently a shopping plaza. New Haven Rd or CT-63 over Bridge No. 06772 is used for travel to these areas.



Figure 3: Eroded embankment approximately 300 feet downstream of Bridge No. 06772

<u>Functions and Values</u>

There are no inland wetlands present within the proposed project area. Therefore, no inland wetlands will be impacted by the proposed project. All regulated impacts associated with the project are watercourse impacts below OHW.

The principal functions of the watercourse impacted by the project include: Fish and Shellfish Habitat and Floodflow Alteration. Additional functions the watercourse is suitable for include: Sediment/Toxicant Retention and Sediment/shoreline stabilization.

There were no values found for this watercourse.

Fish and shellfish habitat is a principal function of the watercourse due to the presence of spawning areas that support wild Brook Trout and wild Brown Trout as sampled by CT DEEP. This function may be temporarily impacted by the use of water-handling cofferdams to perform work in the dry, relining of Bridge 06772, removal of 16 foot 3 inch portion of existing culvert inlet, replacement of inlet headwall and wingwalls at the inlet, the replacement of the outlet endwall, construction of temporary crane-mat platform, installation of riprap revetment, channel regrading and the placement

of natural streambed material. However, impacts will be minimized by the use of best management practices. Removal of a portion of the existing culvert at the inlet will result in an additional 8 feet of natural stream channel upstream of the culvert. Additionally, a field meeting with DEEP LWRD determined fish passage barriers further upstream make the project area unsuitable for fish habitat. No adverse impacts to fish and shellfish habitat are anticipated.

Floodflow alteration is a principal function of the watercourse due to the channel flow and flat land cover downstream. This function may be temporarily impacted by the use of water-handling cofferdams to perform work in the dry, temporary water handling, construction of temporary access roads, construction of temporary access platform, construction of riprap revetment, channel regrading, and placement of natural streambed material. However, impacts will be minimized by the use of best management practices and the project is not within a FEMA flood hazard zone. No adverse impacts to floodflow alteration are anticipated.

Sediment/toxicant retention and sediment/shoreline stabilization are additional functions of the watercourse due to the potential sources of excess sediment located above the channel, indications of erosion at the downstream eroded embankment, and high flow velocities. These functions may be temporarily impacted by this project; however, impacts will be minimized through the use of best management practices. Additionally, installation of the 140' riprap revetment may improve these functions by decreasing stream velocities and increasing the opportunity for sediment trapping.

Construction will be temporary, and no adverse environmental impacts are expected to the watercourse. Best management practices will be used throughout construction. Minor, unavoidable impacts will occur during construction. The functions and values will be restored upon completion of the project.

Proposed Conditions

The proposed project proposes to rehabilitate Bridge No. 06772 and bring it to a state of good repair. This will involve lining the existing structure with an 8 foot span by 5 foot 6 inch rise corrugated steel tunnel plate liner. The liner invert will be set 3" above the host pipe invert elevations, and the existing slope will remain. The existing headwall and wingwalls will be replaced at the inlet and the endwall will be replaced at the outlet. A 16 foot 3 inch portion of the existing structure will be cut back and the steel plate liner will extend 8 feet 3 inches past where the inlet of the existing structure will be partially removed. This will result in daylighting of 8 feet of watercourse at the inlet. There is an existing abandoned 10" cast iron pipe adjacent to the outlet that will be removed. There is an existing 15" corrugated metal pipe culvert adjacent to the outlet which will be cut back to the slope and fitted with a mitered pipe end fitting.

The existing 20 inch and 24 inch cast iron watermains below the upstream portion of the watercourse will be abandoned prior to the initiation of this project. If encountered during construction, they will be removed by the contractor within the limits of the watercourse and the area will be restored with natural streambed material.

A temporary access road will be constructed on the south side of Candee Rd northwest of Bridge No. 06772 to access the inlet of the structure. The existing roadway and driveway southeast of the culvert will be used to access the outlet. The earth retaining systems outside of the watercourse will be cut 2 feet below finished grade and left in place after construction. Earth retaining systems within the

watercourse upstream of the culvert will be removed in their entirety. The earth retaining system at the outlet will be left in place to prevent undermining of the existing endwall

The project also includes the installation of a 140 foot riprap revetment to stabilize the eroded embankment located approximately 300' downstream of the culvert outlet. The proposed work includes re-grading the embankment and armoring with riprap. A temporary access road will be constructed from Beacon Valley Rd to the eroded embankment. Temporary water-handling cofferdams will be installed to construct the temporary crane-mat platform supported by concrete blocks across the watercourse. The access road and temporary crane-mat will be removed upon construction completion. Natural streambed material will be washed into proposed riprap to the 2-year water surface elevation.

Temporarily impacted areas of Straitsville Brook will be restored.

Water Handling:
Water-handling during the rehabilitation of Bridge 06772 will consist of temporary water-handling-cofferdams. Flow of the watercourse will be conveyed through an 18 inch bypass pipe through the structure or by pumping around the work area. A secondary temporary water-handling system will be installed at the downstream eroded embankment using temporary water-handling-cofferdams. Flow of the watercourse will be conveyed by an 18 inch bypass pipe under a temporary crane-mat platform or by pumping around the work area.

Impacts and Mitigation
Permanent impacts are a result of:
Pipe lining the existing culvert with a 8 foot span by 5 foot 6 inch rise corrugated steel tunnel plate liner, replacement of headwall and wingwalls at the inlet, replacement of the endwall at the outlet, the earth retaining system to be left in place at culvert outlet, installation of 140 foot long riprap revetment, associated regrading of Straitsville Brook and placement of natural streambed material

Temporary impacts are associated with: Temporary water-handling to preform work in the dry.

WETLANDS AND WATERCOURSES IMPACT TABLE

	WETLAND IMPACTS	WATERCOURSE IMPACTS (BELOW O.H.W.)	TOTAL
PERMANENT IMPACTS	0	5250 S.F. (0.121 AC)	5250 S.F. (0.121 AC)
TEMPORARY IMPACTS	0	1670 S.F. (0.038 AC)	1670 S.F. (0.038 AC)
TOTAL	0	6920 S.F. (0.159 AC)	6920 S.F. (0.159 AC)

It is anticipated that the following permits will be required for this work:
- DEEP Pre-Construction Notification (PCN) - USACE General Permits for CT
- DEEP Individual Inland Wetlands and Watercourses Permit
- USACE Pre-Construction Notification (PCN) - GP19

Construction is anticipated to start Summer 2025 and last two construction seasons.

Alternatives that were considered for the culvert included:

- Replacement with a box culvert/three-sided frame. This alternative was eliminated due for various reasons including interference with underground water and raw water mains beneath the inlet that are unable to be cutoff, interference with an underground gas main above the structure, staged construction, increased environmental ROW impacts and high costs associated with the work. Additionally, a three-sided structure would require total stream reconstruction that would increase stream velocities.
- Replacement using pipe jacking. This alternative was eliminated due for various reasons including interference with underground water and raw water mains beneath the inlet that are unable to be cutoff, interference with an underground gas main above the structure, difficulties with jacking in rocky substrate, increased environmental ROW impacts and high costs associated with the work. Additionally, pipe-jacking a culvert of this size raised significant concern for damaging through direct conflict or vibration.
- Replacement culvert with skew to match natural channel alignment. This alternative was eliminated due to interference with overhead and underground utilities. Additionally, a replacement structure would require total stream reconstruction that would increase stream velocities.
- Alternatives for providing fish passage through the structure were investigated.
    - Installation of step pools: Due to the steepness of the watercourse and the drop at the culvert outlet providing passage through the culvert would have required a step pool system extending 300 feet downstream of the culvert outlet with a 6 inch depth of riprap throughout the entire channel. CT DEEP Fisheries determined that the amount of disturbance downstream would not be beneficial due to existing natural upstream barriers to fish passage and limited habitat availability upstream of the culvert.
    - Installation of an engineered concrete fishway: Providing a max 15% slope would require 150 foot engineered fishway extending downstream from the culvert outlet. CT DEEP Fisheries determined that the amount of disturbance downstream would not be beneficial due to existing natural upstream barriers to fish passage and limited habitat availability upstream of the culvert.

The proposed project alternative using pipe-ling maintains hydraulic adequacy, reduces construction duration, reduces traffic impacts, reduces environmental and ROW impacts, reduces impacts to overhead and underground utilities, and it has a reduced cost compared to the other alternatives.

Alternatives that were considered for access roads included:

- Installing an access road from Route 63 to access the eroded embankment and culvert outlet. Due to the steep slopes there were constructability concerns about placement of shoring to support the access road. Additionally, this would have required extensive clearing on the slope adjacent to Straitsville Brook and access to install the proposed revetment would be difficult.
- Installation of an access road from Beacon Valley Road to the culvert outlet. This alternative would have had an access road leading from the currently proposed access road along Straitsville Brook to the outlet of the culvert. This alternative would have resulted in significant clearing along Straitsville Brook. There were additional constructability

concerns due to an existing underground stormwater detention system located adjacent to the slope for the existing commercial property.

The proposed temporary access road orientations are proposed to minimize the required tree removal directly adjacent to Straitsville Brook. The access roads will be removed after construction is completed, and impacted areas will be restored. An antitracking pad will be installed at the entrance of access roads.

During construction, impacts will be minimized through the use of Best Management Practices (BMPs) stipulated in the Department's *Standard Specifications for Roads, Bridges, and Incidental Construction, Form 817*, Section 1.10, Environmental Compliance, Best Management Practices, and the implementation of an erosion and sediment control plan consistent with the *2002 CT Guidelines for Soil Erosion and Sediment Control.* District inspection personnel, as well as staff from the Office of Environmental Planning, will oversee construction during the construction activity. The following are site specific measures utilized to positively influence water quality:

- Invasive species will be controlled during construction through the use of the Department's Control and Removal of Invasive Vegetation specification within the project limits.
- Water-handling-cofferdams that convey flow to a 18-inch diameter temporary pipe will be used during the construction to prevent sediment and debris from entering the watercourse. This will also allow the watercourse to flow freely during construction.
- The water pumped from the temporary water-handling-cofferdam will be directed into dewatering basins.
- Sedimentation and erosion control measures will be used in accordance with the 2002 Erosion and Sedimentation Control Guidelines and the 2004 Stormwater Quality Manual.
- All disturbed areas within the project limits will be stabilized and restored with native plantings and seeding.

Mitigation for the project impacts were coordinated with CT DEEP and USACE in an Interagency Coordination Meeting and are not required. Native plantings are proposed and included in the permit plans to restore vegetative communities. Native streambed material will be used to fill excavated areas during the bridge rehabilitation and washed into the riprap at the 2-year water surface elevation during regrading of the downstream eroded embankment.

Invasive Species

Invasive species will be controlled during construction through the use of the Department's *Control and Removal of Invasive Vegetation* specification within the project limits. Invasive species that may be controlled include: Japanese Barberry (*Berberis thunbergia*), Japanese Knotweed (*Reynoutria japonica*), Oriental Bittersweet (*Celastrus orbiculatus*), Garlic Mustard (*Alliaria petiolate*), and Common Wormwood *(Artemisia vulgaris*), Black Locust (*Robinia pseudoacacia*), and Multiflora Rose (*Rosa multiflora*). Seeding and native plantings are proposed for all disturbed areas within the project limits. The proposed control methods and the subsequent native plantings should provide for native plant community establishment within the project limits.

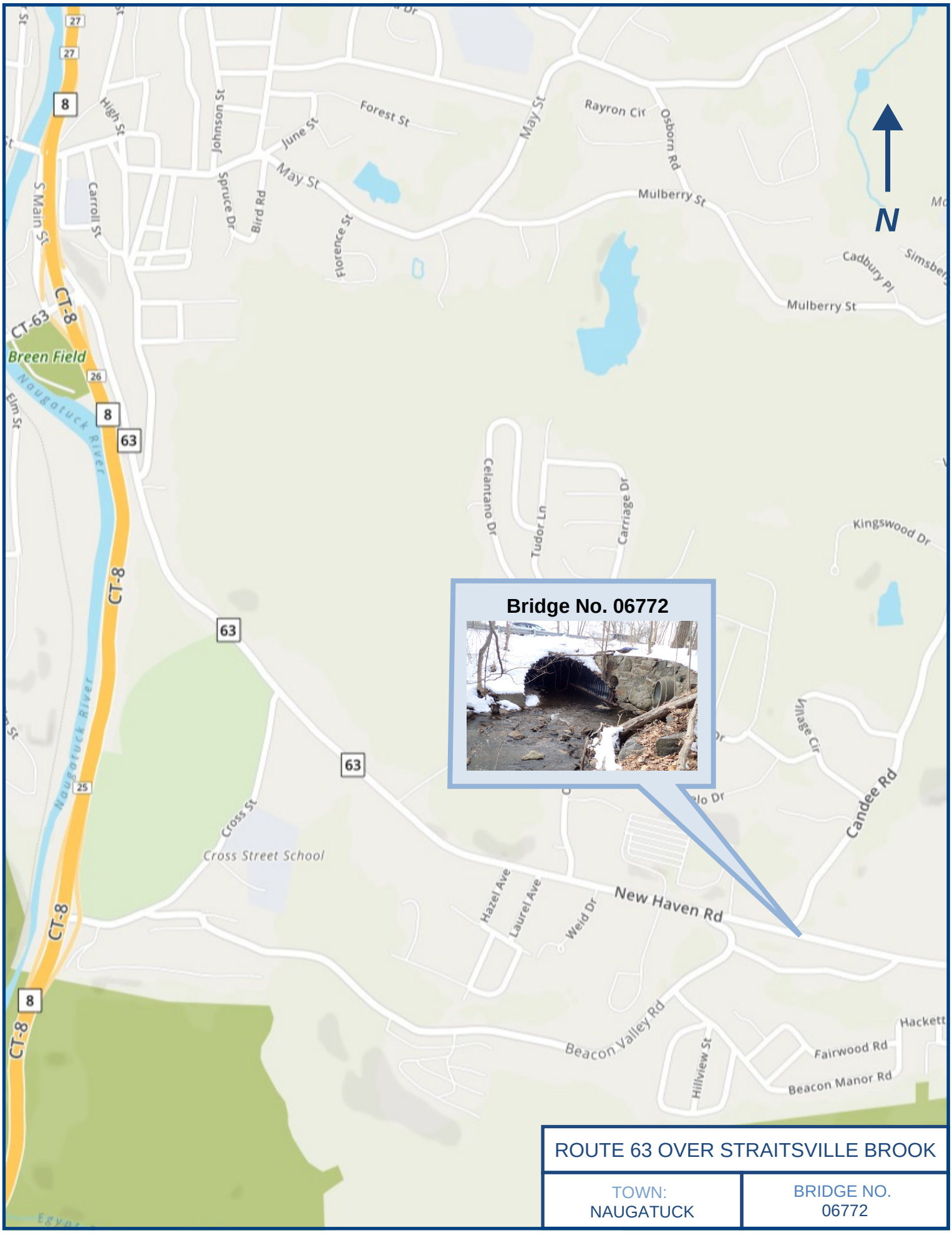
Summary

The functions and values provided by Straitsville Brook will not be significantly impacted by the

proposed activities. Impacts are limited and are mitigated through the use of BMPs, erosion and sediment controls, project oversight, and the implementation of a native planting and stabilization plan.

Prepared by: Sarah Monroe, DOT Office of Environmental Planning

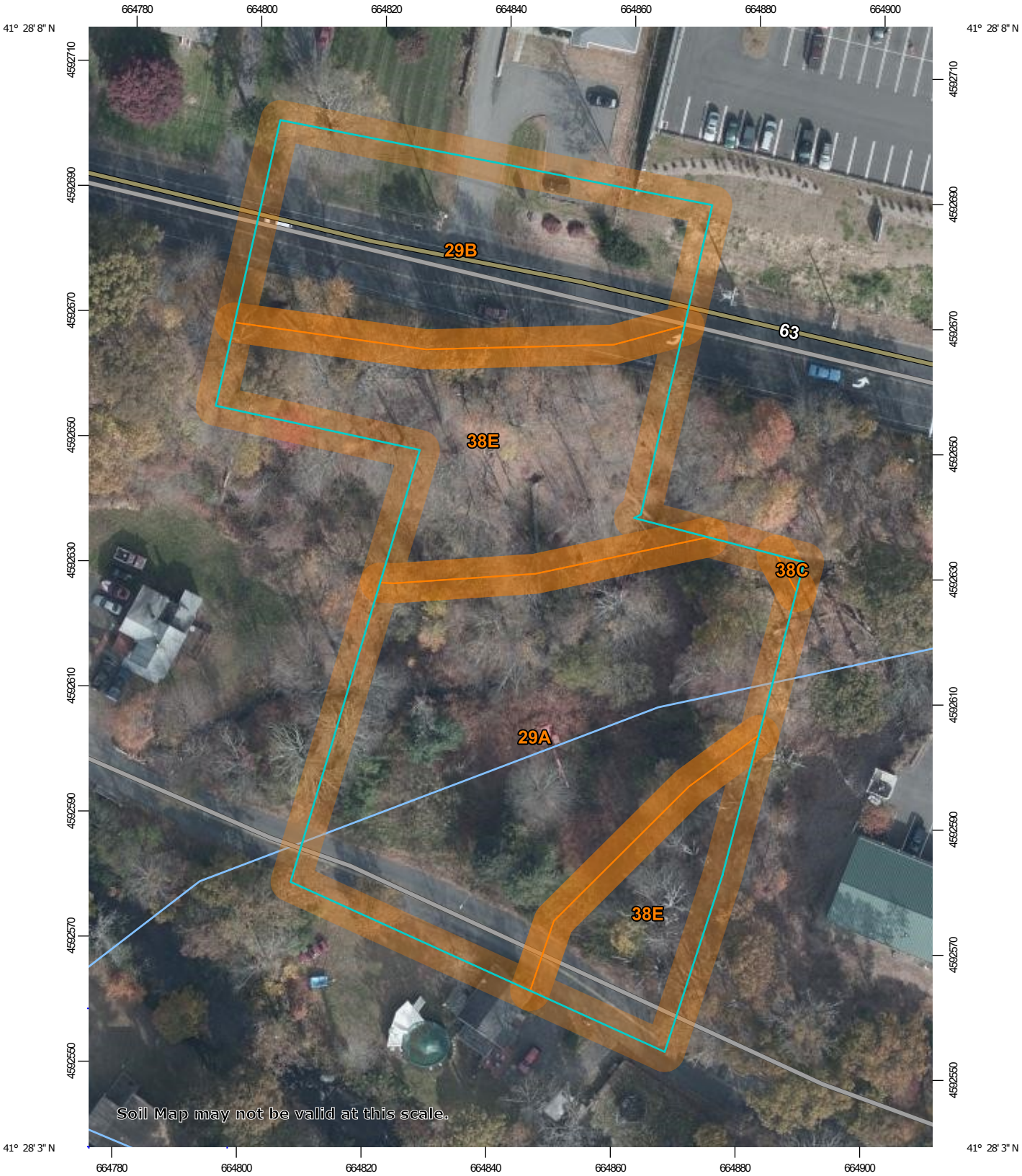
Appendix A: Location Map
Appendix B: Soils map & report from USDA Web Soil Survey
Appendix C: Aerial Photograph with Sketch of Wetland Classifications
Appendix D: USACE Data sheets & ACOE Highway Methodology Wetland Function-Value Evaluation Forms
Appendix E: Site Photographs



ROUTE 63 OVER STRAITSVILLE BROOK

TOWN:	BRIDGE NO.
NAUGATUCK	06772

Soil Map—State of Connecticut
(0087-0148 Soil Map)



Map Scale: 1:872 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 10 20 40 60

Feet
0 40 80 160 240

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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: State of Connecticut
Survey Area Data: Version 22, Sep 12, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 22, 2018—Nov 1, 2018

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
29A	Agawam fine sandy loam, 0 to 3 percent slopes	0.9	42.8%
29B	Agawam fine sandy loam, 3 to 8 percent slopes	0.5	24.5%
38C	Hinckley loamy sand, 3 to 15 percent slopes	0.0	0.1%
38E	Hinckley loamy sand, 15 to 45 percent slopes	0.7	32.6%
Totals for Area of Interest		**2.1**	**100.0%**

Map Unit Description (Brief, Generated)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, provide information on the composition of map units and properties of their components.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description (Brief, Generated)

State of Connecticut

Map Unit: 29A—Agawam fine sandy loam, 0 to 3 percent slopes

Component: Agawam (85%)

The Agawam component makes up 85 percent of the map unit. Slopes are 0 to 3 percent. This component is on outwash terraces on valleys. The parent material consists of coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from gneiss, granite, schist, and/or phyllite. Depth to a root restrictive layer, strongly contrasting textural stratification, is 15 to 35 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the F145XY008MA Dry Outwash ecological site. Nonirrigated land capability classification is 2s. This soil does not meet hydric criteria.

Component: Ninigret (5%)

Generated brief soil descriptions are created for major soil components. The Ninigret soil is a minor component.

Component: Windsor (4%)

Generated brief soil descriptions are created for major soil components. The Windsor soil is a minor component.

Component: Hinckley (3%)

Generated brief soil descriptions are created for major soil components. The Hinckley soil is a minor component.

Component: Walpole (3%)

Generated brief soil descriptions are created for major soil components. The Walpole soil is a minor component.

Map Unit: 29B—Agawam fine sandy loam, 3 to 8 percent slopes

Component: Agawam (85%)

The Agawam component makes up 85 percent of the map unit. Slopes are 3 to 8 percent. This component is on outwash terraces on valleys. The parent material consists of coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from gneiss, granite, schist, and/or phyllite. Depth to a root restrictive layer, strongly contrasting textural stratification, is 15 to 35 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the F145XY008MA Dry Outwash ecological site. Nonirrigated land capability classification is 2s. This soil does not meet hydric criteria.

Component: Sudbury (5%)

Generated brief soil descriptions are created for major soil components. The Sudbury soil is a minor component.

Component: Hinckley (5%)

Generated brief soil descriptions are created for major soil components. The Hinckley soil is a minor component.

Component: Merrimac (3%)

Generated brief soil descriptions are created for major soil components. The Merrimac soil is a minor component.

Component: Windsor (2%)

Generated brief soil descriptions are created for major soil components. The Windsor soil is a minor component.

Map Unit: 38C—Hinckley loamy sand, 3 to 15 percent slopes

Component: Hinckley (85%)

The Hinckley component makes up 85 percent of the map unit. Slopes are 3 to 15 percent. This component is on kame terraces on valleys. The parent material consists of sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 95 percent. Below this thin organic horizon the organic matter content is about 6 percent. This component is in the F144AY022MA Dry Outwash ecological site. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Component: Windsor (5%)

Generated brief soil descriptions are created for major soil components. The Windsor soil is a minor component.

Component: Merrimac (5%)

Generated brief soil descriptions are created for major soil components. The Merrimac soil is a minor component.

Component: Agawam (3%)

Generated brief soil descriptions are created for major soil components. The Agawam soil is a minor component.

Component: Sudbury (2%)

Generated brief soil descriptions are created for major soil components. The Sudbury soil is a minor component.

Map Unit: 38E—Hinckley loamy sand, 15 to 45 percent slopes

Component: Hinckley (85%)

The Hinckley component makes up 85 percent of the map unit. Slopes are 15 to 45 percent. This component is on eskers on valleys. The parent material consists of sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 95 percent. Below this thin organic horizon the organic matter content is about 6 percent. This component is in the F144AY022MA Dry Outwash ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Component: Windsor (5%)

Generated brief soil descriptions are created for major soil components. The Windsor soil is a minor component.

Component: Merrimac (5%)

Generated brief soil descriptions are created for major soil components. The Merrimac soil is a minor component.

Component: Agawam (3%)

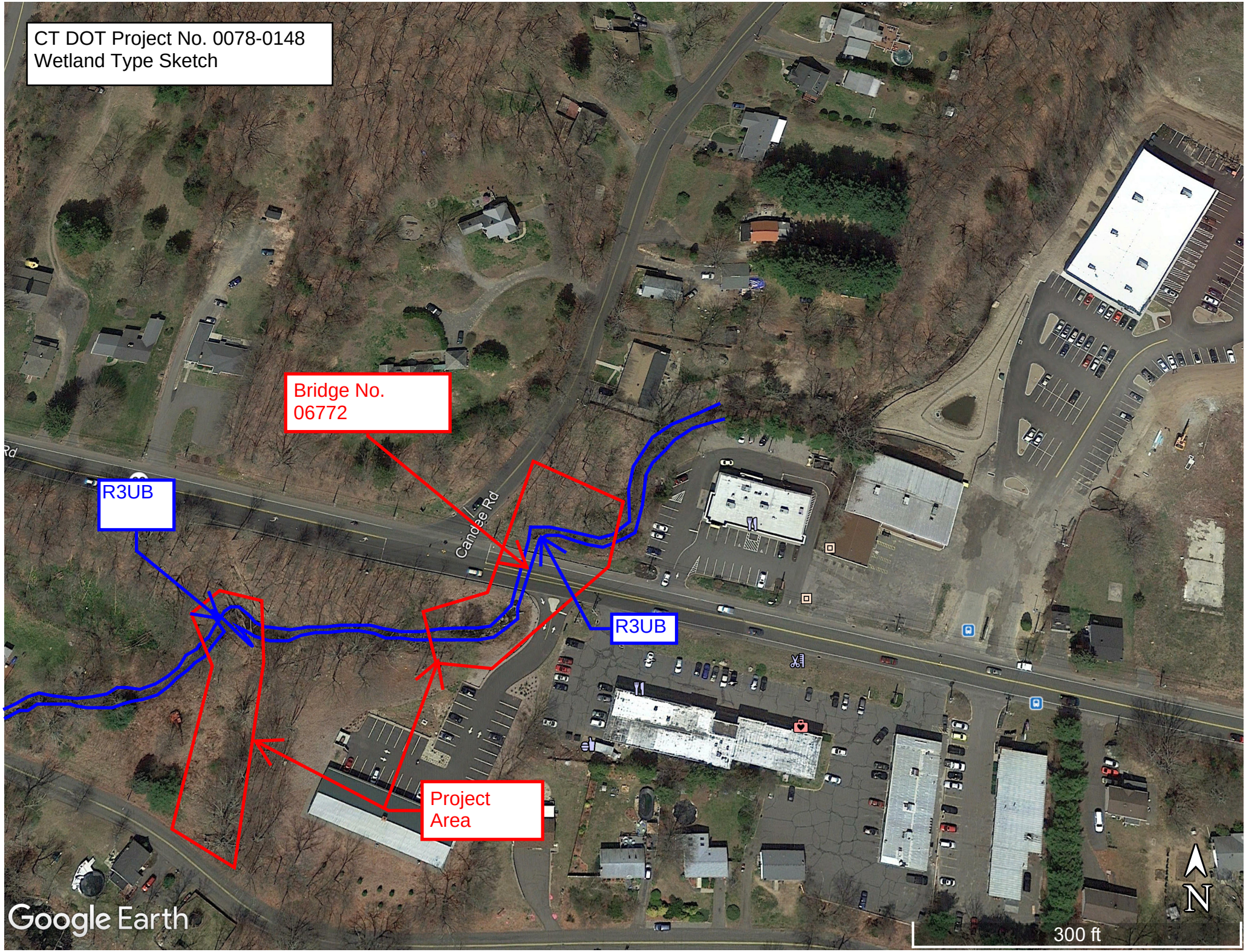
Generated brief soil descriptions are created for major soil components. The Agawam soil is a minor component.

Component: Sudbury (2%)

Generated brief soil descriptions are created for major soil components. The Sudbury soil is a minor component.

Data Source Information

Soil Survey Area: State of Connecticut
Survey Area Data: Version 22, Sep 12, 2022


CT DOT Project No. 0078-0148
Wetland Type Sketch
Bridge No.
06772
R3UB
R3UB
Project
Area
Candee Rd
Google Earth
300 ft
N

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 0087-0148 City/County: Naugatuck Sampling Date: 06-15-2022

Applicant/Owner: CTDOT State: CT Sampling Point: DS UPL

Investigator(s): MJS, MRG Section, Township, Range:

Landform (hillslope, terrace, etc.): Steep slope Local Relief (concave, convex, none):

Slope (%): 10 Lat: 41 28'05.98" N Long: 73 01'30.18" W Datum:

Soil Map Unit Name: Agawam fine sandy loam NWI Classification:

Are Climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks).

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** **Yes** ☐ **No** ☒
Hydric Soil Present Yes ☐ No ☒	If yes, optional Wetland Site ID:
Wetland Hydrology Present? Yes ☐ No ☒	

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches):

Water Table Present? Yes ☐ No ☒ Depth (inches):

Saturation Present? Yes ☐ No ☒ Depth (inches):
(includes capillary fringe)

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photographs, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: DS UPL

Tree Stratum (Plot Size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot Size: 15')			
1. *Rosa multiflora*	20	Yes	FACU
2. *Cornus amomum*	5	Yes	FACW
3. *Acer saccharum*	5	Yes	FACU
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot Size: 5')			
1. *Reynoutria japonica*	100	Yes	FACU
2. *Impatiens capensis*	5	No	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		
Woody Vine Stratum (Plot Size: 30')			
1. *Vitis labrusca*	10	Yes	FACU
2.			
3.			
4.			
	= Total Cover		

Dominance Test Worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That are OBL, FACW, or FAC: 20 (A/B)

Prevalence Test Worksheet:

	Total % Cover of		Multiply by	
OBL Species		x 1 =		
FACW species	10	x 2 =	20	
FAC species		x 3 =		
FACU species	135	x 4 =	536	
UPL species		x 5 =		
Column Totals:	145	(A)	556	(B)

Prevalence Index = B/A = 3.83

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. (7.6cm) or more in diameter at breast height (DBH), regardless of height

Sapling/shrub – Woody plants less than 3in. DBH and greater than 3.28 ft (1m) 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** ☒

Remarks: (include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DS UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/1	100					Sandy Loam	
4-10	10YR 3/3	100					Sandy Loam	
10-16	10YR4/4	100						
16-20	10YR 4/6	100						refusal at 20"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleated 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 Glayed Matrix (F2)
- ☐ Depleated Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleated Dark Surface (F7)
- ☐ Redox Depression (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 (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): 20"

Hydric Soil Present? Yes ☐ **No** ☒

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 0087-0148 City/County: Naugatuck Sampling Date: 06-15-2022

Applicant/Owner: CTDOT State: CT Sampling Point: UPS UPL

Investigator(s): MJS, MRG Section, Township, Range:

Landform (hillslope, terrace, etc.): Sloping Local Relief (concave, convex, none):

Slope (%): 12 Lat: 41 28'06.29" N Long: 73 01'28.89" W Datum:

Soil Map Unit Name: Agawam fine sandy loam NWI Classification:

Are Climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks).

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** **Yes** ☐ **No** ☒
Hydric Soil Present Yes ☐ No ☒	If yes, optional Wetland Site ID:
Wetland Hydrology Present? Yes ☐ No ☒	

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches):

Water Table Present? Yes ☐ No ☒ Depth (inches):

Saturation Present? Yes ☐ No ☒ Depth (inches):
(includes capillary fringe)

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photographs, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: UPS UPL

Tree Stratum (Plot Size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharum*	50	Yes	FACW
2. *Robinia pseudoacacia*	15	Yes	FACU
3. *Prunus serotina*	5	No	FACU
4.			
5.			
6.			
7.			
	70	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 15')			
1. *Acer saccharum*	20	Yes	FACW
2. *Berberis thunbergii*	7	Yes	FACU
3. *Ulmus americana*	5	No	FACW
4. *Ailanthus altissima*	3	No	UPL
5.			
6.			
7.			
	35	= Total Cover	
Herb Stratum (Plot Size: 5')			
1. *Reynoutria japonica*	20	Yes	FACU
2. *Alliaria petiolata*	10	Yes	FACU
3. *Artemisia vulgaris*	10	Yes	UPL
4. *Impatiens capensis*	5	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	45	= Total Cover	
Woody Vine Stratum (Plot Size: 30')			
1. *Parthenocissus quinquefolia*	5	Yes	FACU
2. *Celastrus orbiculatus*	5	Yes	FACU
3. *Vitis labrusca*	5	Yes	FACU
4.			
	15	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of Dominant Species That are OBL, FACW, or FAC: 20 (A/B)

Prevalence Test Worksheet:

	Total % Cover of		Multiply by	
OBL Species		x 1 =		
FACW species	80	x 2 =	160	
FAC species		x 3 =		
FACU species	72	x 4 =	288	
UPL species	10	x 5 =	50	
Column Totals:	162	(A)	498	(B)

Prevalence Index = B/A = 3.07

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. (7.6cm) or more in diameter at breast height (DBH), regardless of height

Sapling/shrub – Woody plants less than 3in. DBH and greater than 3.28 ft (1m) 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** ☒

Remarks: (include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UPS UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/1	100						
2-8	10YR 4/6	100						
8-16	10YR 4/4	100						refusal at 16 inches

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleated 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 Glayed Matrix (F2)
- ☐ Depleated Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleated Dark Surface (F7)
- ☐ Redox Depression (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 (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): 16"

Hydric Soil Present? Yes ☐ **No** ☒

Remarks:

-edge of roadway

-heavy roadway sand

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 0087-0148 City/County: Naugatuck Sampling Date: 11-23-2022

Applicant/Owner: CTDOT State: CT Sampling Point: UPL 3

Investigator(s): SAM, MJS, MRG, PM, ML Section, Township, Range:

Landform (hillslope, terrace, etc.): hillslope Local Relief (concave, convex, none): concave

Slope (%): 15 Lat: 41 28'05.86" N Long: 73 01'31.61" W Datum:

Soil Map Unit Name: Agawam fine sandy loam NWI Classification:

Are Climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks).

Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐ No ☒	**Is the Sampled Area within a Wetland?**	**Yes** ☐ **No** ☒
Hydric Soil Present	Yes ☐ No ☒	If yes, optional Wetland Site ID:	
Wetland Hydrology Present?	Yes ☐ No ☒		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐ No ☒	Depth (inches):	
Water Table Present?	Yes ☐ No ☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ☐ No ☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photographs, previous inspections), if available:

Remarks:
Eroded embankment

VEGETATION – Use scientific names of plants.

Sampling Point: UPL 3

Tree Stratum (Plot Size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	20	Yes	FAC
2. *Acer saccharum*	5	Yes	FACW
3. *Quercus rubra*	5	Yes	FACU
4. *Betula alleghaniensis*	5	Yes	FAC
5. *Carya glabra*	5	Yes	FACU
6. *Ulmus americana*	2	No	FACW
7.			
	42	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 15')			
1. *Berberis thunbergii*	70	Yes	FACU
2. *Lindera benzoin*	8	No	FACW
3. *Quercus alba*	5	No	FACU
4. *Euonymus alatus*	5	No	FAC
5. *Fraxinus americana*	5	No	FACU
6. *Rosa multiflora*	2	No	FACU
7.			
	95	= Total Cover	
Herb Stratum (Plot Size: 5')			
1. *Eurybia divaricata*	30	Yes	FACU
2. *Solidago rugosa*	2	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	32	= Total Cover	
Woody Vine Stratum (Plot Size: 30')			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That are OBL, FACW, or FAC: 42 (A/B)

Prevalence Test Worksheet:

	Total % Cover of		Multiply by	
OBL Species		x 1 =		
FACW species	15	x 2 =	30	
FAC species	32	x 3 =	96	
FACU species	122	x 4 =	488	
UPL species		x 5 =		
Column Totals:	169	(A)	614	(B)

Prevalence Index = B/A = 3.63

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. (7.6cm) or more in diameter at breast height (DBH), regardless of height

Sapling/shrub – Woody plants less than 3in. DBH and greater than 3.28 ft (1m) 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** ☒

Remarks: (include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UPL 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/1	100					Silt Loam	
8-16	10YR 3/3	100						refusal at 16"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleated 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 Glayed Matrix (F2)
- ☐ Depleated Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleated Dark Surface (F7)
- ☐ Redox Depression (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 (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: rock

Depth (inches): 16"

Hydric Soil Present? Yes ☐ **No** ☒

Remarks:

-Hillslope failure and erosion washing into watercourse
-Sample taken at top of bank failure

Wetland Function-Value Evaluation Form

Total area of wetland_____ Human made?___No__ Is wetland part of a wildlife corridor?___No___ or a "habitat island"?___No___

Adjacent land use____Residential/Highway_____ Distance to nearest roadway or other development_____100ft_____

Dominant wetland systems present__Watercourse (R3UB)_____ Contiguous undeveloped buffer zone present_____No_____

Is the wetland a separate hydraulic system?___No_____ If not, where does the wetland lie in the drainage basin? Straitsville Brook

How many tributaries contribute to the wetland?_____Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D.__Watercourse_____

Latitude41°28'11.03"N Longitude__-73°01'35.28"W

Prepared by:_CTDOT_ Date_____

Wetland Impact:
Type__pending final calculations__Area_____

Evaluation based on:
Office_____ Field___X____

Corps manual wetland delineation completed? Y_X_ N___

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge		X			Not likely to significantly impact groundwater recharge or discharge
Floodflow Alteration	X		8, 9, 10, 13, 15	X	Wetland is associated with Straitsville Brook
Fish and Shellfish Habitat	X		2, 3, 7, 8, 10, 12, 17	X	DEEP Fisheries found this brook to be suitable for aquatic habitat.
Sediment/Toxicant Retention	X		1, 10		Area is likely to experience sediment erosion and wetland likely helps prevent this
Nutrient Removal		X			Not likely to significantly impact nutrient removal.
Production Export		X			Wetland not suitable for production export.
Sediment/Shoreline Stabilization		X			Uplands have experiences erosion from stream shape, wetlands likely help stabilization
Wildlife Habitat		X			Not suitable habitat for many wildlife species.
Recreation		X			Area not suitable for recreational activities.
Educational/Scientific Value		X			Area not suitable for educational or scientific purposes
Uniqueness/Heritage		X			Area not associated with unique or cultural areas
Visual Quality/Aesthetics		X			Area not suitable for visual quality or aesthetic purposes due to its location
ES Endangered Species Habitat		X			Area does not contain endangered species
Other					

Notes:

* Refer to backup list of numbered considerations.

North Elevation - Inlet



South Elevation – Outlet



Inlet – Looking Upstream



Outlet – Looking Downstream



Interior Looking North - Upstream



Interior Typical Holes in Invert



Streambank Erosion (300 feet downstream of culvert)
Looking West



Streambank Erosion (300 feet downstream of culvert)
Looking East



Streambank Erosion (300 feet downstream of culvert)
Looking North



Streambank Erosion (300 feet downstream of culvert)
Looking southwest



Pre-Construction Notification & Inland Wetlands and Watercourses Permit

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
Town of Naugatuck

Attachment 18: Engineering Report Cover Sheet (DEEP-LWRD-APP-001R)

Final Hydraulic Report

Connecticut Department of
Energy & Environmental Protection
Bureau of Water Protection & Land Reuse
Land & Water Resources Division

LWRD License Application
Engineering Report Cover Sheet

This Cover Sheet is a checklist of requirements that need to be completed and submitted with the engineering report. Please complete this checklist by identifying where each requirement listed is addressed in the engineering report (report title and page numbers). If an item is not applicable, place "NA" in the box. The engineer report must fully describe the design of the proposed facilities or other actions and the hydraulic and hydrologic effects thereof. This Cover Sheet is required to be signed and sealed by a professional engineer licensed in the State of Connecticut.

Stormwater Management

Engineering Report section title and page number	Requirement Description
N/A	Description of the design storm frequency intensity, volume and duration
N/A	Watershed maps, existing and proposed
N/A	Computations for Tc
N/A	Imperviousness calculations
N/A	NRCS runoff curve numbers, volumetric runoff coefficients
N/A	Computations used to determine peak runoff rates, and velocities for each watershed area (24-hour storm): • Stream Channel Protection: 1-year, 2-year frequency (“over-control” of 2-year storm) • Conveyance Protection: 10-year frequency • Peak Runoff Attenuation: 2-year, 10-year, 25 year, and 100-year frequency • Emergency Outlet Sizing: safely pass the 100-year frequency or larger storm
N/A	Hydrograph routing calculations
N/A	Description, schematics, and calculations for drainage and stormwater management systems
N/A	Infiltration rates, geotechnical information, test pit data, perc test data, conductivity testing data
N/A	Documentation of sources
N/A	Electronic files in native format for any computer modelling generated for analysis.

Stormwater Management

Engineering Report section title and page number	Requirement Description
N/A	Detention basin analysis including timing and duration of expected outflow, stream stability analysis and hydrograph summation
N/A	Erosion & sedimentation calculations for any engineered measures
N/A	Calculations for any engineered water quality treatment measures

Floodway/Floodplain Assessment

Engineering Report section title and page number	Requirement Description
0087-0148 Final Hydraulic Design Report - Narrative - Existing Conditions / Proposed Conditions	Description of existing and proposed conditions upstream and downstream of the proposed activity
0087-0148 Final Hydraulic Design Report - Appendix G	For any bridge or culvert placement or replacement with a drainage area of 100 acres or more, plan sheets showing the existing and proposed inundation area for the 2, 10, 25, 50, and 100 year discharges, carried to convergence
0087-0148 Final Hydraulic Design Report - Appendix F	Flood Contingency Plan
N/A	A description and analysis of the floodplain modifications required to restore any flood conveyance and flood storage capacity
N/A	Demonstration that backwater from the proposed activity will not impact an existing dam, dike, detention, or similar structure
N/A	Backup data and complete hydraulic analysis for proposed modifications to the floodplain including location plan and plot for sections, profile sheet, summary sheet (for riverine modeling, refer to: https://www.fema.gov/sites/default/files/2020-02/Hydraulics_OneDimensionalAnalyses_Nov_2016.pdf)
0087-0148 Final Hydraulic Design Report - Appendix D	Description, schematics, and calculations for bridges and culverts

Structures within a Coastal Floodplain

Engineering Report section title and page number	Requirement Description
N/A	Longshore sediment transport impact report
N/A	Wind, wave, load analysis for significant public access structures (Only for Flood Management Certification)
N/A	Wind, wave, load analysis for flood and erosion control structures (e.g. seawalls, bulkheads, revetments, berms, jetties, etc.)
N/A	Hydrologic / Hydraulic impact report for tide regulating / influencing structures (e.g. culverts, tidegates, flood berms / levees, etc.)

Professional Certification

For any engineering report submitted as part of the LWRD License application, the following certification must be signed and sealed by a professional engineer licensed to practice in Connecticut and submitted with the Engineering Report Cover Sheet.

"I certify that in my professional judgement, each requirement listed in the Engineering Report Cover Sheet has been addressed in the engineering report submitted as part of the LWRD permit application and that the information is true, accurate and complete to the best of my knowledge and belief.

This certification is based on my review of the engineering report.

I understand that a false statement made in the submitted information may, pursuant to Section 22a-6 of the General Statutes, be punishable as a criminal offense under Section 53a-157b of the General Statutes, and may also be punishable under Section 22a-438 of the General Statutes."

Andrew J Cardinali Digitally signed by Andrew J. Cardinali, P.E. Date: 2024.04.05 10:55:23-04'00'

Signature of Professional Engineer	Date
	04/05/2024
Name of Professional Engineer (print or type)	P.E. Number (if applicable)

Affix P.E. Stamp Here (if applicable)

FINAL

HYDRAULIC DESIGN REPORT

State Project 0087-0148
Replacement of Bridge No. 06772
Route 63 over Straitsville Brook



Town of Naugatuck, Connecticut

Hydraulics & Drainage Section
2800 Berlin Turnpike
Newington, CT 06131-7546
March 2024

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Executive Summary

Project 0087-0148 will reline Bridge No. 06772. The culvert carries Route 63 over Straitsville Brook in the Town of Naugatuck, CT. Bridge No. 06772 was constructed in 1966 and is a 9.50' wide by 6.42' tall structural steel plate pipe arch culvert, per the as-built plans (Appendix I). Route 63 has an ADT of 15,600 and the culvert carries 2 lanes of traffic. During the January 2022 RSR, it was determined that the culvert will be relined to restore the structure to a satisfactory rating.

The north streambank of Straitsville Brook supporting Route 63 has eroded 300' downstream of Bridge No. 06772. This streambank erosion was discussed at a field meeting on 1/10/22 and restoring the eroded streambank has since been proposed as part of this project.

Bridge No. 06772 will be lined with an 8.00' wide by 5.50' tall tunnel liner plate (TLP) pipe arch. A cast in place headwall with wingwalls will be constructed at the inlet. The inlet of the existing pipe will be cut back 1 foot to improve the culvert's alignment with the stream, to accommodate a new headwall and wingwalls at the inlet, and to avoid a potential utility conflict. The liner invert will be set 3" above the host pipe invert and the proposed pipe slope will remain the same as the existing.

The drainage area of Bridge No. 06772 is 0.69 square miles, classifying it as a small structure according to the *CTDOT Drainage Manual* (DM). The proposed culvert is hydraulically adequate, with over 1' of freeboard and an HW/D < 1.5.

Bridge No. 06772 is located within a 500-yr FEMA floodplain. No floodplain management certification is required.

The CTDEEP Inland Fisheries division initially requested the design accommodate fish passage at the crossing. After a field review meeting with both CTDOT and CTDEEP Fisheries, it was determined the potential benefits of accommodating fish passage at this crossing did not justify the additional environmental impacts.

All elevations in this report are referenced to NAVD '88 unless otherwise noted.

Figure 1 – Location Plan

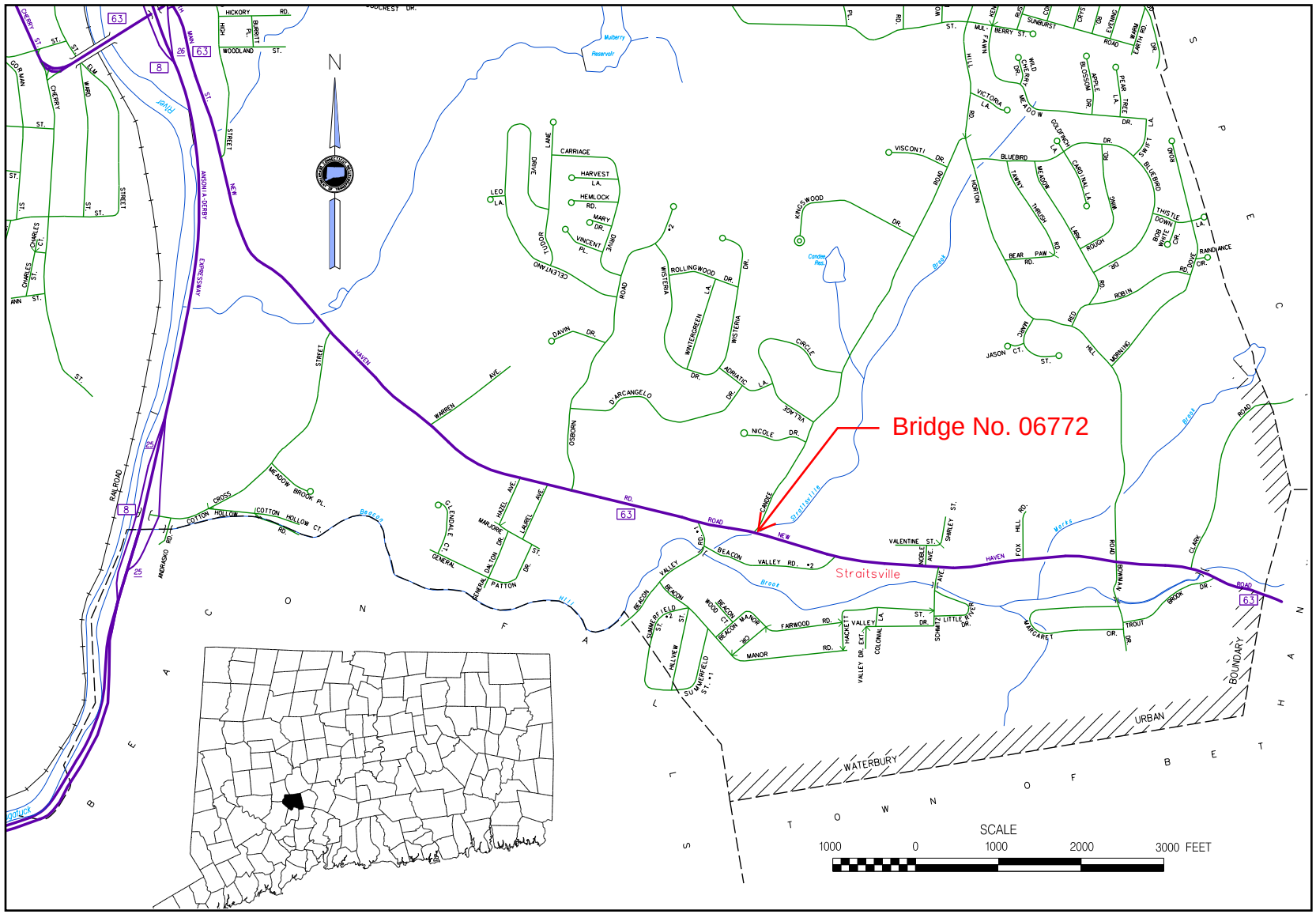


Figure 2 – Site Aerial (with contours based on the latest CT LiDAR dataset)

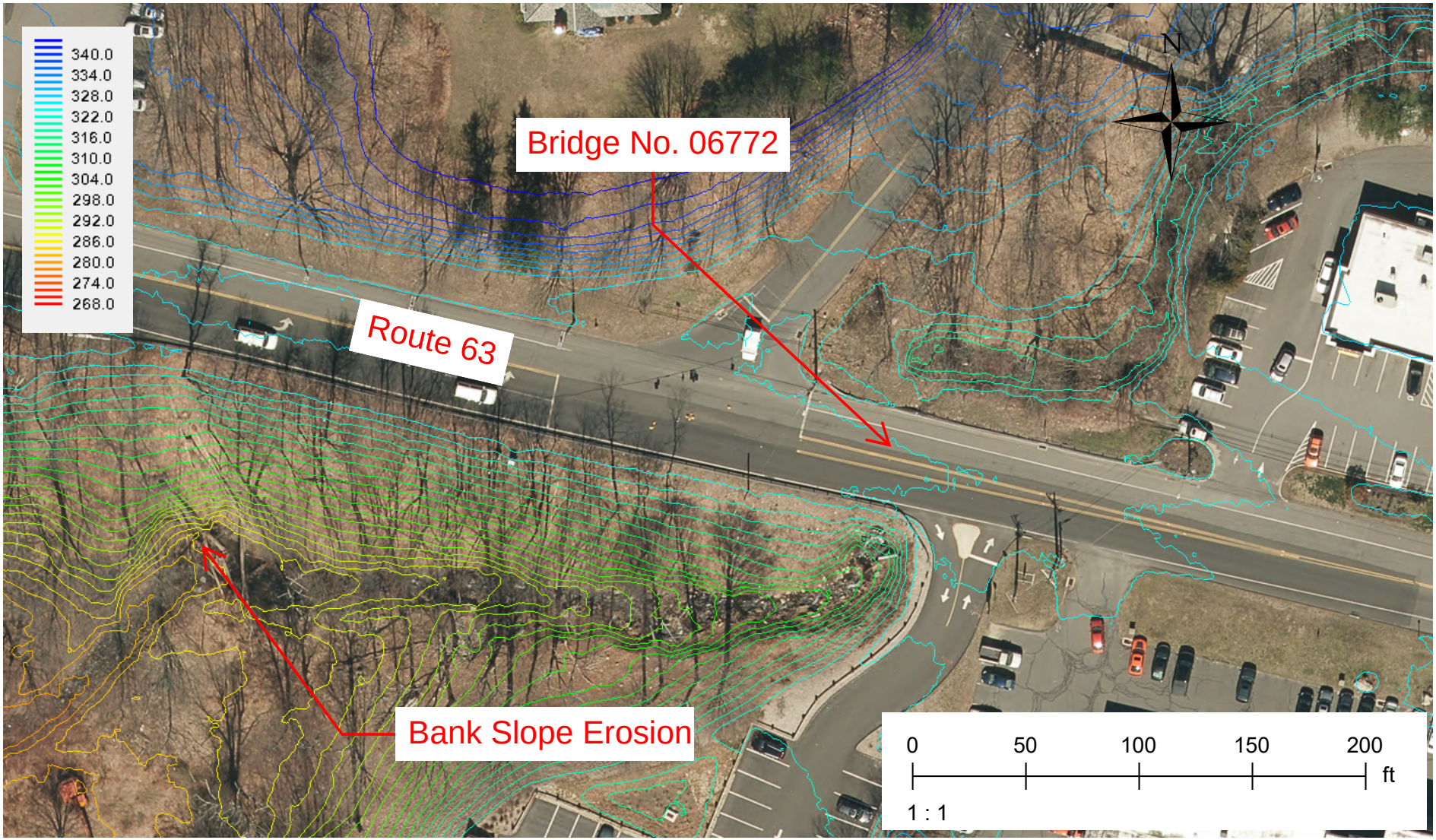
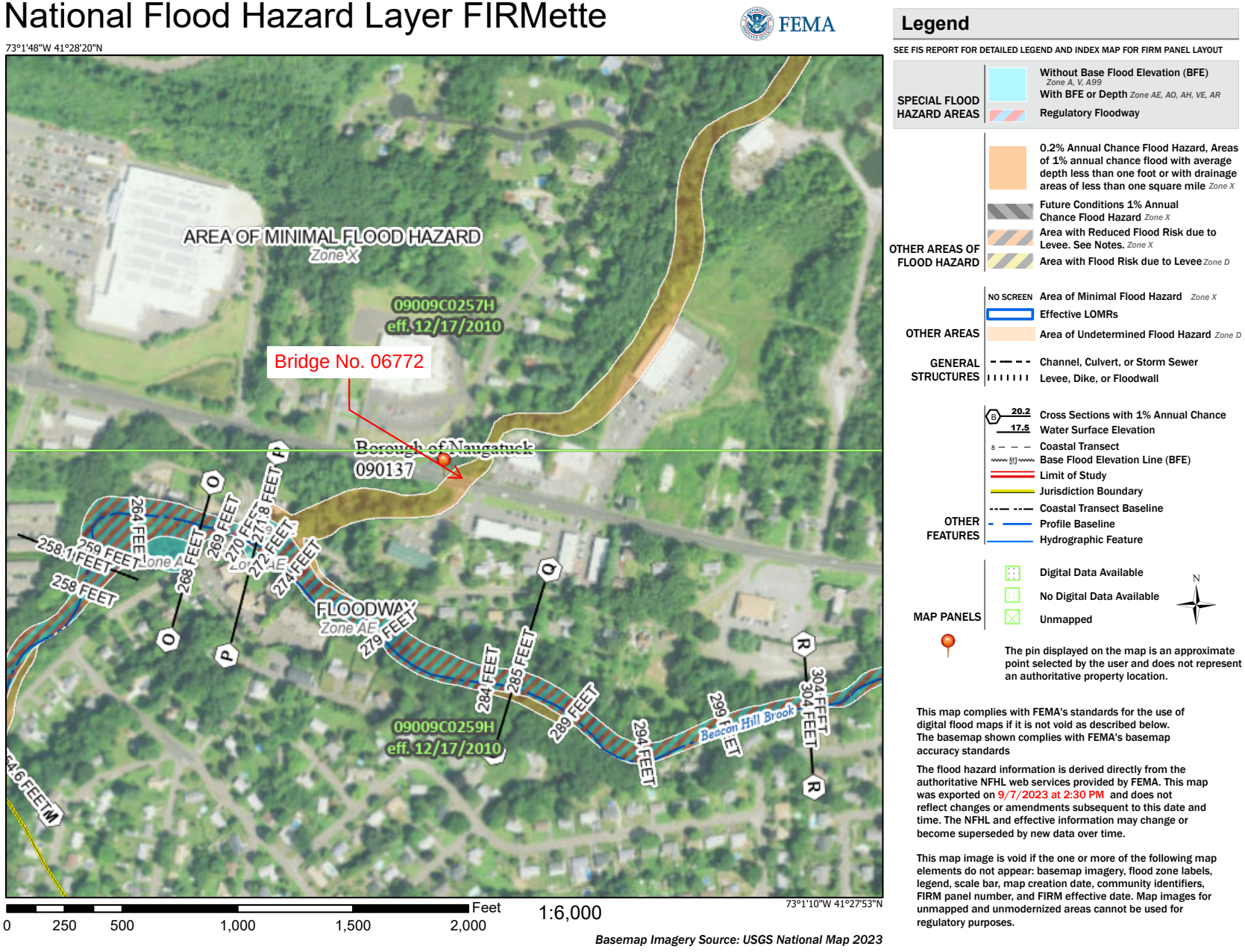


Figure 3 – FEMA "Firmette"



Hydraulic Data

1) Location

State Project No.	*Route No. (Roadway)*	*Town(s)*
0087-0148	Route 63 (New Haven Rd)	Naugatuck

Structure No.	*Stream*
06772	Straitsville Brook

Location Relative to Highway Landmark
2 miles east of the intersection of Route 8 and Route 63

Location Relative to Stream Landmark
700 feet upstream of the confluence with Beacon Hill Brook

2) Design Flood

Hydrologic Procedure Used for Design	*Hydrologic Procedure Used by FEMA*
USGS SIR 2020-5054	N/A

CTDOT Drainage Manual Structure Classification	*Design Storm Frequency (yr)*	*Required Freeboard (ft)*
Small	50-yr	1 ft

Drainage Area (mi^2)	*Design Discharge (cfs)*	*FEMA Discharge (cfs)*
0.69	220	N/A

3) Hydraulic Analysis Procedure

Model Used and Version No.	*Flow Regime*
HEC-RAS 6.4.1	Mixed

Boundary Conditions (starting water surface at the ends of the river system – i.e. known water surface, normal depth, critical depth, rating curve, etc.)	
Upstream of crossing	Critical Depth
Downstream of crossing	Normal Depth, slope = 0.05

Other Method(s)
N/A

4) Hydraulic Control (i.e. culvert/bridge, dam (weir), channel construction, tide, known water surface elevation, etc.)

Type of Control	*Location Relative to Proposed Construction*
N/A	N/A

5) Coefficients of Roughness

Manning's Roughness Coefficients	*Left Overbank*	*Channel*	*Right Overbank*
Downstream of crossing	0.075	0.04	0.075
At crossing	N/A	0.034	N/A
Upstream of crossing	0.075	0.04	0.075

6) Existing Structures (Off-Site)

Off-Site Structures	*Structure Type*	*Gross waterway opening (ft^2)*
Upstream of crossing	N/A	N/A
Downstream of crossing	N/A	N/A

7) Site Structures (At Crossing)

Site Structures	*Existing Structure*	*Proposed Structure*
Structure Type	Structural Steel Plate Pipe Arch	TLP Pipe Arch
Gross Waterway Opening (ft^2)	50.2	34.7
Effective Waterway Opening (ft^2)	50.2	34.7
Overall Width of Waterway Opening (ft)	9.50	8.00
Effective Depth of Waterway Opening (ft)	6.42	5.50
Low Chord Elevation (ft)	321.2	320.5
Minimum Roadway Elevation (ft)	323.5	323.5
Water Surface Elev. - Controlling Section at Design Discharge (ft)	320.6	320.6
Freeboard at Design Discharge (ft)	2.9	2.9
Max. Velocity at Structure at Design Discharge (ft/s)	9.0	9.8

Maximum Regulatory Elevation (ft)	*Other Controlling Water Surface Elevation (ft) [If Below Maximum Regulatory Elev.]*
N/A	N/A

8) Remarks

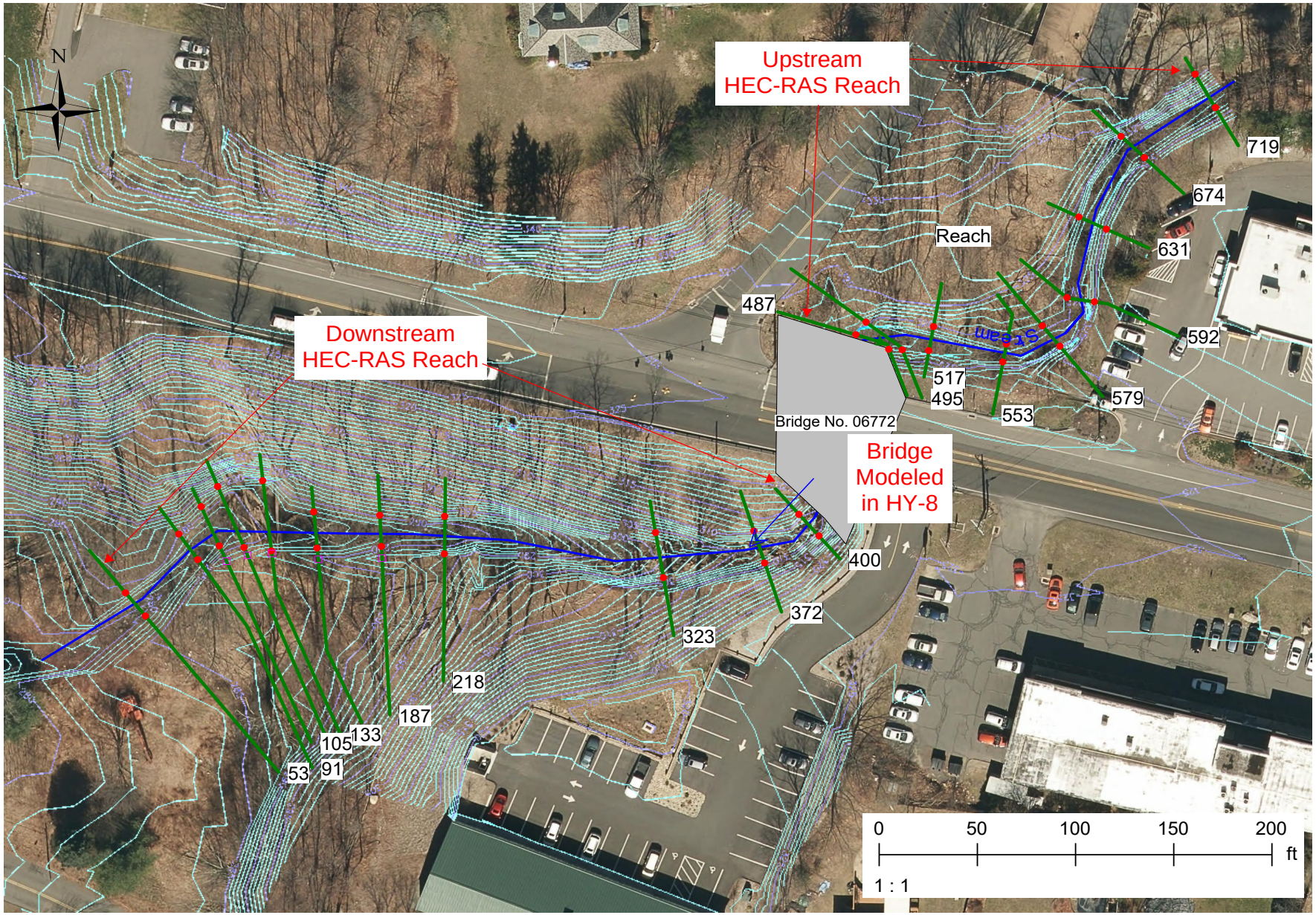
Flood Hazard Zone	*Vertical Datum*	*Average Daily Flow (cfs)*	*Average Spring Flow (cfs)*
500-yr	**NAVD'88**	**1.3**	**2.5**

Average Daily Flow: $Q_{AD}(cfs) = [A\,(sm)]^{0.98} * 1.87\,)$
Average Spring Flow $Q_{AS}(cfs) = [A\,(sm)]^{0.988} * 3.62\,)$

Record Floods
There is no known or documented history of flooding at this site.

Navigational Requirements	*Tidal Conditions*
N/A	N/A

Figure 4 – Hydraulic Cross Section Location Plan



Water Surface Profile Plots

Figure 5 – Proposed vs. Existing Condition Downstream Reach – Design Discharge

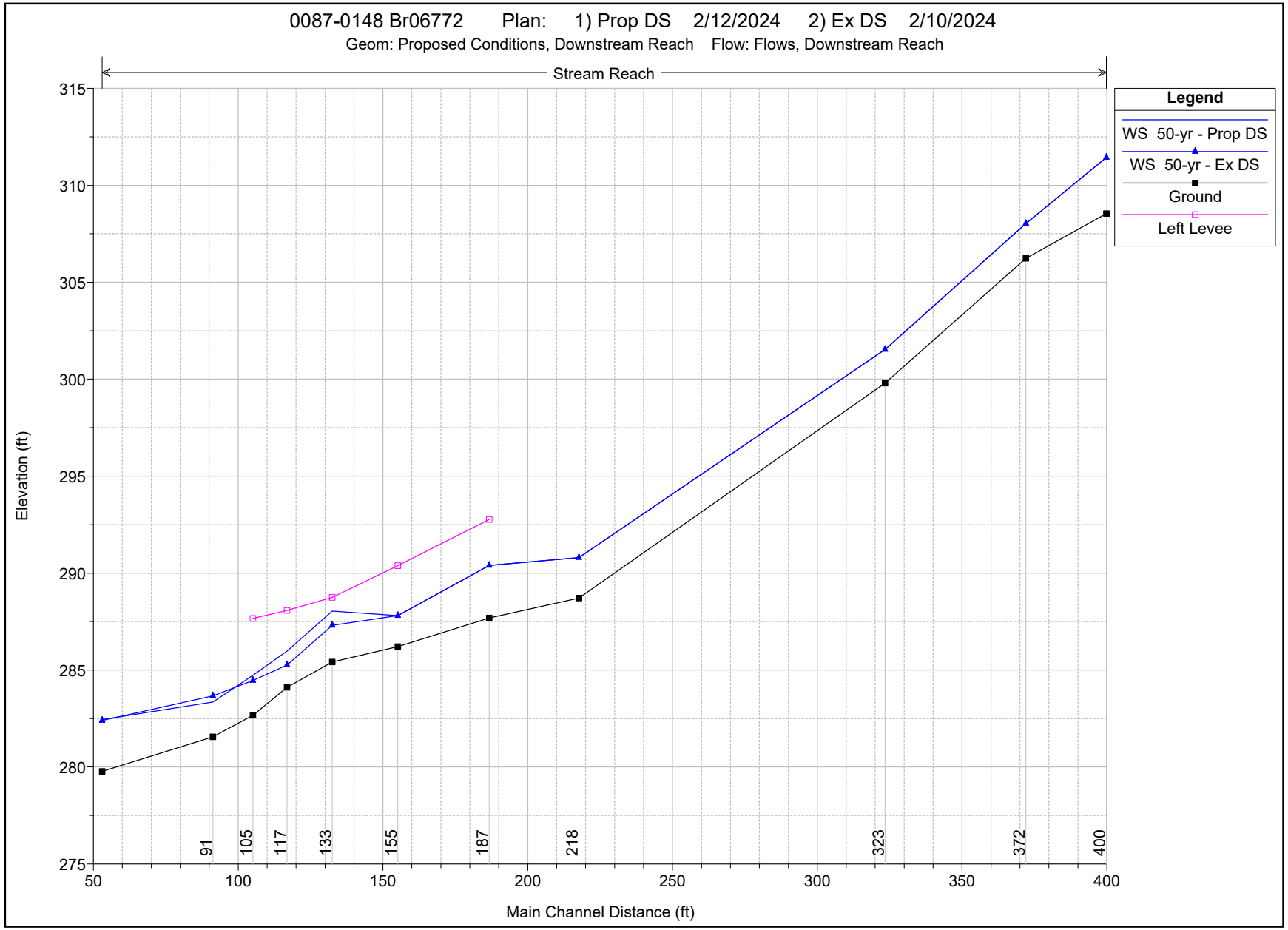


Figure 6 – Proposed vs. Existing Condition Upstream Reach – Design Discharge

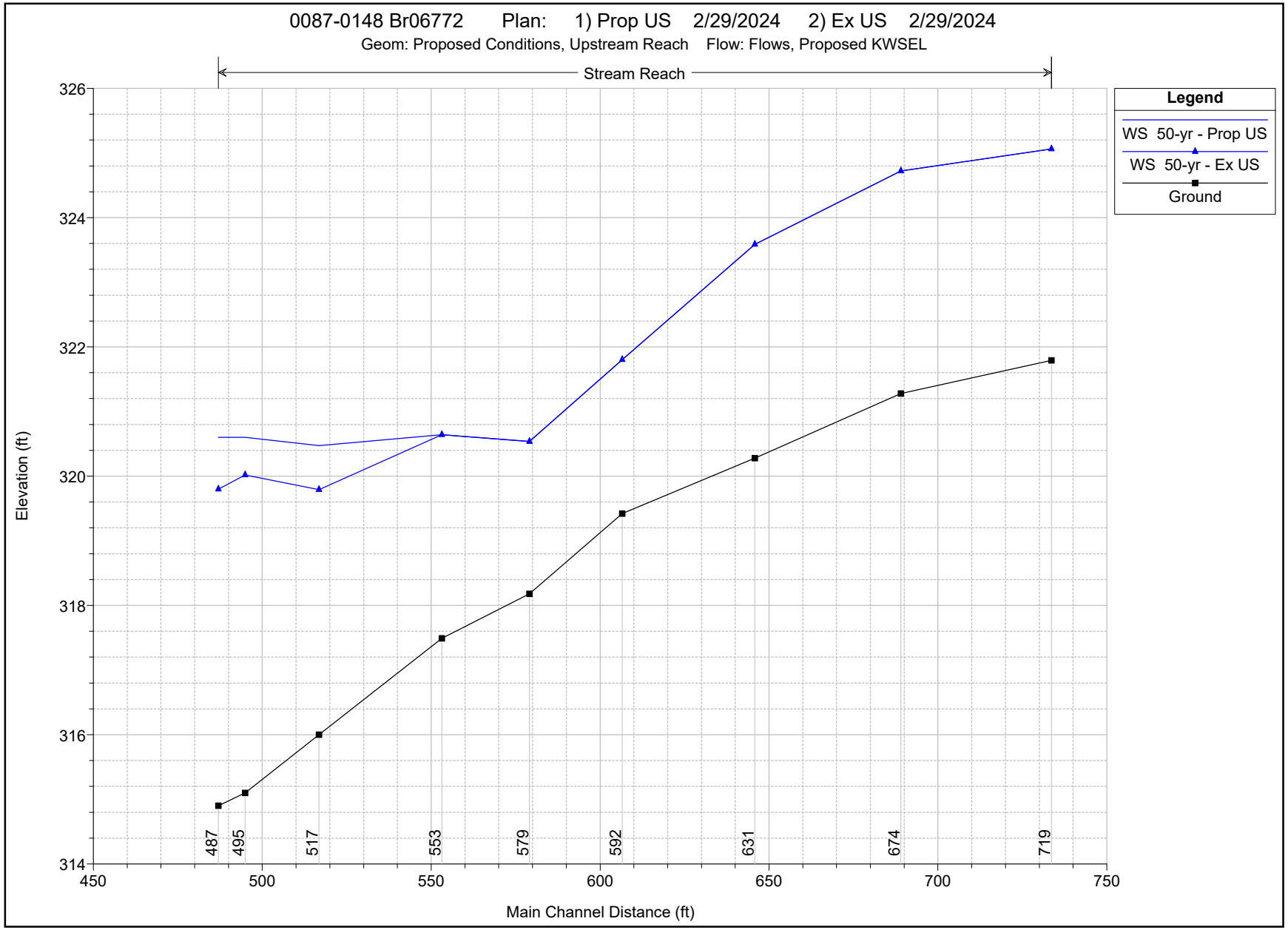


Figure 7 – Proposed vs. Existing Condition Downstream Reach - Check Discharge

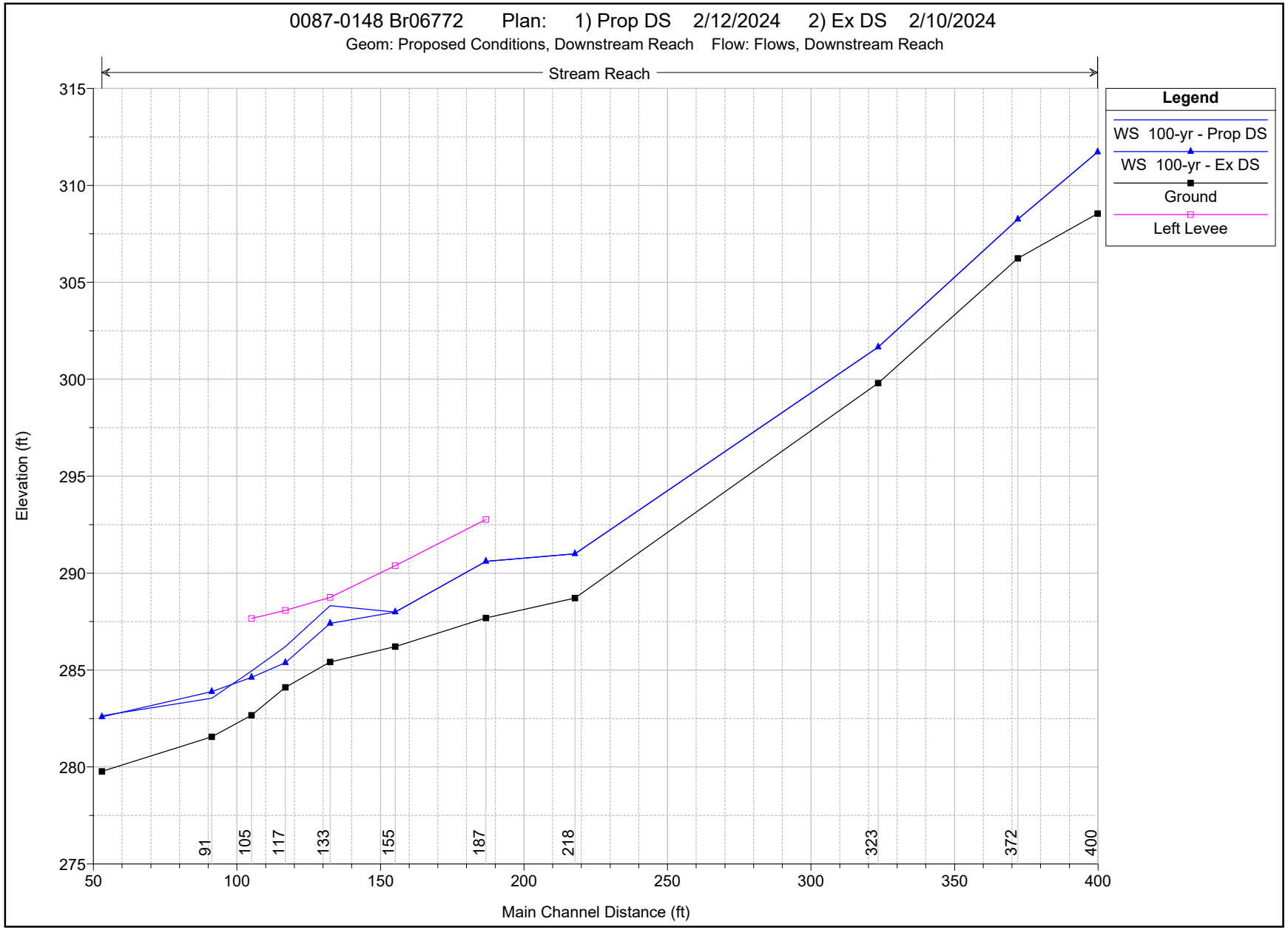
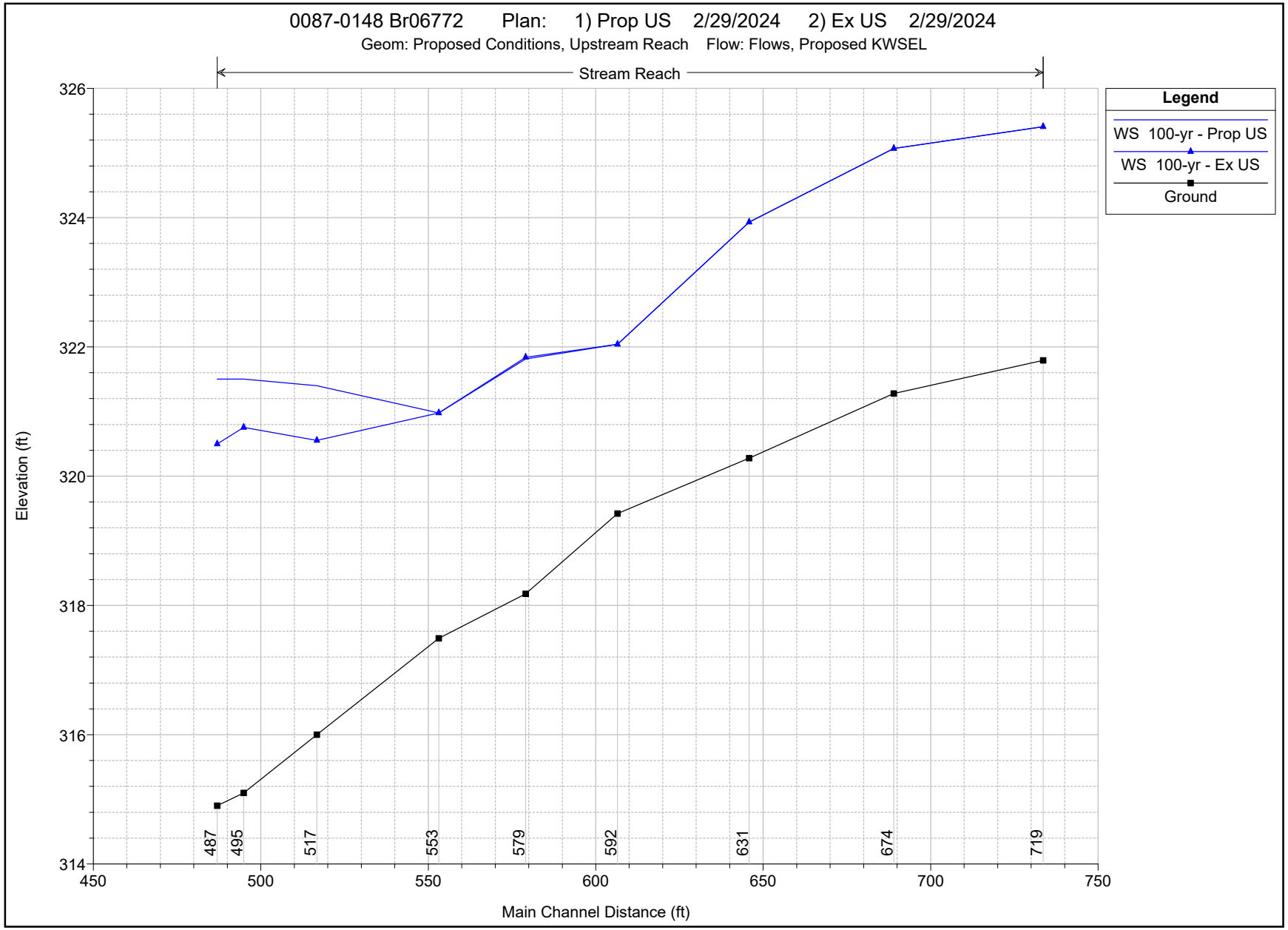


Figure 8 – Proposed vs. Existing Condition Upstream Reach - Check Discharge



Comparison Tables

Table 1

Proposed vs. Existing Condition 50-Yr Design Discharge Water Surface Elevation and Average Channel Velocity

Cross Section	*Existing Condition*		*Proposed Condition*		*Difference*	
	W.S. Elev. ft (1)	*Velocity ft/s (2)*	*W.S. Elev. ft (3)*	*Velocity ft/s (4)*	*W.S. Elev. ft (3) – (1)*	*Velocity ft/s (4) – (2)*
719	325.1	5.8	325.1	5.8	0	0
674	324.7	5.6	324.7	5.6	0	0
631	323.6	8.2	323.6	8.2	0	0
592	321.8	9.8	321.8	9.8	0	0
579	320.5	10.2	320.5	10.2	0	0
553	320.6	8.5	320.6	8.5	0	0
517	319.8	5.7	320.5	4.4	0.7	-1.3
495	320.0	2.4	320.6	2.3	0.6	-0.1
487	319.8	4.0	320.6	2.1	0.8	-1.9
Br. 06772						
400	311.4	7.9	311.4	7.9	0	0
372	308.0	14.0	308.0	14.0	0	0
323	301.5	14.0	301.5	14.0	0	0
218	290.8	11.9	290.8	11.9	0	0
187	290.4	8.1	290.4	8.1	0	0
155	287.8	11.8	287.8	11.8	0	0
133*	287.3	7.7	288.0	7.6	0.7	-0.1
117*	285.3	10.8	286.0	12.0	0.7	1.2
105*	284.5	9.6	284.7	12.6	0.2	3.0
91*	283.7	9.8	283.4	12.8	-0.3	3.0
53	282.4	8.9	282.4	8.6	0	-0.3

*Revetment cross sections

Table 2

Proposed vs. Existing Condition 100-Yr Check Discharge Water Surface Elevation and Average Channel Velocity

Cross Section	*Existing Condition*		*Proposed Condition*		*Difference*	
	W.S. Elev. ft (1)	*Velocity ft/s (2)*	*W.S. Elev. ft (3)*	*Velocity ft/s (4)*	*W.S. Elev. ft (3) – (1)*	*Velocity ft/s (4) – (2)*
719	325.4	6.2	325.4	6.2	0	0
674	325.1	6.0	325.1	6.0	0	0
631	323.9	8.5	323.9	8.5	0	0
592	322.0	10.5	322.0	10.5	0	0
579	321.8	6.6	321.8	6.7	0	0.1
553	321.0	9.0	321.0	9.0	0	0
517	320.6	5.4	321.4	4.1	0.8	-1.3
495	320.8	2.5	321.5	2.3	0.7	-0.2
487	320.5	4.3	321.5	2.2	1.0	-2.1
Br. 06772						
400	311.7	8.5	311.7	8.5	0	0
372	308.3	14.5	308.3	14.5	0	0
323	301.7	15.1	301.7	15.1	0	0
218	291.0	12.7	291.0	12.7	0	0
187	290.6	8.9	290.6	8.9	0	0
155	288.0	12.4	288.0	12.4	0	0
133*	287.4	8.6	288.3	8.0	0.9	-0.6
117*	285.4	11.3	286.2	12.4	0.8	1.1
105*	284.6	10.3	285.0	13.2	0.4	2.9
91*	283.9	10.4	283.5	13.5	-0.4	3.1
53	282.6	9.8	282.6	9.5	0	-0.3

*Revetment cross sections

Performance (Rating) Curves

Figure 9 – Water Surface Elevation (HY-8) vs. Peak Discharge

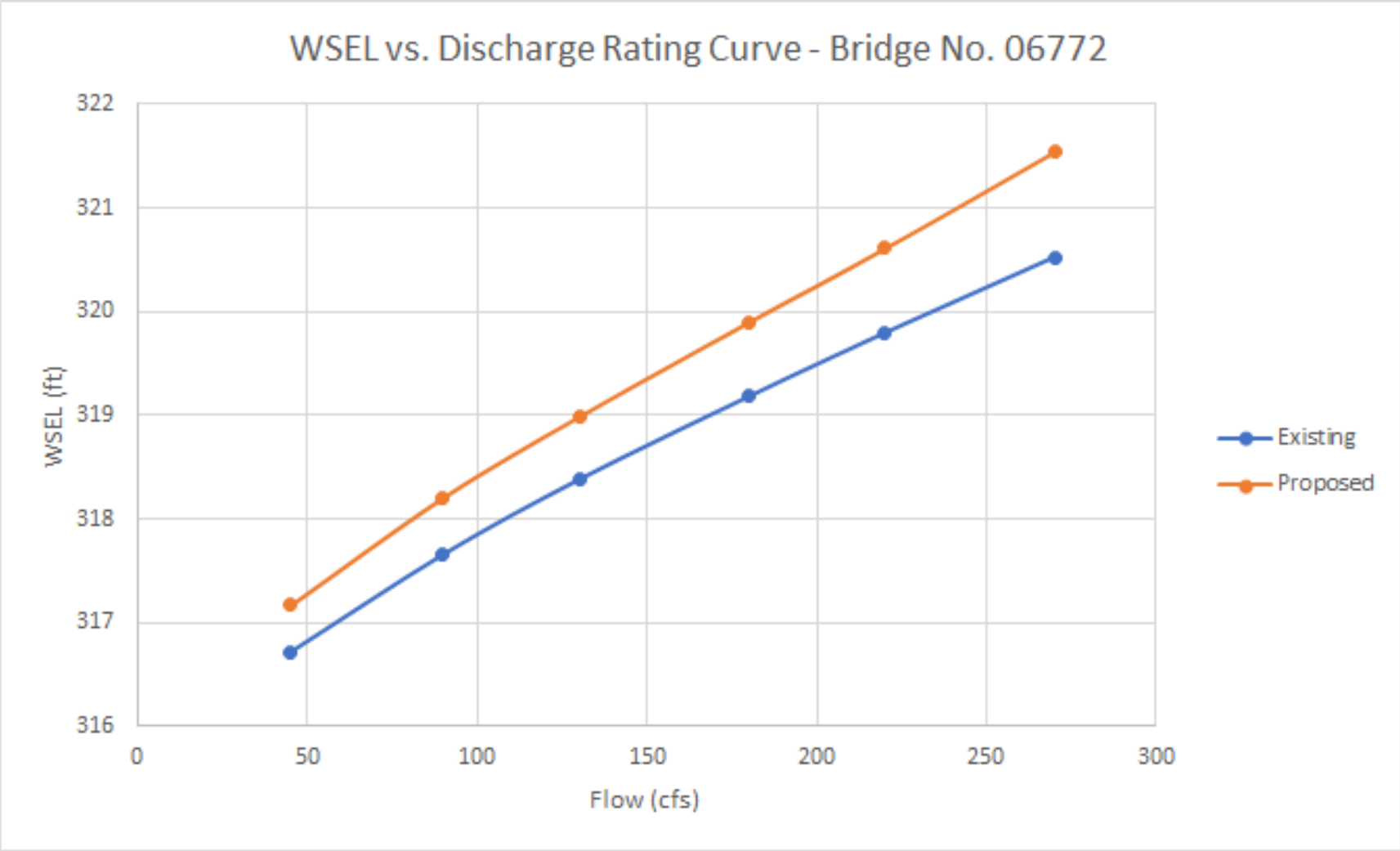
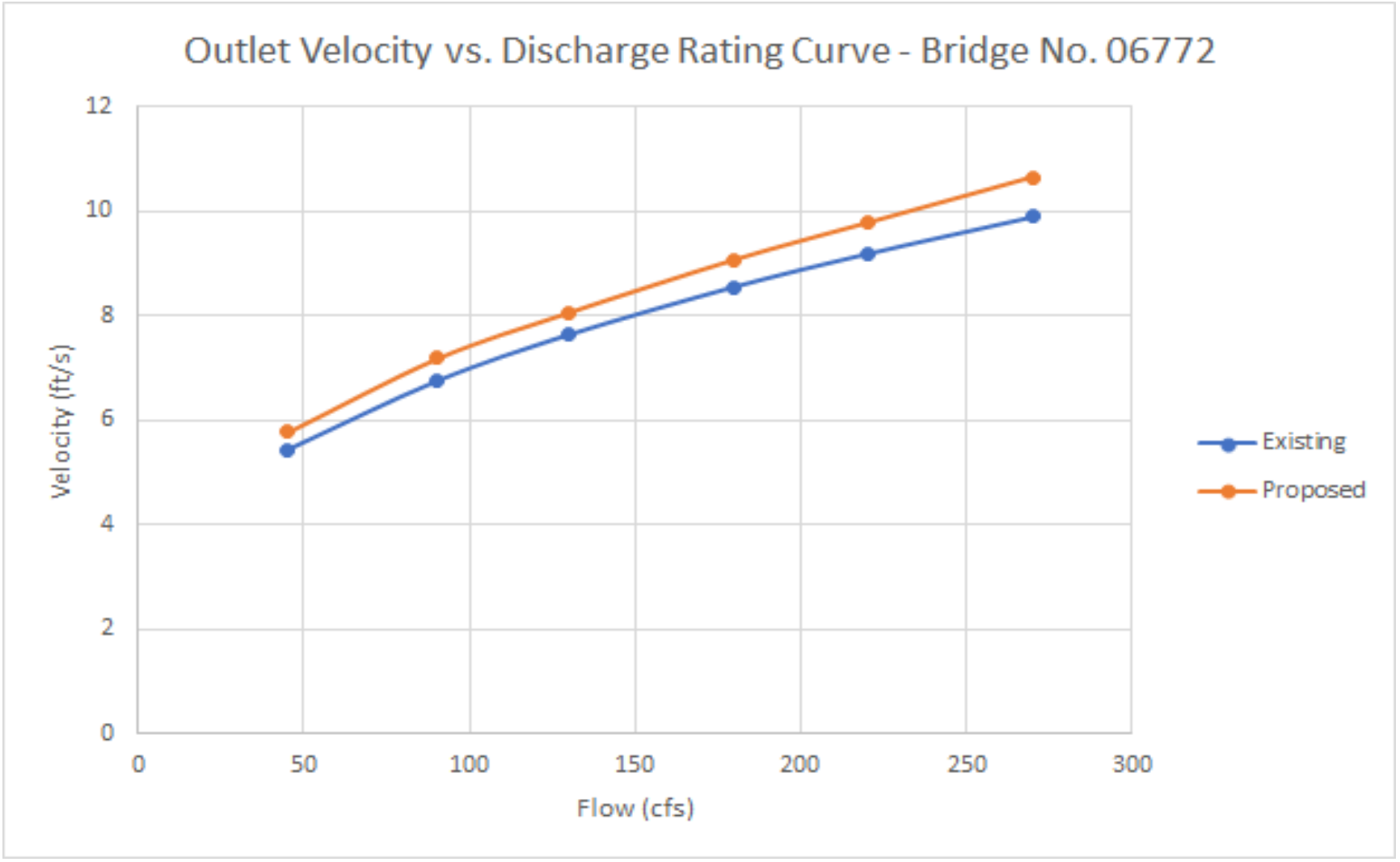


Figure 10 – Outlet Velocity (HY-8) vs. Peak Discharge



Narrative

Purpose

The purpose of project 0087-0148 is to return Bridge No. 06772 to a satisfactory condition. This will be done by lining the culvert with an 8.00’ wide by 5.50’ tall tunnel liner plate (TLP) culvert with 6” x 2” corrugations. Project 0087-0148 will restore Bridge No. 06772 to a satisfactory condition and maintain hydraulic adequacy at this crossing.

Restoring the eroded streambank downstream of Bridge No. 06772 is also a goal of this project. A riprap revetment, using heavy riprap with a D50 of 2.0’, will be installed along the eroded streambank to stabilize and restore the slope.

Existing Conditions

Bridge No. 06772

Bridge No. 06772 is a structural steel pipe arch culvert with a span of 9’ 6”, a rise of 6’ 5”, and 6” x 2” corrugations that carries New Haven Rd (Route 63) over Straitsville Brook. The culvert is approximately 66’ long and the inlet is mitered to slope. Per *Hydraulic Design Series 5, Hydraulic Design of Highway Culverts* (HDS-5) Section 1.4.2, the length of the barrel is based on where the crown intersects the fill slope. The culvert invert exhibits a complete loss of asphalt coating, and moderate to heavy rust and perforations throughout the length of the culvert. There is sediment deposition from the culvert inlet to 20’ from the culvert outlet. The culvert outlet is perched approximately 4’ above the downstream channel. The downstream concrete cradle is fully exposed with voids at the base.

There is a retaining wall at the inlet with three pipes passing through it. A minor scour hole has formed at the inlet of Bridge No. 06772, likely resulting from the poor alignment and the three drainage pipes in the retaining wall. Straitsville Brook takes a sharp 90° turn where it meets Bridge No. 06772 and takes another sharp 90° turn about 100’ upstream of the bridge, as can be seen in Figures 1 & 2.

Streambank Erosion

The north bank of Straitsville Brook, approximately 300’ downstream of Bridge No. 06772, has eroded. Since the hydraulic analysis shows the water is shallow (1’-3’ deep) and fast moving (~11 ft/s) in the larger storms, it is assumed the material at the base of the bank washed away and the material above it fell into the channel. The eroded area is on the outside of a bend and the channel is currently much wider than the rest of the stream.

Proposed Conditions

Bridge No. 06772

The proposed culvert is an 8.00’ wide x 5.50’ tall TLP pipe arch with 6” x 2” corrugations. The inlet and outlet inverts will be raised approximately 3” from the existing conditions. The culvert inlet will be cut back approximately 1’ to avoid a potential conflict with a water main and to decrease the severity of the bend at the inlet. The channel leading to the culvert inlet will be regraded and widened. A headwall is proposed with a wing wall parallel to the inlet to the east and perpendicular to the inlet to the west to connect to the retaining wall. Cutoff walls will be installed at the culvert inlet and outlet. A concrete saddle wall extending 4’ below the existing stream grade is proposed at the outlet. No outlet protection is proposed due to the presence of large boulders (1’-5’ diameter) at the existing outlet. Any boulders disturbed during construction will be placed back to replicate the existing conditions.

Streambank Erosion

A revetment using heavy riprap (gradation provided in Appendix D) will be used to restore and stabilize the streambank erosion. The revetment dimensions and layout were designed in accordance with the *Hydraulic Engineering Circular No. 23, Bridge Scour and Stream Instability Countermeasures* (HEC-23) Volume 2. The riprap revetment will have natural streambed material washed in up to the ordinary high water elevation. The slope above the necessary revetment height will be stabilized with vegetation and be no greater than 2:1.

Floodplain Involvement

Bridge No. 06772 is located within a 500-yr FEMA Flood Zone. There is no 100-yr floodplain or floodway within the project limits and no flood management certification is needed.

Hydrology

The flows at Bridge No. 06772 were developed using the SIR 2020-5054 rural regression equations through the USGS web application StreamStats 4.19.2. The drainage area is 0.69 square miles (440 acres) as delineated by StreamStats and verified through Aquaveo’s Watershed Modeling Software, using 2016 LiDAR data. The land use is primarily a mix of forested and residential areas. Per the town of Naugatuck’s Plan of Conservation and Development, no change in land use is expected during the life of the proposed culvert. There is no known or documented history of flooding at the site. Appendix C contains the StreamStats report for Bridge No. 06772. Equations 6.24 and 6.25, from the *CTDOT Drainage Manual* (DM), calculated the average daily flow (ADF) and average daily spring flow (ASF) for the site. Table 3 reports the design flows below.

Table 3
Design Discharges

Flood Frequency (year)	Peak Discharge (cfs)
2	45
10	130
25	180
50	220
100	270
ADF	1.3
ASF	2.5

Hydraulic Design Criteria

Bridge No. 06772 is classified as a small structure according to Table 8-4 of the DM and is designed in accordance with Section 8.3 of the DM. Small structures have a 50-yr design storm and a 100-yr check storm. The allowable headwater will be limited by the following:

- Non-damaging to upstream property,
- 1' below the established hydraulic control,
- Equal to an HW/D no greater than 1.5,
- The elevation where flow is diverted from the area tributary to the culvert.

The hydraulic control is a catch basin on Route 63 approximately 30' east of Bridge No. 06772.

A natural conditions analysis was not done for Bridge No. 06772. In 1966, when Route 63 was constructed, the stream was realigned. Since Route 63's construction, the downstream reach has degraded 3 - 4 feet, resulting in a perched condition at the outlet of Bridge No. 06772. To account for the natural conditions in the model the entire reach would have to be modified and the effect of the structure would no longer be represented. See Appendix I for the as-built plans from 1966.

The proposed riprap revetment (to restore the streambank erosion) was designed following the procedure in HEC-23.

Fisheries

The perched outlet of Bridge No. 06772 is a barrier to fish passage. The CTDEEP Inland Fisheries division provided initial comments requesting the design accommodate fish passage at the crossing. After a field review meeting with both CTDOT and CTDEEP Fisheries on January 10, 2022, it was determined allowing for fish passage would not be required. No accommodations for fish passage are being considered at this crossing.

Hydraulic Analyses

The reach of Straitsville Brook that includes Bridge No. 06772 was modeled using a combination of HEC-RAS 6.4.1 and HY-8 7.80. The model extends from 400' downstream to 250' upstream of Bridge No. 06772. Cross sections were derived from CTDOT survey data.

HEC-RAS does not have the proposed culvert size predefined and thus cannot be used to model the proposed culvert. HY-8 can model user-defined culverts and was used to determine the culvert headwater for all storms modeled. Although HEC-RAS can model the existing culvert, HY-8 was used to model the existing culvert to obtain a fair comparison between the existing and proposed conditions.

A Manning's roughness of 0.04 was chosen for the channel to reflect the steep, rocky stream. A Manning's roughness of 0.075 was chosen for the overbanks to reflect the dense underbrush. A Manning's roughness of 0.02 was chosen for the retaining wall at the culvert inlet. See Appendix A for representative pictures of the channel and overbank areas. Per HDS-5 Table B.3, the manning's roughness for both existing and proposed culverts is 0.034.

The modeled reach uses contraction and expansion coefficients of 0.3 and 0.5, respectively, for the cross section immediately downstream of the bridge and the two cross sections immediately upstream of the bridge. All other cross section used contraction and expansion coefficients of 0.1 and 0.3, respectively.

A mixed flow regime and the design discharges provided in Table 3 were used in the existing and proposed models. Normal depth with a slope of 5% (calculated from survey data) was used for the downstream boundary condition for both existing and proposed downstream reaches and critical depth was used for the upstream boundary condition for all models. The downstream boundary condition for both existing and proposed upstream HEC-RAS reaches is set to known water surface elevations (WSELs), calculated by HY-8 for the existing and proposed culverts.

In cross sections 105 to 187, the ground elevation in the left overbank is lower than the top of bank and is below the computed WSELs. The top of banks for these cross sections were modeled as a levee to prevent flow from being computed in the overbank areas unless the channel bank overtops.

The WSELs calculated for cross sections 487 through 553 were used to determine the hydraulic adequacy of the existing and proposed structures. Section 553 is the furthest upstream section that will indicate whether the WSEL will encroach onto Route 63, as Straitsville Brook flows parallel to Route 63 for approximately 100' upstream of Bridge No. 06772.

The HEC-RAS and HY-8 printouts for the existing and proposed conditions models can be found in Appendix B.

Existing Conditions

HY-8 was used to model Bridge No. 06772 as a culvert. The tailwater data was entered as a rating curve with elevations and velocities taken at section 400 of the downstream reach HEC-RAS model. The road was modeled with a constant elevation of 323.5' a crest length of 50.0' and a top width of 30.0'. Since the culvert does not overtop in the existing or proposed models, more accurate roadway data was not deemed necessary.

HY-8 does not have the existing culvert size as an available preset so a user-defined shape was input based off a cross-section drawn in CAD. The span and rise of the culvert are 9.50' and 6.42', respectively. The inlet configuration is set to "Mitered to Conform to Slope (Ke=0.7)". The existing inlet and outlet inverts are 314.8' and 314.3', respectively, with a structure length of 66'. The resulting culvert slope is 0.76%.

The headwater elevations calculated by HY-8 were input into the upstream reach HEC-RAS model as the downstream boundary condition using known WSELs.

The highest 50-yr design WSEL in sections 487 through 553 is 320.6'. The WSEL at section 487, immediately upstream of the culvert, is 319.8'. The existing culvert provides 2.9' of freeboard to the hydraulic control (323.5') and an HW/D of 0.9. The existing culvert is hydraulically adequate.

The highest 100-yr check WSEL in sections 487 through 553 is 321.0', providing 2.5' of freeboard to the hydraulic control.

Tabulated results from the 50-yr and 100-yr models can be seen in Tables 1 and 2, respectively.

Proposed Condition

The proposed HEC-RAS and HY-8 models were created by copying and modifying the existing conditions models as described in the following paragraphs.

The existing downstream reach was modified between cross sections 91 through 133 to capture the impacts of the slope stabilization revetment. The three cross sections upstream of the culvert (487, 495, & 517) were adjusted to reflect the proposed grading, proposed retaining wall, and the proposed wingwall. The known WSELs for the upstream reach's downstream boundary condition were set to those calculated by HY-8 for the proposed culvert.

The proposed conditions HY-8 model retained the same tailwater rating curve and roadway data from the existing conditions model. The culvert was defined using the user-defined shape option. The proposed culvert is 8.00' wide by 5.50' tall. The inlet configuration was set to "Square Edge with Headwall (Ke=0.5)". The inlet and outlet inverts were set to 315.0' and 314.6', respectively, and the length was decreased to 65' to reflect the culvert inlet being cut back. The slope of the proposed culvert is 0.62%.

The highest 50-yr design WSEL in sections 487 through 553 is 320.6'. The WSEL at section 487, immediately upstream of the culvert, is 320.6', a 0.8' increase over the existing conditions. The proposed culvert provides 2.9' of freeboard to the hydraulic control (323.5') and an HW/D of 1.0. The proposed culvert is hydraulically adequate.

The highest 100-yr check WSEL in sections 487 through 553 is 321.5', providing 2.0' of freeboard to the hydraulic control.

The proposed and existing 50-yr models converge at section 553. All WSEL increases upstream of the culvert are within 0.8' and are contained within the channel banks and CTDOT right of way. There are no 50-yr velocity increases upstream of the culvert in the proposed conditions.

The proposed and existing 100-yr models converge at section 553. All WSEL increases upstream of the culvert are within 1.0' and are contained within the channel banks and CTDOT right of way. The only 100-yr velocity increase upstream of the culvert in the proposed conditions is by 0.1 ft/s.

Tabulated results from the 50-yr and 100-yr models can be seen in Tables 1 and 2, respectively. See Appendix G for existing vs. proposed inundation limits for the 50- and 100-yr storms.

Streambank Erosion

Cross sections 91 through 133 were analyzed to determine the stability of the proposed revetment in the 50-yr design storm using HEC-23 Design Guide 4 (DG 4). DG 4 Equation 4.1 uses a variable called the characteristic velocity for design, defined as the depth-averaged velocity at a point 20% upslope from the toe of the revetment. The characteristic velocity is calculated from the ratio of curve radius to top width and the average channel velocity. Since the channel is ~15' wide and the flow depths are around 2' through the revetment, the average channel velocity is assumed to be approximately the same as the characteristic velocity and was used in place of the characteristic design velocity. Using HEC-23 DG 4, the largest D50 at the cross sections analyzed (91 through 133) was 1.91' at section 91.

A limitation to equation 4.1 in HEC-23 DG 4 is the longitudinal slope of the channel should not be greater than 2.0 %. HEC-23 DG 4 states Design Guide 5 Riprap Design for Embankment Overtopping (DG 5) should be used to compute the riprap D50, and the results compared with Equation 4.1. The average channel slope through the proposed revetment is 9.2%. The largest D50 at the cross sections analyzed using HEC-23 DG 5 is 2.72'. HEC-23 DG 4 provided a more reasonable D50 for this location considering the low flow depths and design flows, therefore a D50 of 2.0' was used. Revetment calculations and the riprap gradation can be found in Appendix D. The revetment details can be found in Appendix L.

As an additional stability check, the paper "Stability Thresholds for Stream Restoration Materials", published by the USACOE, was used to check the stability of the riprap. The shear stresses calculated in HEC-RAS were compared with the shear stresses provided in Table 1 of the paper, and all values were less than the maximum for Medium Boulders (20" < d50 < 40"). The shear stresses calculated with HEC-RAS and Table 1 of the paper can be found in Appendix D.

The toe depth for the revetment was determined using Maynard's method for estimating scour depth at a bend as recommended in HEC-23. Using Maynard's method for estimating bend scour, depths of 0.8' and 0.9' were determined for the 50-yr and 100-yr storms, respectively. The revetment will have a toe depth of 1.0'. Bend scour calculations can be found in Appendix D.

The 50-yr WSELs and velocities vary in cross sections 91 through 133 between the existing and proposed model due to the proposed revetment. The range of velocities in sections 91 through 133 are computed to be stable with the proposed revetment. The channel width was decreased to reflect the revetment, causing an increase in WSELs. The WSEL increases are retained within the channel banks and will not pose any threat to life or property. The channel width will be more consistent with the rest of the channel after the revetment has been constructed.

Temporary Water Handling

Two water handling systems are required to construct the project. The first is for the culvert liner and a second for the bank slope restoration. The "Hydrology for Temporary Facilities" worksheet, Appendix 6.F in the DM, determined the 2-yr discharge should be used to design the water handling systems. A lower discharge of three times ASF was chosen for the water handling systems since the contractor will be asked to remove all materials and equipment when a storm is predicted.

An 18" HDPE gravity bypass pipe is proposed to carry up to three times the ASF through the culvert while the liner and associated work is performed. The inlet and outlet inverts will be 317.7' and 314.5', respectively. The work is expected to take less than three months to complete. The upstream cofferdam elevation will have a top elevation of no lower than 320.7'. The contractor will halt activities and remove the temporary water handling system when a storm is predicted to allow the flow to pass through the existing structure. If the contractor elects to use a pump bypass system, it should be sized to handle at least 3 times the ASF, 7.5 cfs (3,400 gpm).

An 18" HDPE gravity bypass pipe is proposed to carry up to three times the ASF through the revetment during construction. The inlet and outlet inverts will be 289.5' and 280.5', respectively. The work is expected to take one construction season. The upstream cofferdam will have a top elevation no lower than 292.5'. A temporary Type A riprap apron made with standard riprap will be placed at the outlet of the temporary 18" HDPE pipe to dissipate the erosive 14 ft/s velocity. The contractor will halt activities and remove the temporary water handling system when a storm is predicted to allow the flow to pass through the channel. If the contractor elects to use a pump bypass system, it should be sized to handle at least 3 times the ASF, 7.5 cfs (3,400 gpm).

The HEC-RAS output data and Appendix 6.F of the DM can be found in Appendix E. The flood contingency plan can be found in Appendix F. The Environmental Permit Plan Set (Appendix L) shows the temporary water handling layouts.

Summary and Conclusions

The proposed culvert is hydraulically adequate. During the 50-yr design storm, the proposed liner increases the upstream water surface elevation by a maximum of 0.8’ and the increases are contained within the Department’s right of way limits and the channel banks. The 50-yr design storm provides for 2.9’ of freeboard to the hydraulic control, exceeding the design requirement of 1.0’ of freeboard. The crossing has an HW/D of 1.0, meeting the requirement of an HW/D less than 1.5.

The proposed culvert does not overtop the road in the 100-yr check storm and has 2.0’ of freeboard.

The proposed riprap revetment to restore the eroded streambank located approximately 300’ downstream of Bridge No. 06772 was designed to be stable using HEC-23 DG 4.

Appendices

A. Site Photographs



Inlet of Bridge No. 06772



Retaining Wall at Inlet of Bridge No. 06772



Immediately Upstream of Bridge No. 06772



Looking Through Bridge No. 06772 From the Inlet



Bridge No. 06772 Perched Outlet



Downstream Channel Directly After Bridge No. 06772 Outlet



Downstream Channel Leading to Slope Failure



Downstream Channel Immediately Upstream of Slope Failure



Looking Downstream Towards the Slope Failure



Slope Failure



Downstream Limit of Slope Failure



Channel Downstream of Slope Failure

B. Hydraulic Analysis Models – Output

HEC-RAS Existing Conditions – Downstream Reach

HY-8 Existing Conditions

HEC-RAS Existing Conditions – Upstream Reach

HEC-RAS Proposed Conditions – Downstream Reach

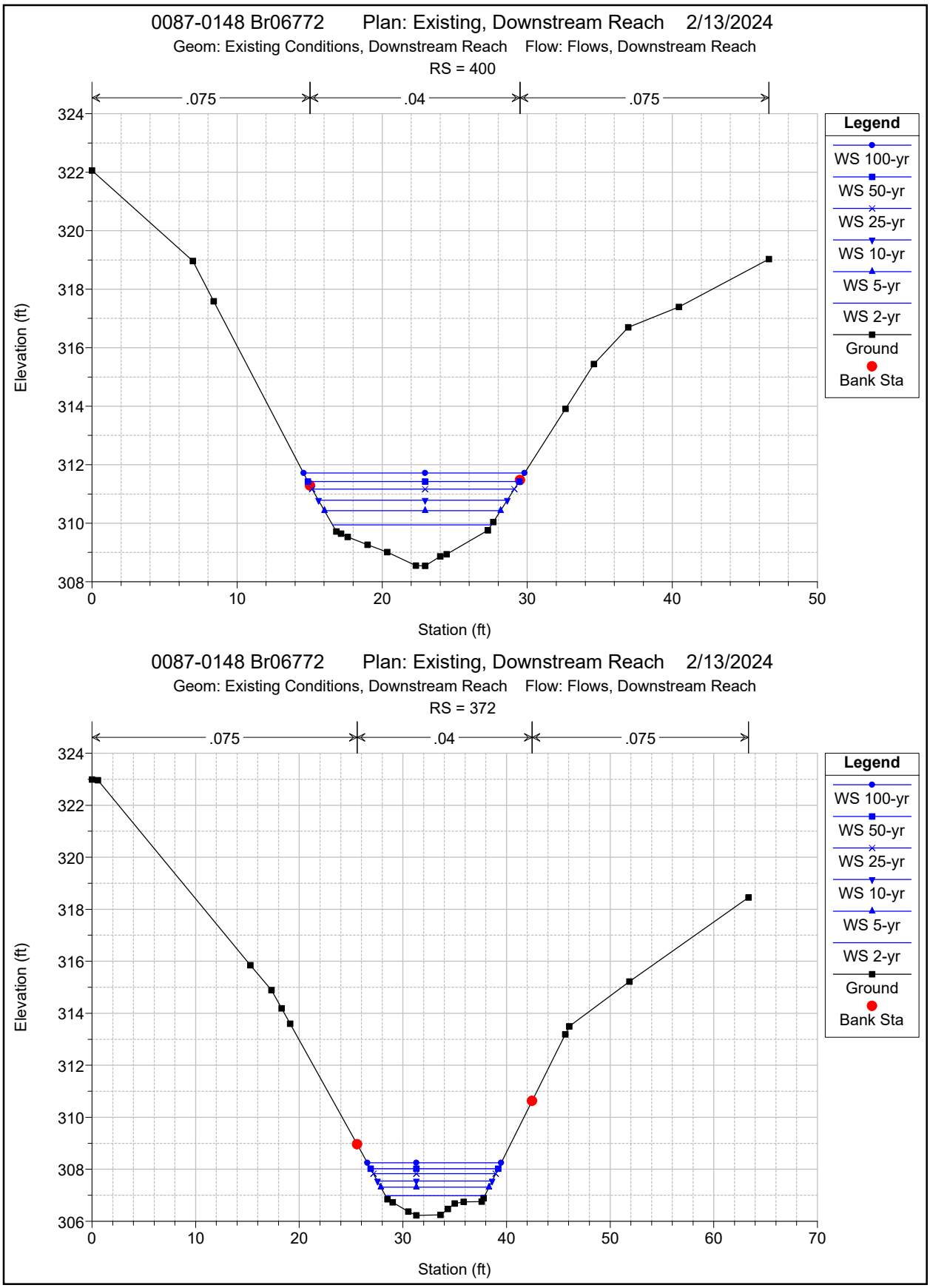
HY-8 Proposed Conditions

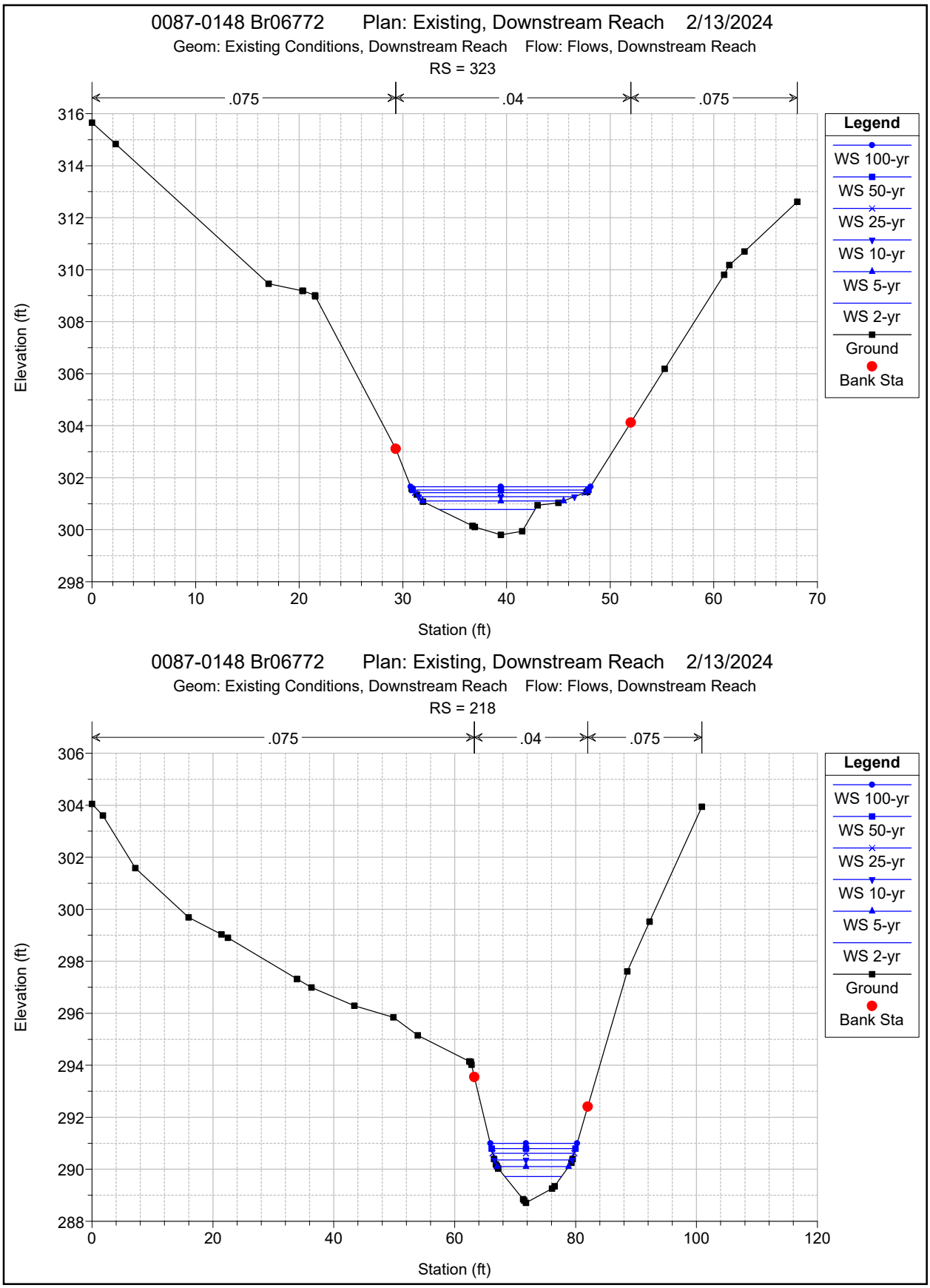
HEC-RAS Proposed Conditions – Upstream Reach

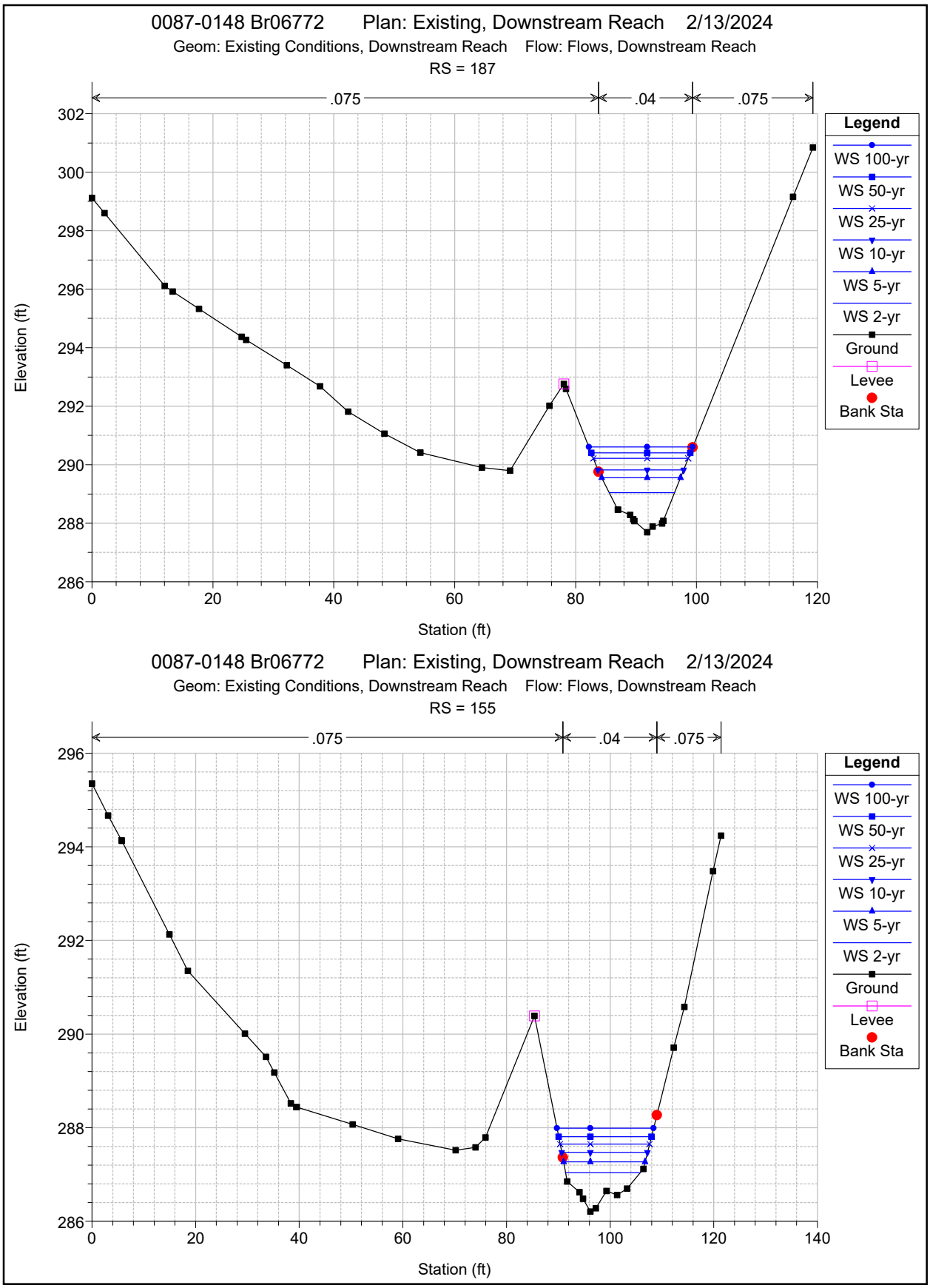
Tailwater Data for HY-8 Model

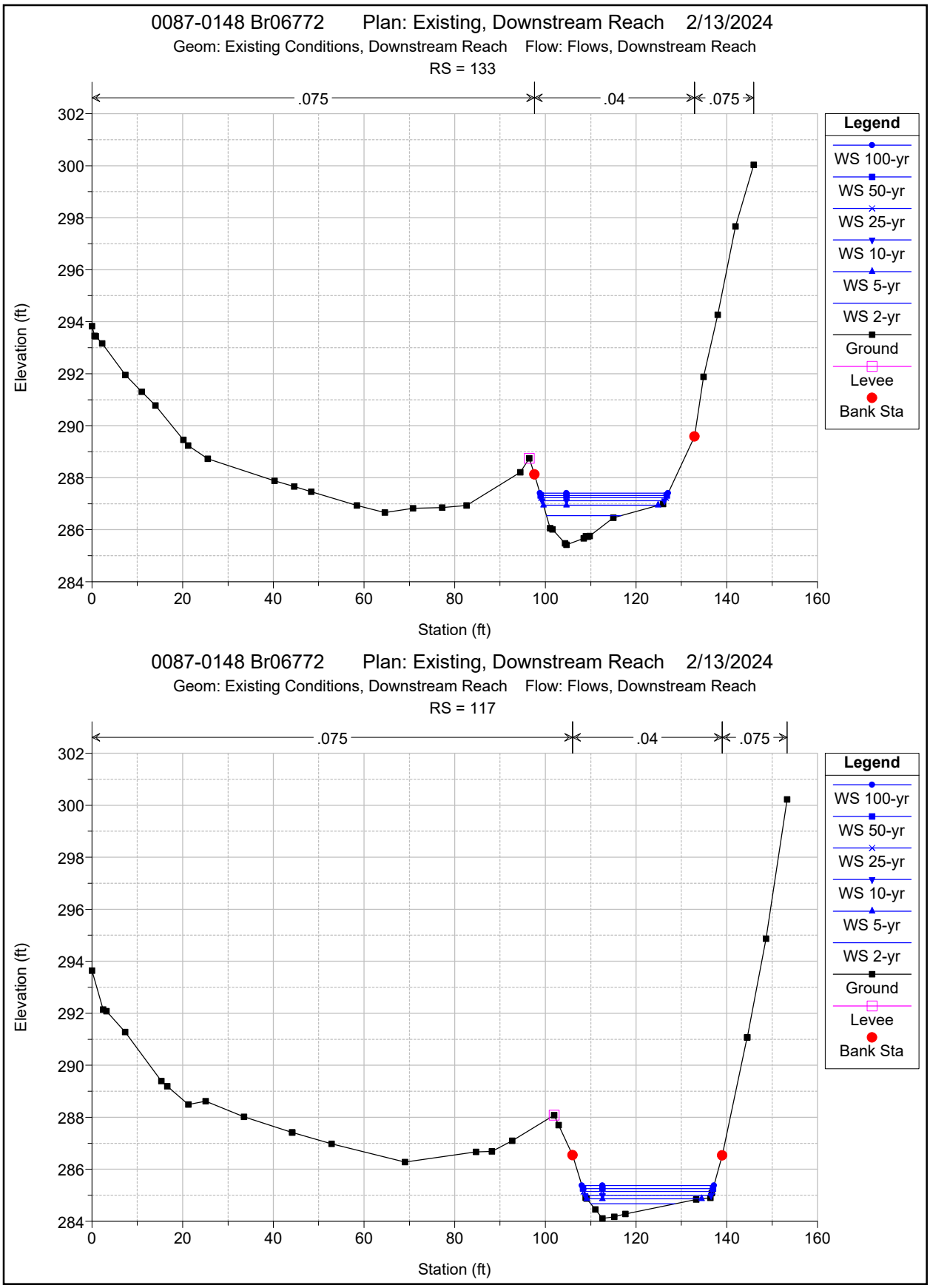
HEC-RAS Plan: Ex DS River: Stream Reach: Reach

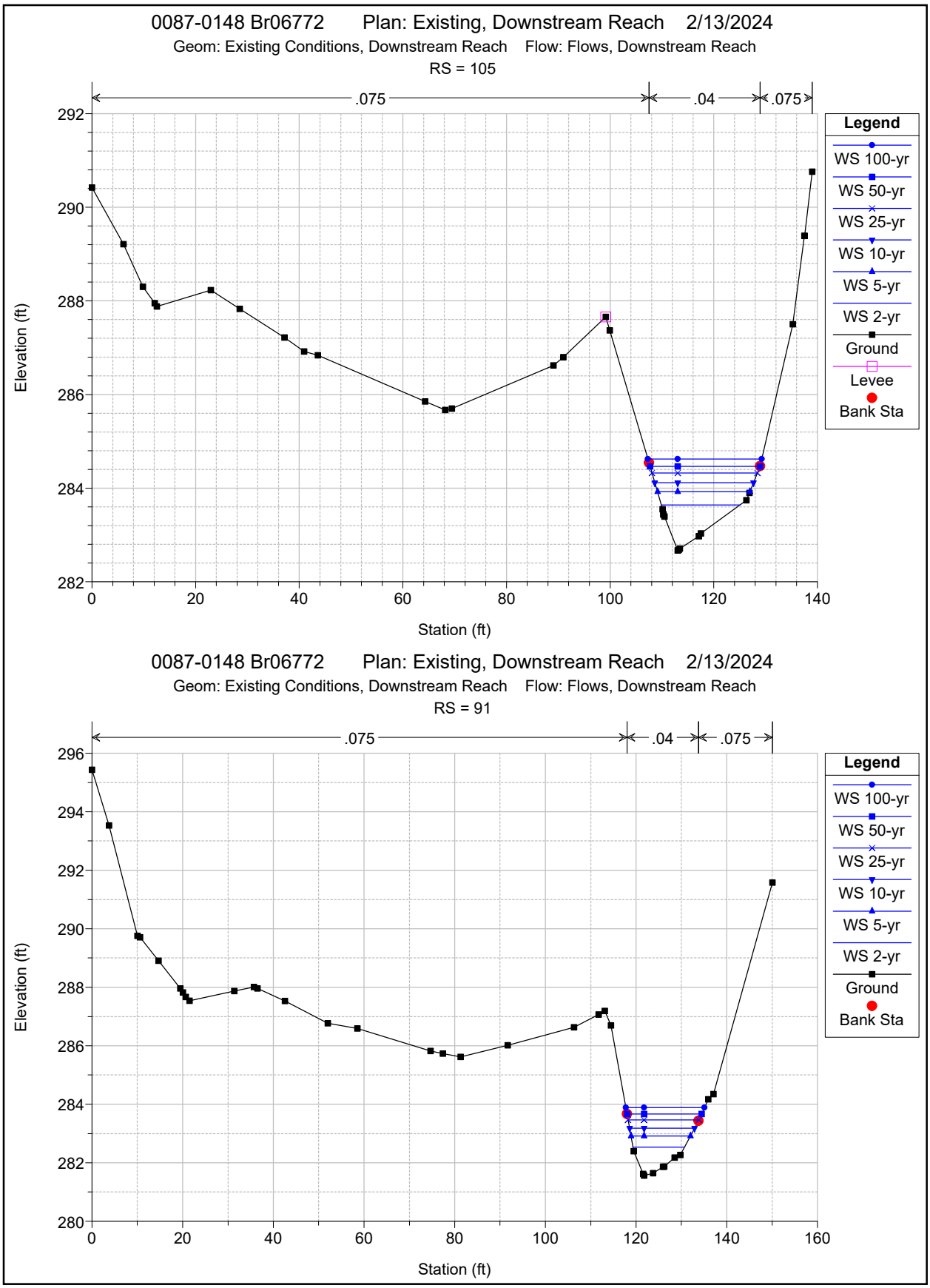
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach	400	2-yr	45.00	308.54	309.94	309.94	310.35	0.027281	5.15	8.74	10.94	1.01
Reach	400	5-yr	90.00	308.54	310.43	310.43	311.04	0.024591	6.26	14.39	12.14	1.01
Reach	400	10-yr	130.00	308.54	310.78	310.78	311.52	0.023301	6.90	18.85	13.01	1.01
Reach	400	25-yr	180.00	308.54	311.17	311.17	312.04	0.022315	7.50	23.99	13.94	1.01
Reach	400	50-yr	220.00	308.54	311.43	311.43	312.41	0.021697	7.94	27.73	14.56	1.01
Reach	400	100-yr	270.00	308.54	311.71	311.71	312.83	0.020660	8.47	31.99	15.23	1.01
Reach	372	2-yr	45.00	306.23	306.99	307.41	308.58	0.214919	10.14	4.44	9.57	2.62
Reach	372	5-yr	90.00	306.23	307.31	307.91	309.47	0.161641	11.79	7.64	10.42	2.43
Reach	372	10-yr	130.00	306.23	307.55	308.27	310.04	0.138530	12.67	10.26	11.07	2.32
Reach	372	25-yr	180.00	306.23	307.83	308.66	310.63	0.120452	13.42	13.41	11.79	2.22
Reach	372	50-yr	220.00	306.23	308.02	308.93	311.04	0.111517	13.93	15.79	12.32	2.17
Reach	372	100-yr	270.00	306.23	308.25	309.22	311.52	0.104440	14.50	18.61	12.91	2.13
Reach	323	2-yr	45.00	299.80	300.78	301.12	301.77	0.094103	7.98	5.64	9.27	1.80
Reach	323	5-yr	90.00	299.80	301.11	301.55	302.57	0.118270	9.69	9.29	13.63	2.07
Reach	323	10-yr	130.00	299.80	301.27	301.84	303.23	0.135275	11.24	11.56	15.02	2.26
Reach	323	25-yr	180.00	299.80	301.42	302.12	303.98	0.152775	12.82	14.04	16.40	2.44
Reach	323	50-yr	220.00	299.80	301.53	302.34	304.55	0.162336	13.95	15.78	16.97	2.55
Reach	323	100-yr	270.00	299.80	301.65	302.60	305.18	0.165302	15.06	17.93	17.35	2.61
Reach	218	2-yr	45.00	288.71	289.72	290.06	290.83	0.114177	8.45	5.32	9.39	1.98
Reach	218	5-yr	90.00	288.71	290.11	290.53	291.52	0.092875	9.54	9.44	11.84	1.88
Reach	218	10-yr	130.00	288.71	290.36	290.86	292.02	0.084201	10.35	12.56	12.87	1.85
Reach	218	25-yr	180.00	288.71	290.62	291.22	292.59	0.078067	11.25	15.99	13.48	1.82
Reach	218	50-yr	220.00	288.71	290.80	291.47	293.00	0.075764	11.90	18.48	13.89	1.82
Reach	218	100-yr	270.00	288.71	291.00	291.77	293.51	0.075580	12.71	21.25	14.34	1.84
Reach	187	2-yr	45.00	287.69	289.05	289.05	289.45	0.026076	5.10	8.83	10.80	0.99
Reach	187	5-yr	90.00	287.69	289.56	289.56	290.12	0.023813	6.05	14.87	13.02	1.00
Reach	187	10-yr	130.00	287.69	289.83	289.90	290.59	0.026505	7.01	18.54	14.16	1.08
Reach	187	25-yr	180.00	287.69	290.22	290.25	291.08	0.022548	7.44	24.37	15.67	1.03
Reach	187	50-yr	220.00	287.69	290.40	290.51	291.43	0.024140	8.14	27.36	16.39	1.08
Reach	187	100-yr	270.00	287.69	290.61	290.79	291.84	0.026020	8.94	30.76	17.17	1.13
Reach	155	2-yr	45.00	286.21	287.04	287.29	287.86	0.121362	7.30	6.17	14.39	1.97
Reach	155	5-yr	90.00	286.21	287.27	287.67	288.61	0.121758	9.28	9.70	15.74	2.08
Reach	155	10-yr	130.00	286.21	287.47	287.94	289.04	0.102738	10.05	12.94	16.54	1.99
Reach	155	25-yr	180.00	286.21	287.65	288.25	289.64	0.102893	11.33	15.95	17.26	2.05
Reach	155	50-yr	220.00	286.21	287.81	288.46	289.98	0.093650	11.82	18.76	17.91	2.00
Reach	155	100-yr	270.00	286.21	287.99	288.70	290.36	0.086018	12.38	22.11	18.66	1.96
Reach	133	2-yr	45.00	285.42	286.54	286.54	286.84	0.027113	4.40	10.22	16.48	0.99
Reach	133	5-yr	90.00	285.42	286.94	286.94	287.31	0.026631	4.87	18.48	25.29	1.00
Reach	133	10-yr	130.00	285.42	287.12	287.17	287.61	0.028566	5.61	23.17	26.98	1.07
Reach	133	25-yr	180.00	285.42	287.23	287.38	287.96	0.036644	6.83	26.35	27.49	1.23
Reach	133	50-yr	220.00	285.42	287.31	287.55	288.23	0.042530	7.70	28.58	27.84	1.34
Reach	133	100-yr	270.00	285.42	287.41	287.74	288.57	0.048359	8.63	31.30	28.26	1.45
Reach	117	2-yr	45.00	284.11	284.67	284.96	285.78	0.274690	8.46	5.32	18.52	2.78
Reach	117	5-yr	90.00	284.11	284.86	285.22	286.27	0.243752	9.50	9.48	25.33	2.74
Reach	117	10-yr	130.00	284.11	284.99	285.41	286.55	0.203232	10.03	12.96	27.81	2.59
Reach	117	25-yr	180.00	284.11	285.15	285.62	286.83	0.153192	10.41	17.30	28.33	2.35
Reach	117	50-yr	220.00	284.11	285.26	285.76	287.06	0.134015	10.77	20.43	28.70	2.25
Reach	117	100-yr	270.00	284.11	285.38	285.96	287.35	0.121230	11.27	23.96	29.11	2.19
Reach	105	2-yr	45.00	282.67	283.64	283.81	284.20	0.067084	5.98	7.53	15.18	1.50
Reach	105	5-yr	90.00	282.67	283.93	284.18	284.76	0.064756	7.31	12.32	17.85	1.55
Reach	105	10-yr	130.00	282.67	284.12	284.44	285.16	0.064140	8.22	15.82	19.04	1.59
Reach	105	25-yr	180.00	282.67	284.32	284.70	285.60	0.062873	9.05	19.88	20.34	1.61
Reach	105	50-yr	220.00	282.67	284.46	284.89	285.91	0.062741	9.63	22.84	21.24	1.64
Reach	105	100-yr	270.00	282.67	284.62	285.12	286.27	0.060581	10.30	26.25	21.99	1.64
Reach	91	2-yr	45.00	281.56	282.53	282.74	283.24	0.068801	6.74	6.67	11.33	1.55
Reach	91	5-yr	90.00	281.56	282.91	283.20	283.89	0.057912	7.93	11.34	13.10	1.50
Reach	91	10-yr	130.00	281.56	283.18	283.51	284.34	0.053785	8.65	15.03	14.35	1.49
Reach	91	25-yr	180.00	281.56	283.47	283.84	284.82	0.050069	9.32	19.32	15.65	1.47
Reach	91	50-yr	220.00	281.56	283.67	284.07	285.16	0.046635	9.81	22.50	16.45	1.45
Reach	91	100-yr	270.00	281.56	283.89	284.36	285.57	0.043446	10.41	26.21	17.34	1.43
Reach	53	2-yr	45.00	279.77	281.17	281.22	281.64	0.031915	5.52	8.15	10.30	1.09
Reach	53	5-yr	90.00	279.77	281.69	281.74	282.30	0.027781	6.29	14.30	13.32	1.07
Reach	53	10-yr	130.00	279.77	281.97	282.07	282.76	0.029025	7.09	18.34	14.85	1.12
Reach	53	25-yr	180.00	279.77	282.23	282.40	283.25	0.030325	8.09	22.34	15.87	1.18
Reach	53	50-yr	220.00	279.77	282.40	282.65	283.62	0.031714	8.88	25.01	16.52	1.22
Reach	53	100-yr	270.00	279.77	282.59	282.92	284.06	0.033131	9.76	28.18	17.26	1.27

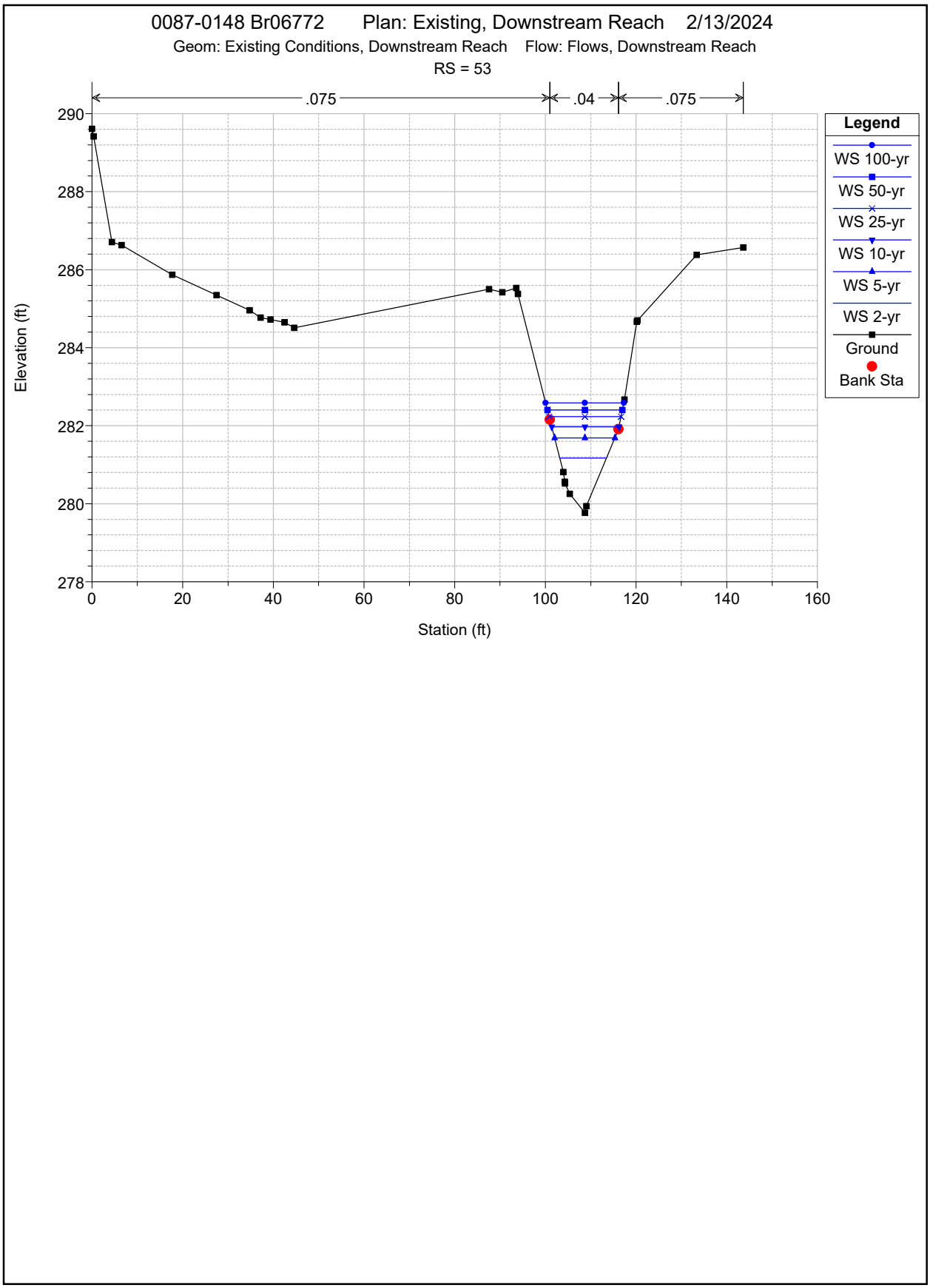

0087-0148 Br06772 Plan: Existing, Downstream Reach 2/13/2024
Geom: Existing Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 400
.075
.04
.075
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta
Elevation (ft)
Station (ft)
0087-0148 Br06772 Plan: Existing, Downstream Reach 2/13/2024
Geom: Existing Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 372
.075
.04
.075
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta
Elevation (ft)
Station (ft)


0087-0148 Br06772 Plan: Existing, Downstream Reach 2/13/2024
Geom: Existing Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 323
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta
0087-0148 Br06772 Plan: Existing, Downstream Reach 2/13/2024
Geom: Existing Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 218
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta


0087-0148 Br06772 Plan: Existing, Downstream Reach 2/13/2024
Geom: Existing Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 187
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Levee
Bank Sta
0087-0148 Br06772 Plan: Existing, Downstream Reach 2/13/2024
Geom: Existing Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 155
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Levee
Bank Sta


0087-0148 Br06772 Plan: Existing, Downstream Reach 2/13/2024
Geom: Existing Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 133
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Levee
Bank Sta
0087-0148 Br06772 Plan: Existing, Downstream Reach 2/13/2024
Geom: Existing Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 117
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Levee
Bank Sta


0087-0148 Br06772 Plan: Existing, Downstream Reach 2/13/2024
Geom: Existing Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 105
.075
.04
.075
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
0087-0148 Br06772 Plan: Existing, Downstream Reach 2/13/2024
Geom: Existing Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 91
.075
.04
.075
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta
Elevation (ft)
Station (ft)


0087-0148 Br06772 Plan: Existing, Downstream Reach 2/13/2024
Geom: Existing Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 53
.075
.04
.075
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta
Elevation (ft)
290
288
286
284
282
280
278
0
20
40
60
80
100
120
140
160
Station (ft)

HY-8 Culvert Analysis Report - Existing

Crossing Discharge Data

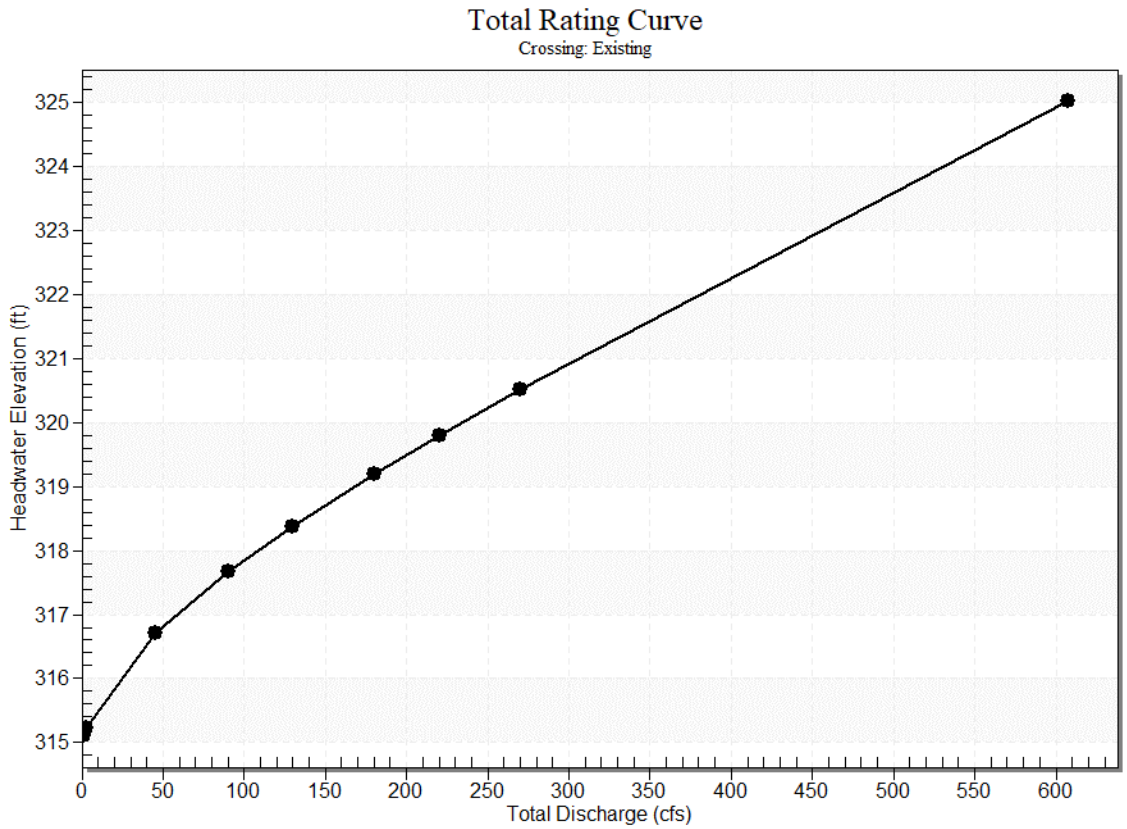
Discharge Selection Method: User Defined

Known WSELs for upstream HEC-RAS model downstream boundary condition

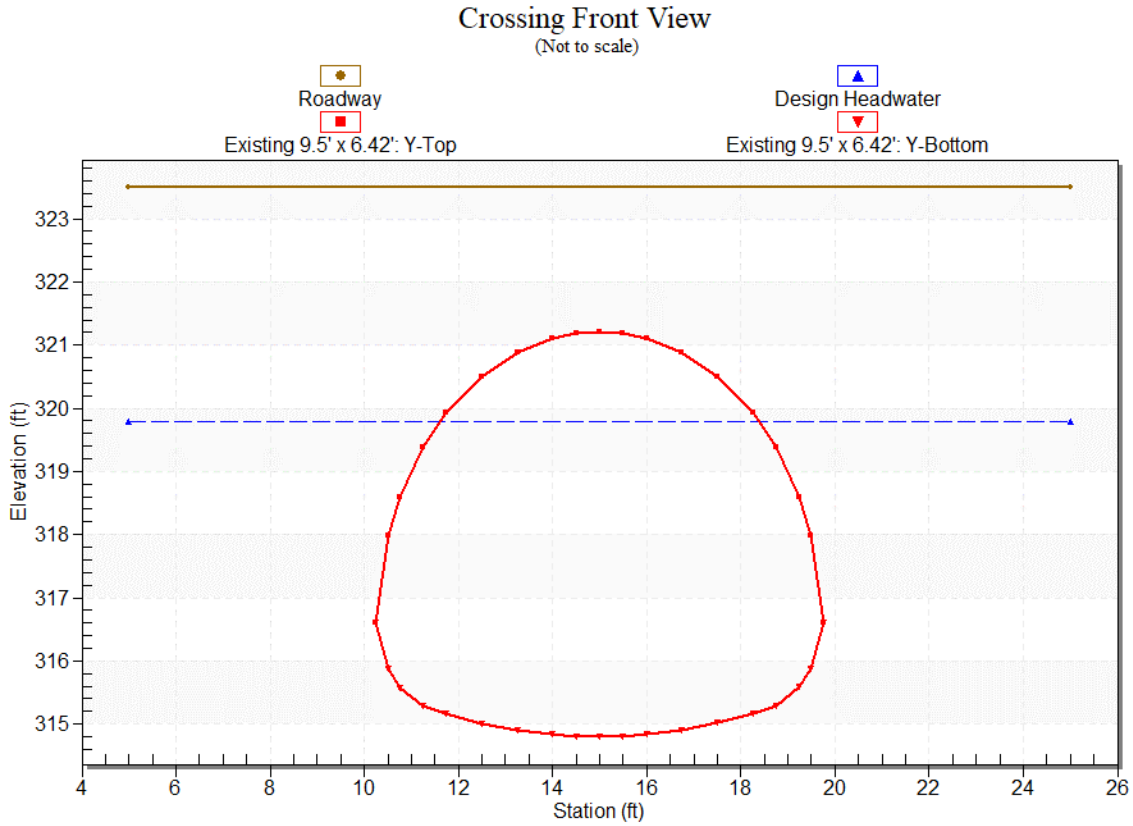
Table 1 - Summary of Culvert Flows at Crossing: Existing

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Existing 9.5' x 6.42' Discharge (cfs)	Roadway Discharge (cfs)	Iterations
315.11	1	1.30	1.30	0.00	1
315.23	2	2.50	2.50	0.00	1
316.72	3	45.00	45.00	0.00	1
317.66	4	90.00	90.00	0.00	1
318.38	5	130.00	130.00	0.00	1
319.18	6	180.00	180.00	0.00	1
319.79	7	220.00	220.00	0.00	1
320.52	8	270.00	270.00	0.00	1
323.50	Overtopping	456.97	456.97	0.00	Overtopping

Rating Curve Plot for Crossing: Existing



Crossing Front View (Roadway Profile): Existing



Culvert Data: Existing 9.5' x 6.42'

Table 1 - Culvert Summary Table: Existing 9.5' x 6.42'

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
1	1.30 cfs	1.30 cfs	315.11	0.30	0.312	2-M2c	0.27	0.20	0.20	0.40	2.06	2.50
2	2.50 cfs	2.50 cfs	315.23	0.41	0.433	2-M2c	0.37	0.28	0.28	0.50	2.43	2.80
3	45.00 cfs	45.00 cfs	316.72	1.78	1.919	2-M2c	1.50	1.18	1.18	1.40	5.43	5.20
4	90.00 cfs	90.00 cfs	317.66	2.66	2.862	2-M2c	2.21	1.72	1.72	1.90	6.75	6.30

5	130.00 cfs	130.00 cfs	318.38	3.30	3.576	2-M 2c	2.78	2.11	2.11	2.30	7.64	6.90
6	180.00 cfs	180.00 cfs	319.18	4.04	4.384	2-M 2c	3.47	2.54	2.54	2.70	8.56	7.50
7	220.00 cfs	220.00 cfs	319.79	4.63	4.989	2-M 2c	4.06	2.86	2.86	2.90	9.19	7.90
8	270.00 cfs	270.00 cfs	320.52	5.36	5.721	2-M 2c	4.92	3.23	3.23	3.20	9.90	8.50

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

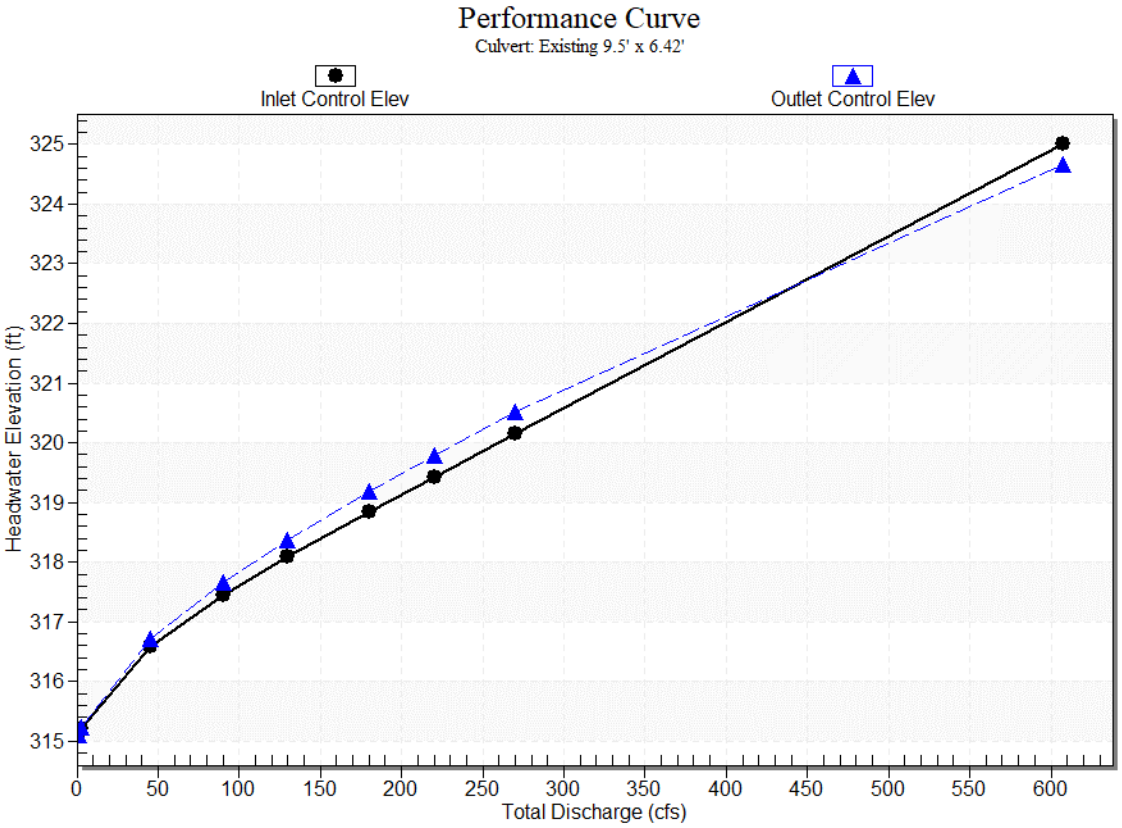
Inlet Elevation (invert): 314.80 ft,

Outlet Elevation (invert): 314.30 ft

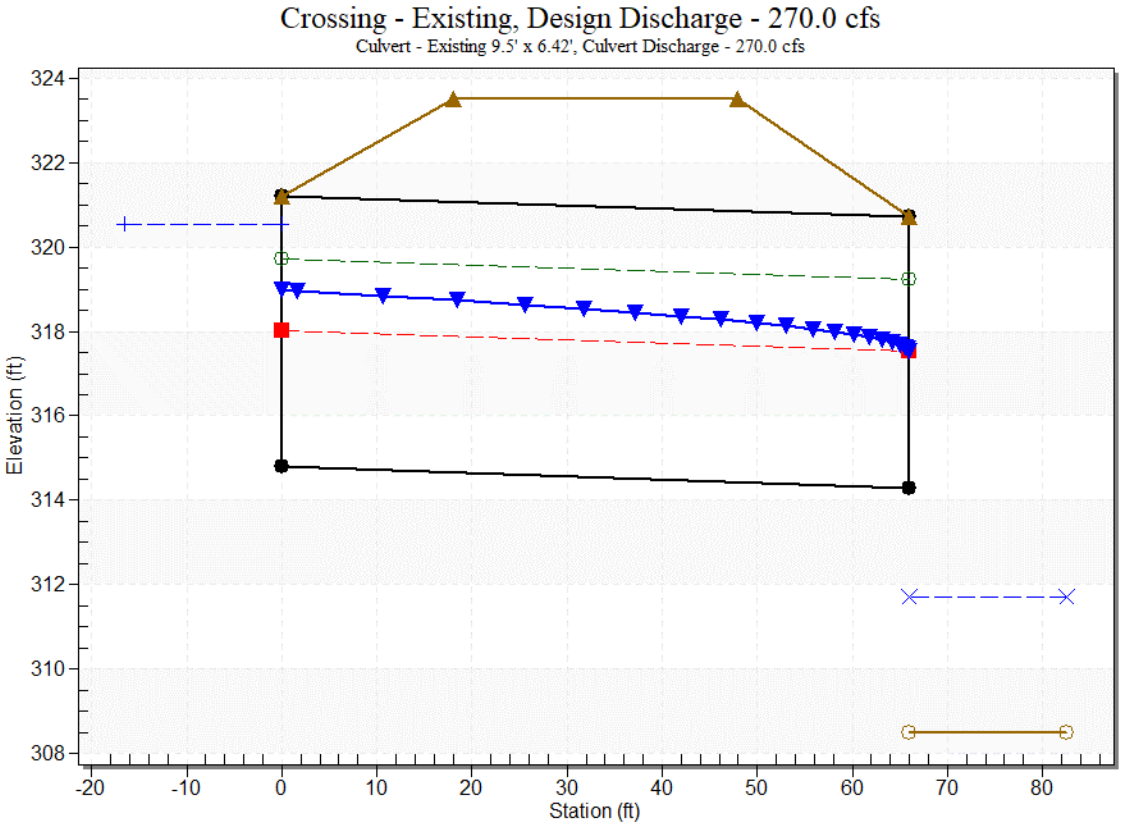
Culvert Length: 66.00 ft,

Culvert Slope: 0.0076

Culvert Performance Curve Plot: Existing 9.5' x 6.42'



Water Surface Profile Plot for Culvert: Existing 9.5' x 6.42'



Site Data - Existing 9.5' x 6.42'

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 314.80 ft

Outlet Station: 66.00 ft

Outlet Elevation: 314.30 ft

Number of Barrels: 1

Culvert Data Summary - Existing 9.5' x 6.42'

Barrel Shape: User Defined

Barrel Span: 9.50 ft

Barrel Rise: 6.42 ft

Barrel Material: Corrugated Metal Riveted or Welded

Embedment: 0.00 in

Barrel Manning's n: 0.0340 (top and sides)

Manning's n: 0.0340 (bottom)

Culvert Type: Straight

Inlet Configuration: Mitered to Conform to Slope (Ke=0.7)

Inlet Depression: None

WSELs and Velocities from downstream HEC-RAS model

Tailwater Data for Crossing: Existing

Table 2 - Downstream Channel Rating Curve (Crossing: Existing)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)
0.00	308.54	0.00	0.00
1.30	308.90	0.36	2.50
2.50	309.00	0.46	2.80
45.00	309.90	1.36	5.20
90.00	310.40	1.86	6.30
130.00	310.80	2.26	6.90
180.00	311.20	2.66	7.50
220.00	311.40	2.86	7.90
270.00	311.70	3.16	8.50

Tailwater Channel Data - Existing

Tailwater Channel Option: Enter Rating Curve

Channel Invert Elevation: Enter Rating Curve

Roadway Data for Crossing: Existing

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 20.00 ft

Crest Elevation: 323.50 ft

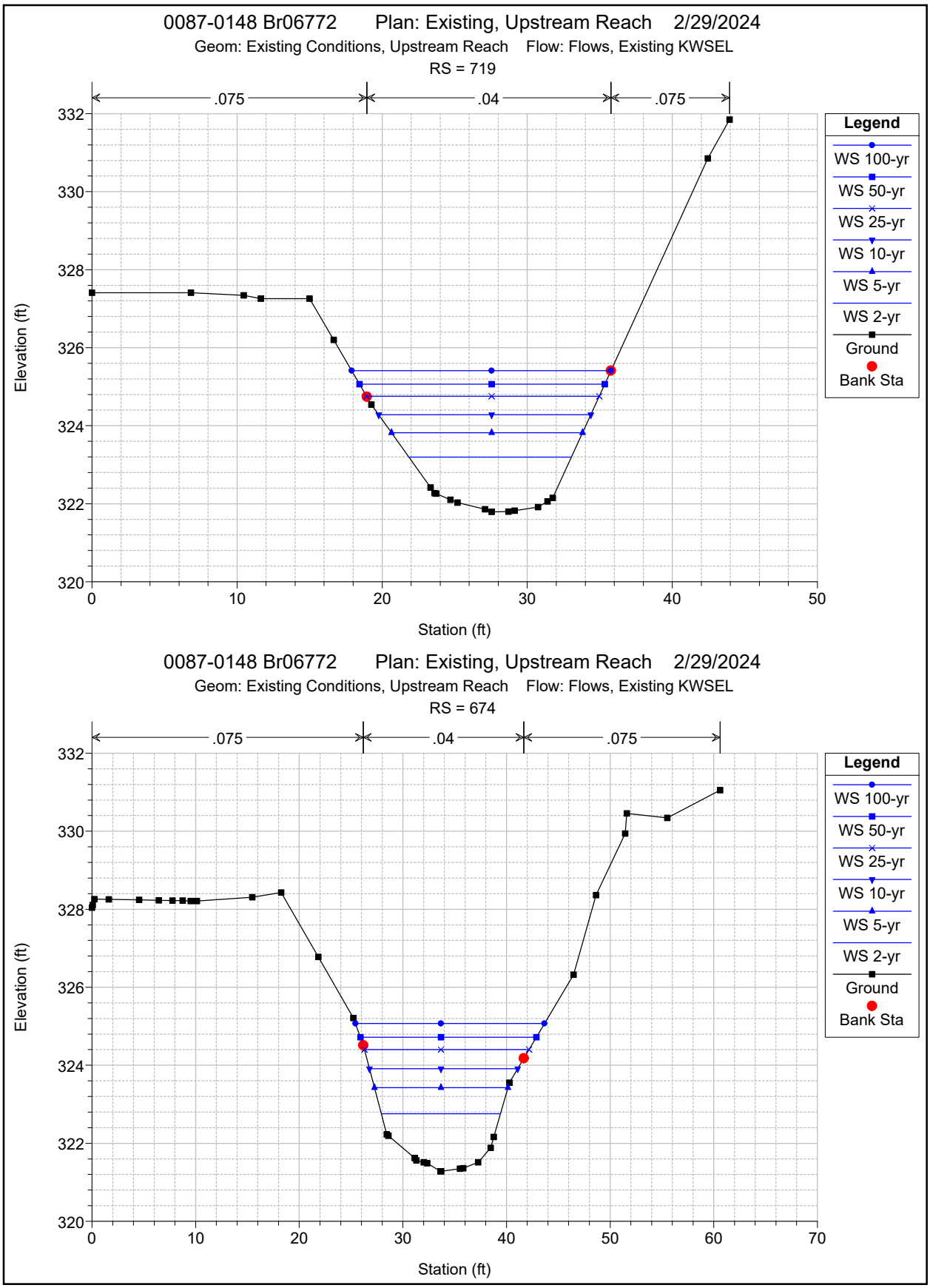
Roadway Surface: Paved

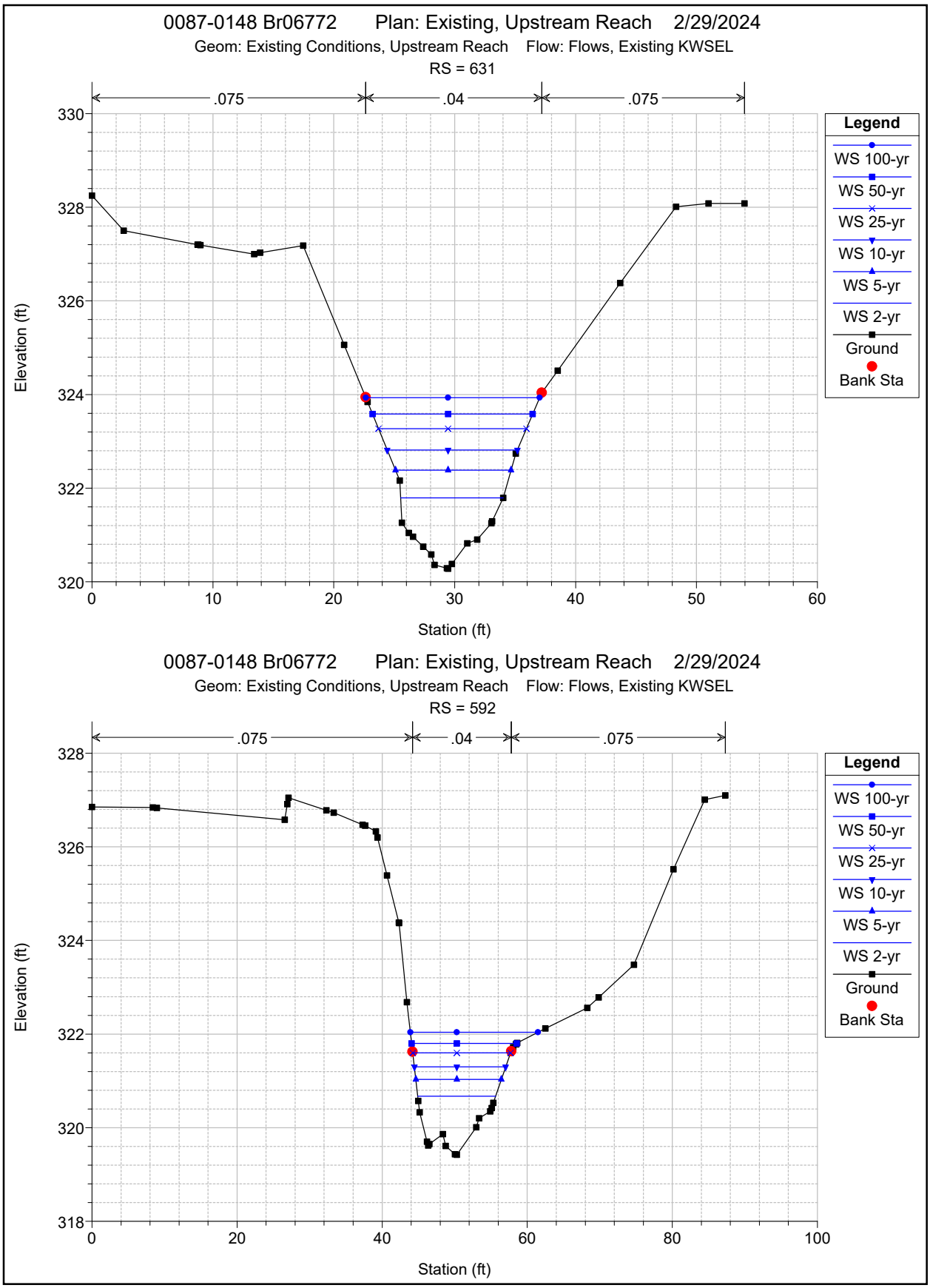
Roadway Top Width: 30.00 ft

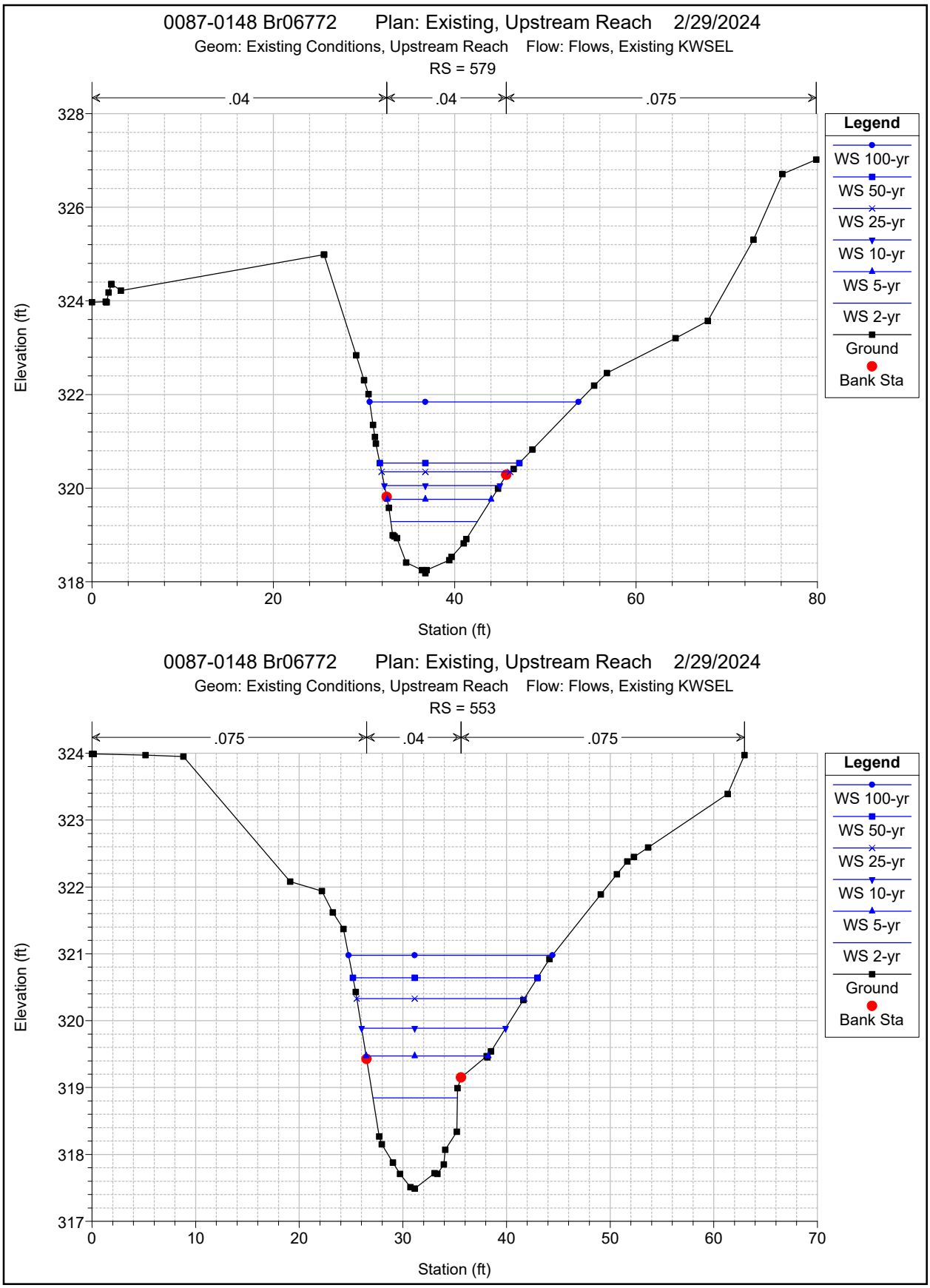
HEC-RAS Plan: Ex US River: Stream Reach: Reach

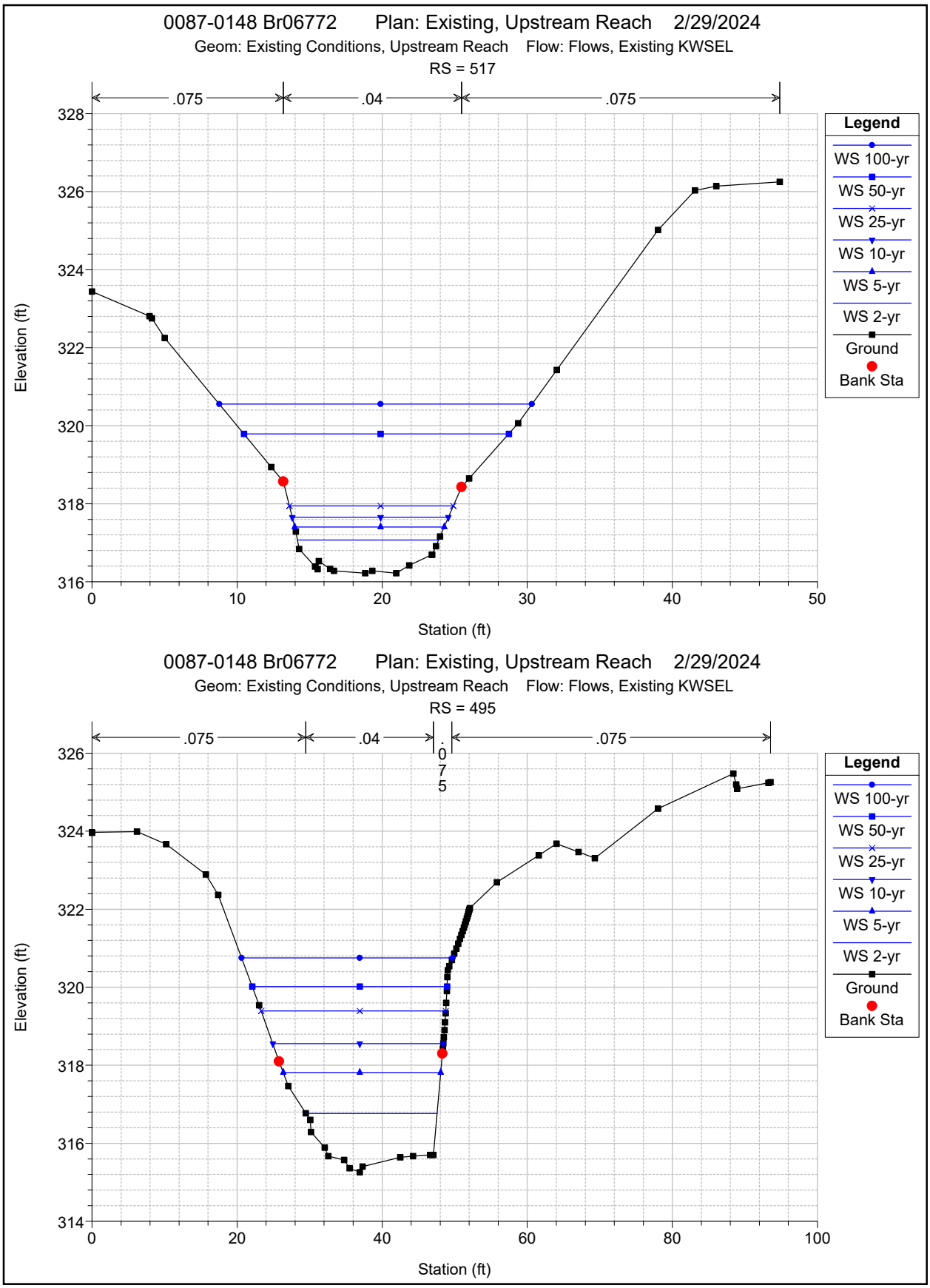
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach	719	2-yr	45.00	321.79	323.19	322.91	323.43	0.011028	3.86	11.66	11.20	0.67
Reach	719	5-yr	90.00	321.79	323.82	323.43	324.16	0.010536	4.67	19.26	13.16	0.68
Reach	719	10-yr	130.00	321.79	324.28	323.79	324.68	0.009785	5.05	25.72	14.63	0.67
Reach	719	25-yr	180.00	321.79	324.76	324.18	325.22	0.009331	5.45	33.01	16.04	0.67
Reach	719	50-yr	220.00	321.79	325.06	324.45	325.59	0.009048	5.79	38.07	16.90	0.67
Reach	719	100-yr	270.00	321.79	325.41	324.75	326.00	0.008869	6.17	44.05	17.87	0.67
Reach	674	2-yr	45.00	321.28	322.75		322.96	0.009479	3.64	12.35	11.49	0.62
Reach	674	5-yr	90.00	321.28	323.42		323.72	0.008504	4.39	20.50	12.87	0.61
Reach	674	10-yr	130.00	321.28	323.91		324.27	0.008185	4.80	27.10	14.29	0.61
Reach	674	25-yr	180.00	321.28	324.40		324.83	0.007864	5.23	34.49	15.87	0.62
Reach	674	50-yr	220.00	321.28	324.72		325.20	0.007590	5.58	39.74	16.98	0.62
Reach	674	100-yr	270.00	321.28	325.07		325.63	0.007411	6.01	45.88	18.24	0.62
Reach	631	2-yr	45.00	320.28	321.79	321.79	322.28	0.027793	5.59	8.05	8.48	1.01
Reach	631	5-yr	90.00	320.28	322.38	322.38	323.09	0.025780	6.76	13.32	9.56	1.01
Reach	631	10-yr	130.00	320.28	322.82	322.82	323.65	0.024610	7.34	17.72	10.76	1.01
Reach	631	25-yr	180.00	320.28	323.27	323.27	324.23	0.023632	7.84	22.96	12.23	1.01
Reach	631	50-yr	220.00	320.28	323.58	323.58	324.62	0.023021	8.16	26.95	13.25	1.01
Reach	631	100-yr	270.00	320.28	323.93	323.93	325.06	0.022417	8.51	31.74	14.37	1.01
Reach	592	2-yr	45.00	319.42	320.67	320.70	321.11	0.030544	5.32	8.45	10.73	1.06
Reach	592	5-yr	90.00	319.42	321.03	321.20	321.84	0.038446	7.20	12.49	11.80	1.23
Reach	592	10-yr	130.00	319.42	321.30	321.56	322.36	0.040865	8.25	15.76	12.59	1.30
Reach	592	25-yr	180.00	319.42	321.60	321.92	322.91	0.041853	9.18	19.62	13.47	1.34
Reach	592	50-yr	220.00	319.42	321.80	322.21	323.30	0.040742	9.82	22.46	14.47	1.35
Reach	592	100-yr	270.00	319.42	322.04	322.56	323.75	0.038849	10.50	26.29	17.61	1.35
Reach	579	2-yr	45.00	318.18	319.29	319.48	319.98	0.055271	6.70	6.71	9.55	1.41
Reach	579	5-yr	90.00	318.18	319.76	320.00	320.68	0.045515	7.70	11.69	11.48	1.35
Reach	579	10-yr	130.00	318.18	320.06	320.35	321.19	0.043889	8.53	15.26	12.73	1.36
Reach	579	25-yr	180.00	318.18	320.35	320.72	321.73	0.043207	9.46	19.16	14.17	1.39
Reach	579	50-yr	220.00	318.18	320.53	320.99	322.14	0.042718	10.20	21.93	15.38	1.41
Reach	579	100-yr	270.00	318.18	321.84	321.29	322.48	0.008117	6.59	47.07	23.02	0.68
Reach	553	2-yr	45.00	317.49	318.85	318.85	319.34	0.027862	5.66	7.95	8.15	1.01
Reach	553	5-yr	90.00	317.49	319.47	319.47	320.17	0.023390	6.69	13.81	11.79	0.97
Reach	553	10-yr	130.00	317.49	319.89	319.89	320.72	0.020457	7.39	19.15	13.91	0.95
Reach	553	25-yr	180.00	317.49	320.33	320.33	321.29	0.018405	8.06	25.78	16.17	0.93
Reach	553	50-yr	220.00	317.49	320.64	320.64	321.69	0.017348	8.51	31.06	17.81	0.92
Reach	553	100-yr	270.00	317.49	320.98	320.98	322.14	0.016655	9.03	37.38	19.67	0.92
Reach	517	2-yr	45.00	316.22	317.07	317.28	317.83	0.066463	6.99	6.44	9.72	1.51
Reach	517	5-yr	90.00	316.22	317.40	317.80	318.71	0.072765	9.16	9.82	10.30	1.65
Reach	517	10-yr	130.00	316.22	317.65	318.17	319.35	0.074488	10.44	12.45	10.76	1.71
Reach	517	25-yr	180.00	316.22	317.95	318.57	320.00	0.072437	11.49	15.67	11.30	1.72
Reach	517	50-yr	220.00	316.22	319.79	318.85	320.28	0.006251	5.67	41.96	18.26	0.57
Reach	517	100-yr	270.00	316.22	320.55	319.19	320.99	0.004293	5.44	57.14	21.55	0.49
Reach	495	2-yr	45.00	315.26	316.76	316.22	316.84	0.004183	2.30	19.60	18.06	0.39
Reach	495	5-yr	90.00	315.26	317.81	316.57	317.89	0.002630	2.21	40.66	21.70	0.29
Reach	495	10-yr	130.00	315.26	318.55	316.85	318.63	0.001985	2.27	57.37	23.51	0.25
Reach	495	25-yr	180.00	315.26	319.39	317.15	319.48	0.001455	2.35	77.93	25.44	0.23
Reach	495	50-yr	220.00	315.26	320.02		320.11	0.001216	2.41	94.35	26.85	0.21
Reach	495	100-yr	270.00	315.26	320.75		320.85	0.001028	2.48	114.76	29.11	0.20
Reach	487	2-yr	45.00	314.95	316.70	316.02	316.81	0.003238	2.63	17.12	15.25	0.39
Reach	487	5-yr	90.00	314.95	317.70	316.48	317.85	0.002278	3.09	29.16	17.34	0.35
Reach	487	10-yr	130.00	314.95	318.40	316.81	318.58	0.002066	3.45	37.70	18.77	0.35
Reach	487	25-yr	180.00	314.95	319.20	317.18	319.42	0.001834	3.79	47.51	20.32	0.34
Reach	487	50-yr	220.00	314.95	319.80	317.47	320.05	0.001696	4.01	54.89	21.48	0.33
Reach	487	100-yr	270.00	314.95	320.50	317.79	320.78	0.001574	4.26	63.52	22.83	0.33

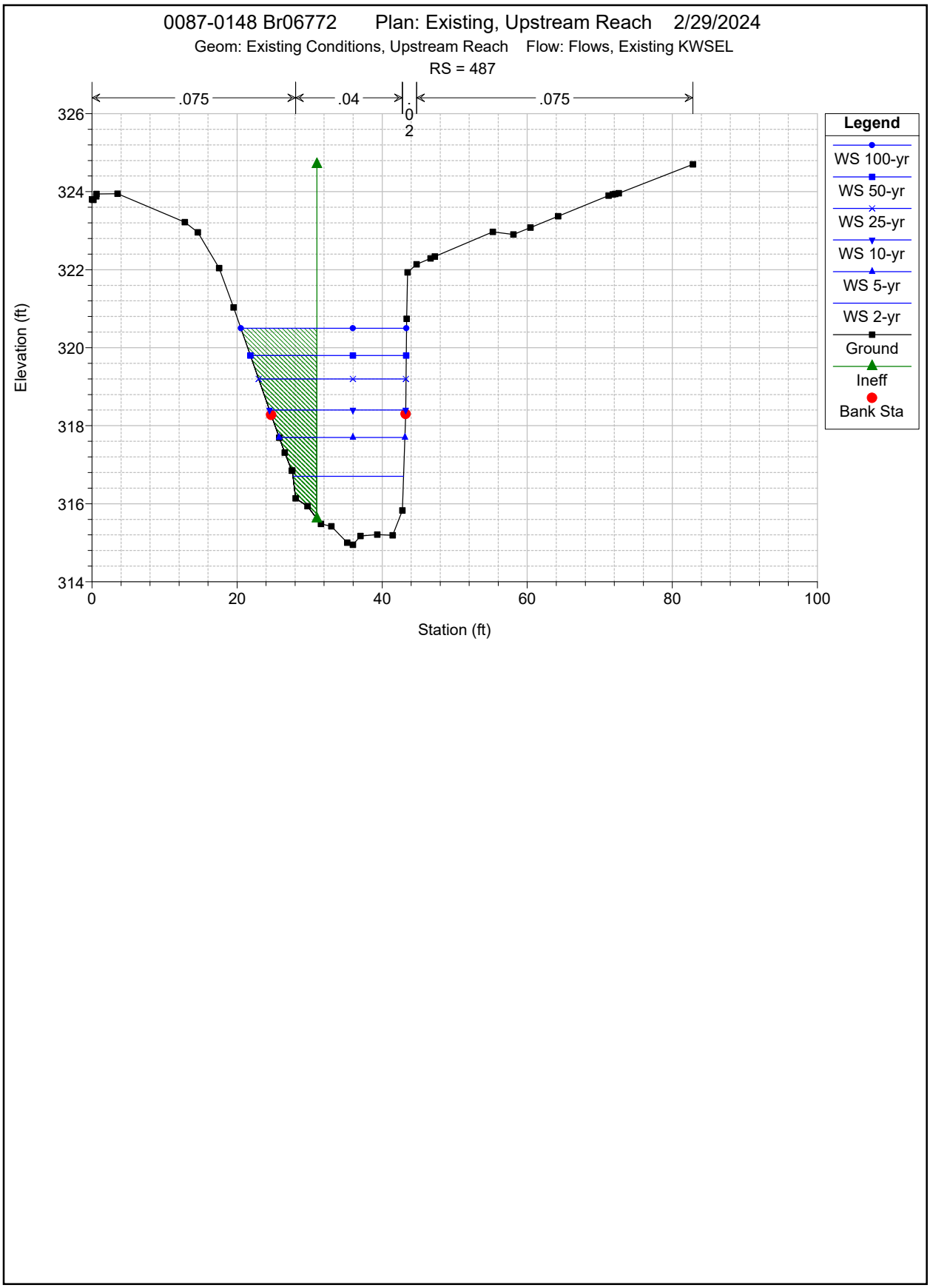
Known WSELs calculated by HY-8


0087-0148 Br06772 Plan: Existing, Upstream Reach 2/29/2024
Geom: Existing Conditions, Upstream Reach Flow: Flows, Existing KWSEL
RS = 719
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta
0087-0148 Br06772 Plan: Existing, Upstream Reach 2/29/2024
Geom: Existing Conditions, Upstream Reach Flow: Flows, Existing KWSEL
RS = 674
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta


0087-0148 Br06772 Plan: Existing, Upstream Reach 2/29/2024
Geom: Existing Conditions, Upstream Reach Flow: Flows, Existing KWSEL
RS = 631
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta
0087-0148 Br06772 Plan: Existing, Upstream Reach 2/29/2024
Geom: Existing Conditions, Upstream Reach Flow: Flows, Existing KWSEL
RS = 592
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta


0087-0148 Br06772 Plan: Existing, Upstream Reach 2/29/2024
Geom: Existing Conditions, Upstream Reach Flow: Flows, Existing KWSEL
RS = 579
.04
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta
0087-0148 Br06772 Plan: Existing, Upstream Reach 2/29/2024
Geom: Existing Conditions, Upstream Reach Flow: Flows, Existing KWSEL
RS = 553
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta

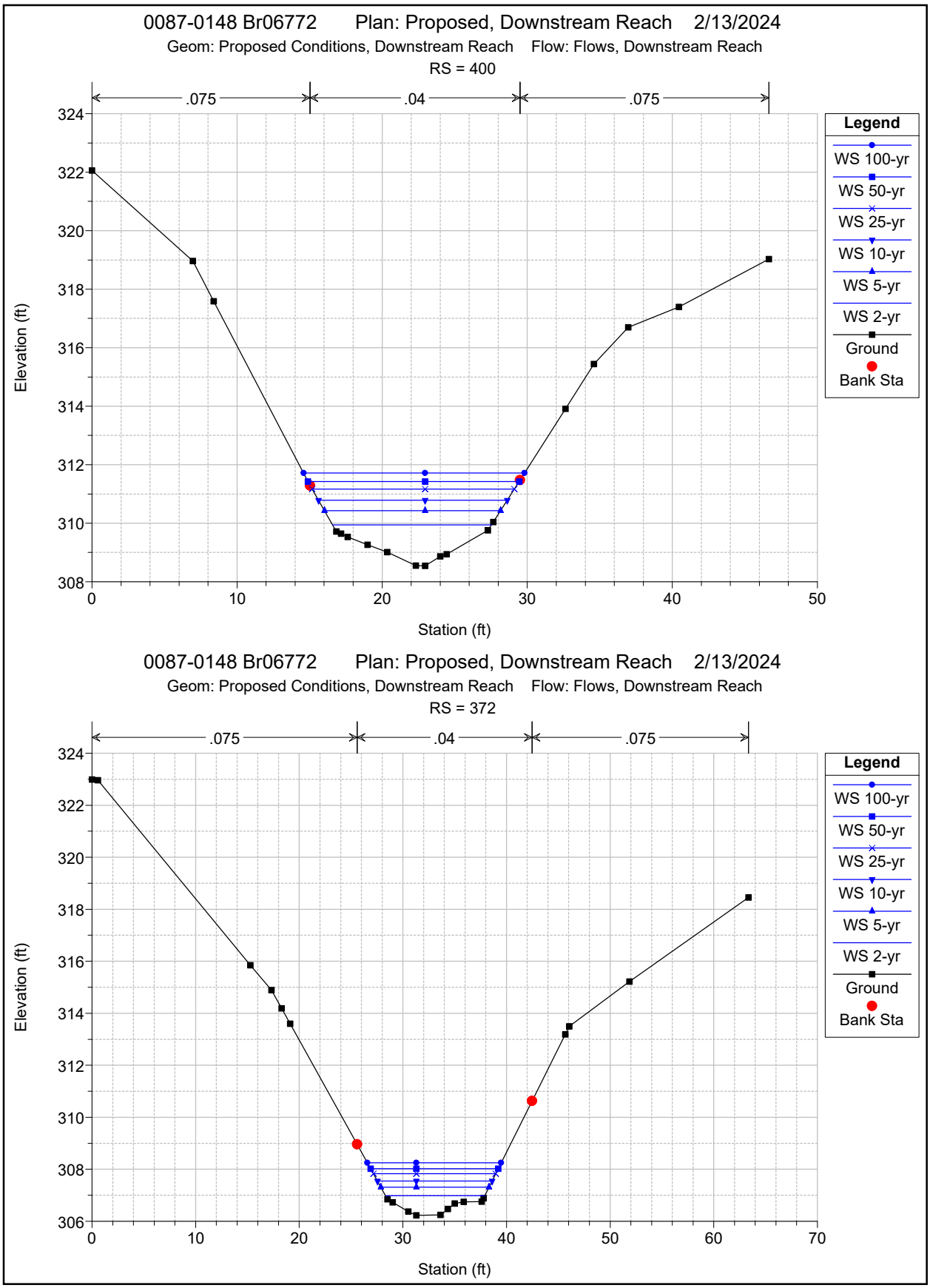

0087-0148 Br06772 Plan: Existing, Upstream Reach 2/29/2024
Geom: Existing Conditions, Upstream Reach Flow: Flows, Existing KWSEL
RS = 517
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta
0087-0148 Br06772 Plan: Existing, Upstream Reach 2/29/2024
Geom: Existing Conditions, Upstream Reach Flow: Flows, Existing KWSEL
RS = 495
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta

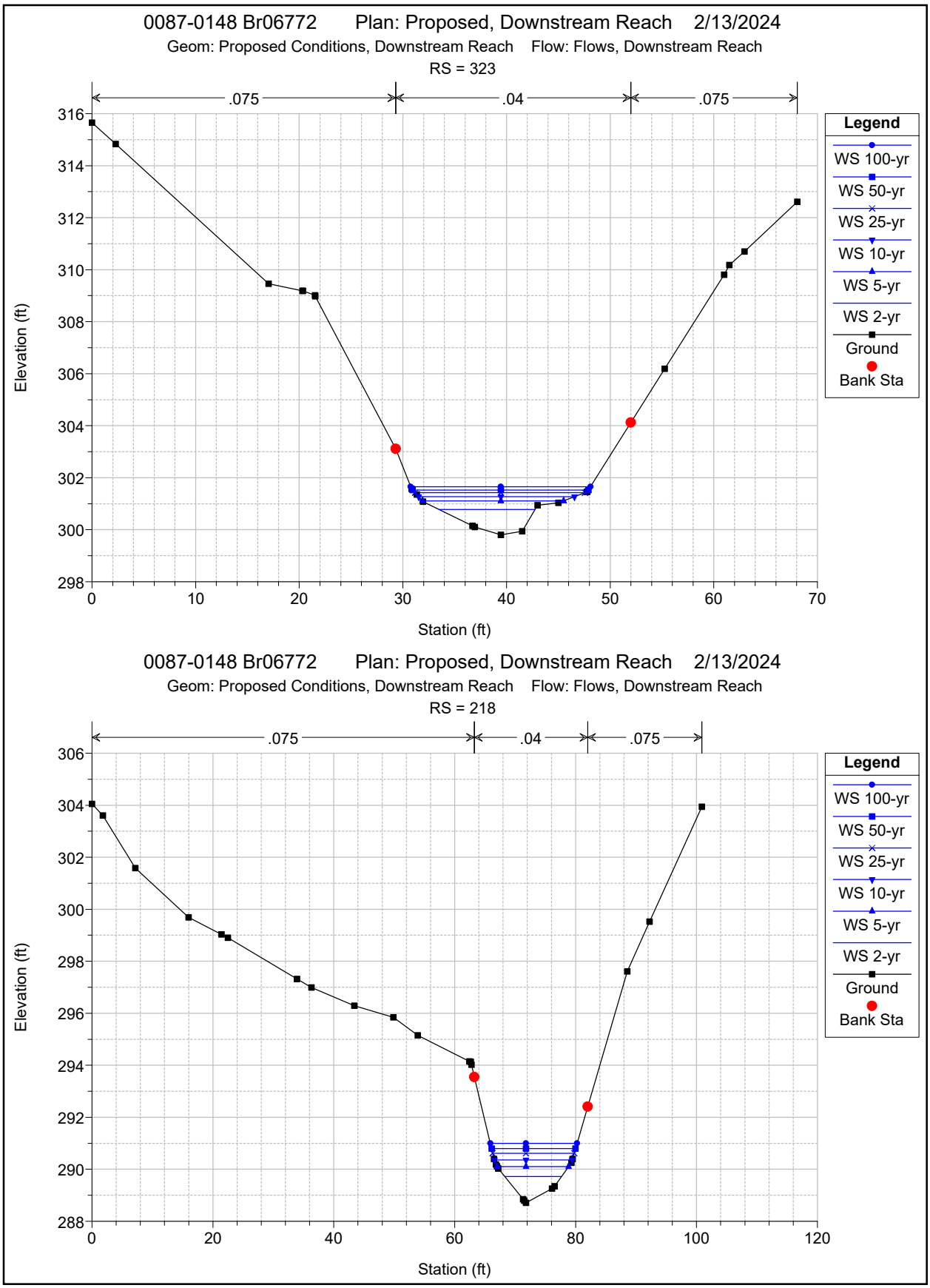

0087-0148 Br06772 Plan: Existing, Upstream Reach 2/29/2024
Geom: Existing Conditions, Upstream Reach Flow: Flows, Existing KWSEL
RS = 487
.075
.04
.02
.075
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
326
324
322
320
318
316
314
0
20
40
60
80
100

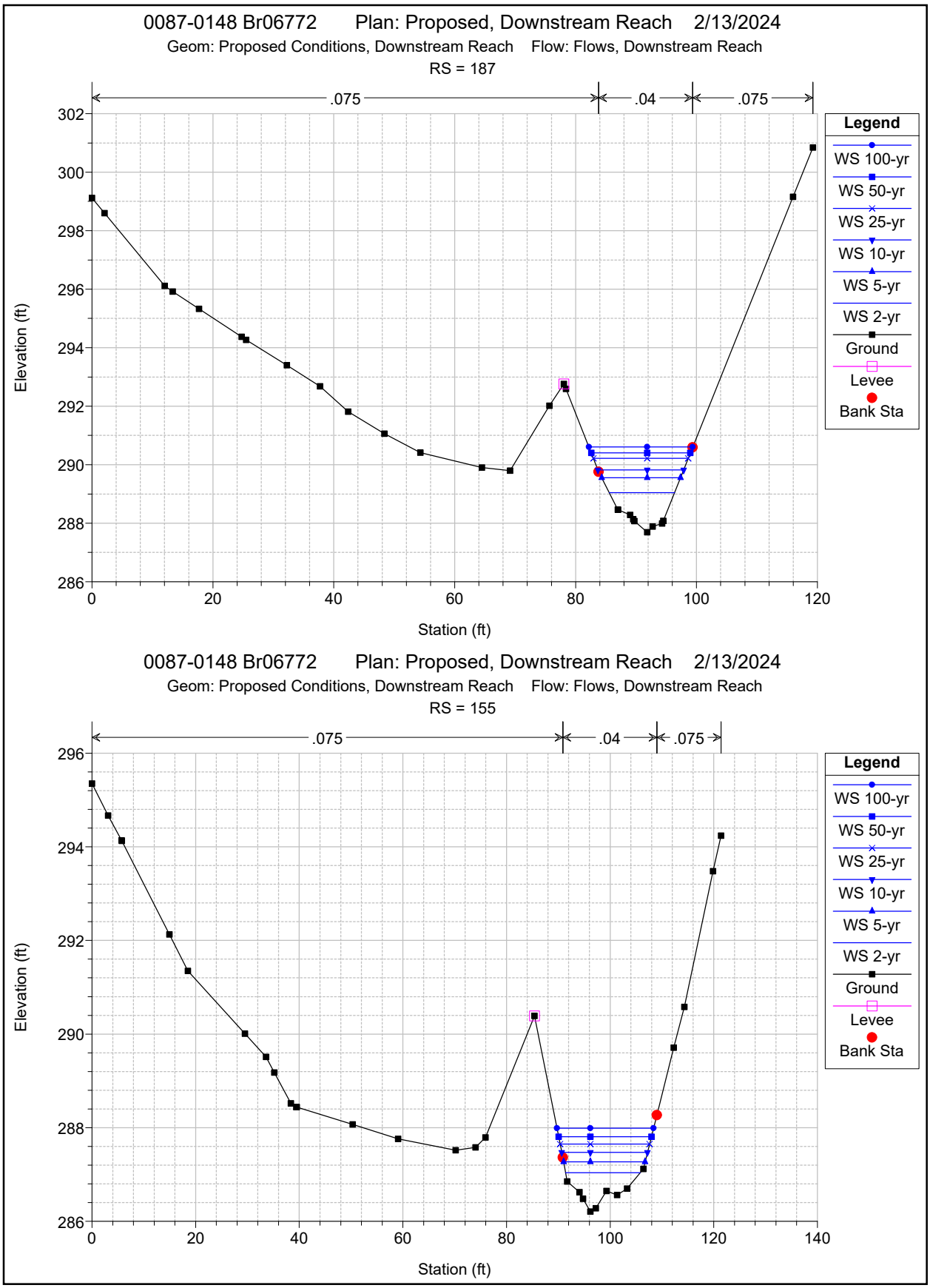
Tailwater Data for HY-8 Model

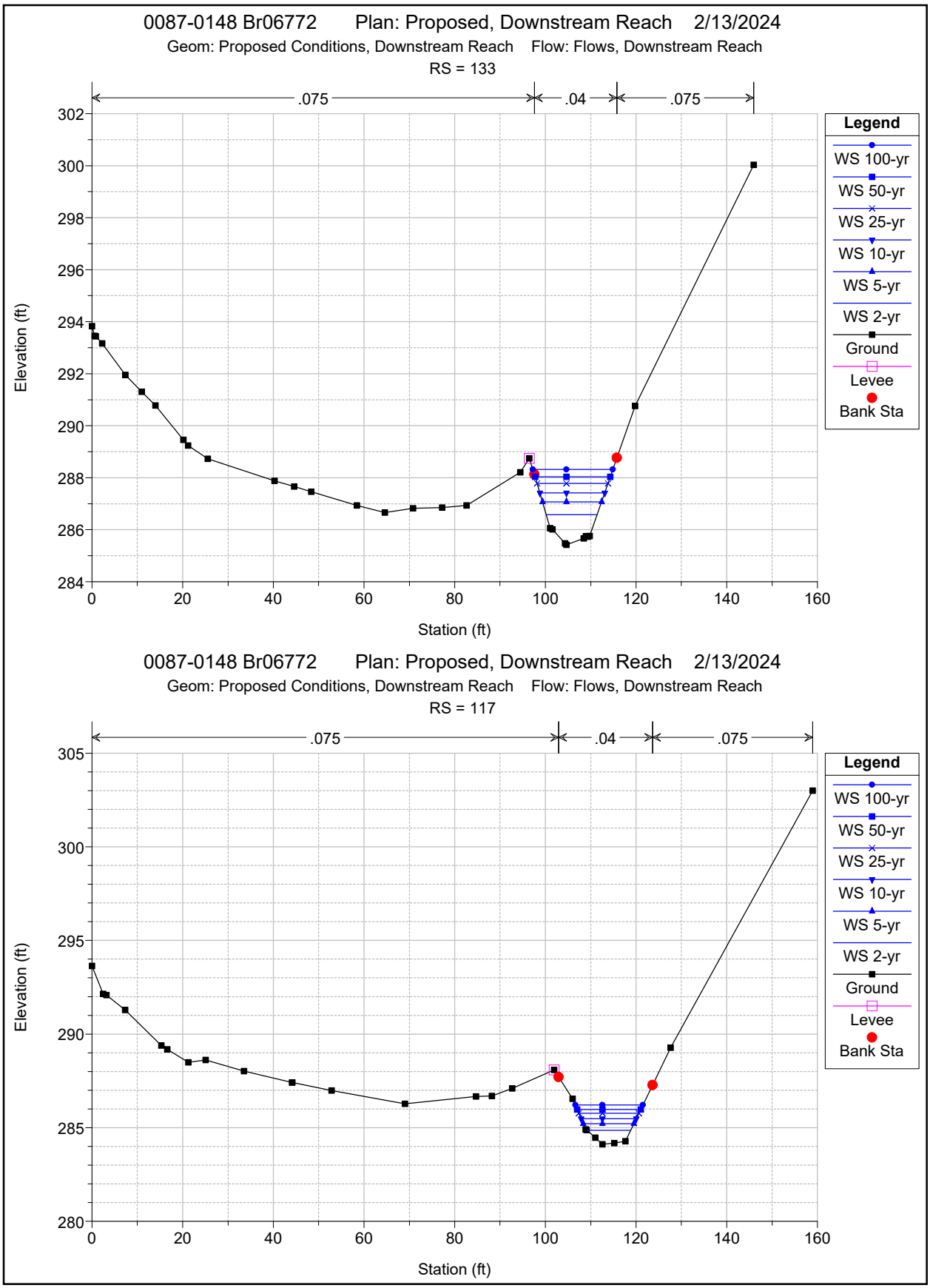
HEC-RAS Plan: Prop DS River: Stream Reach: Reach

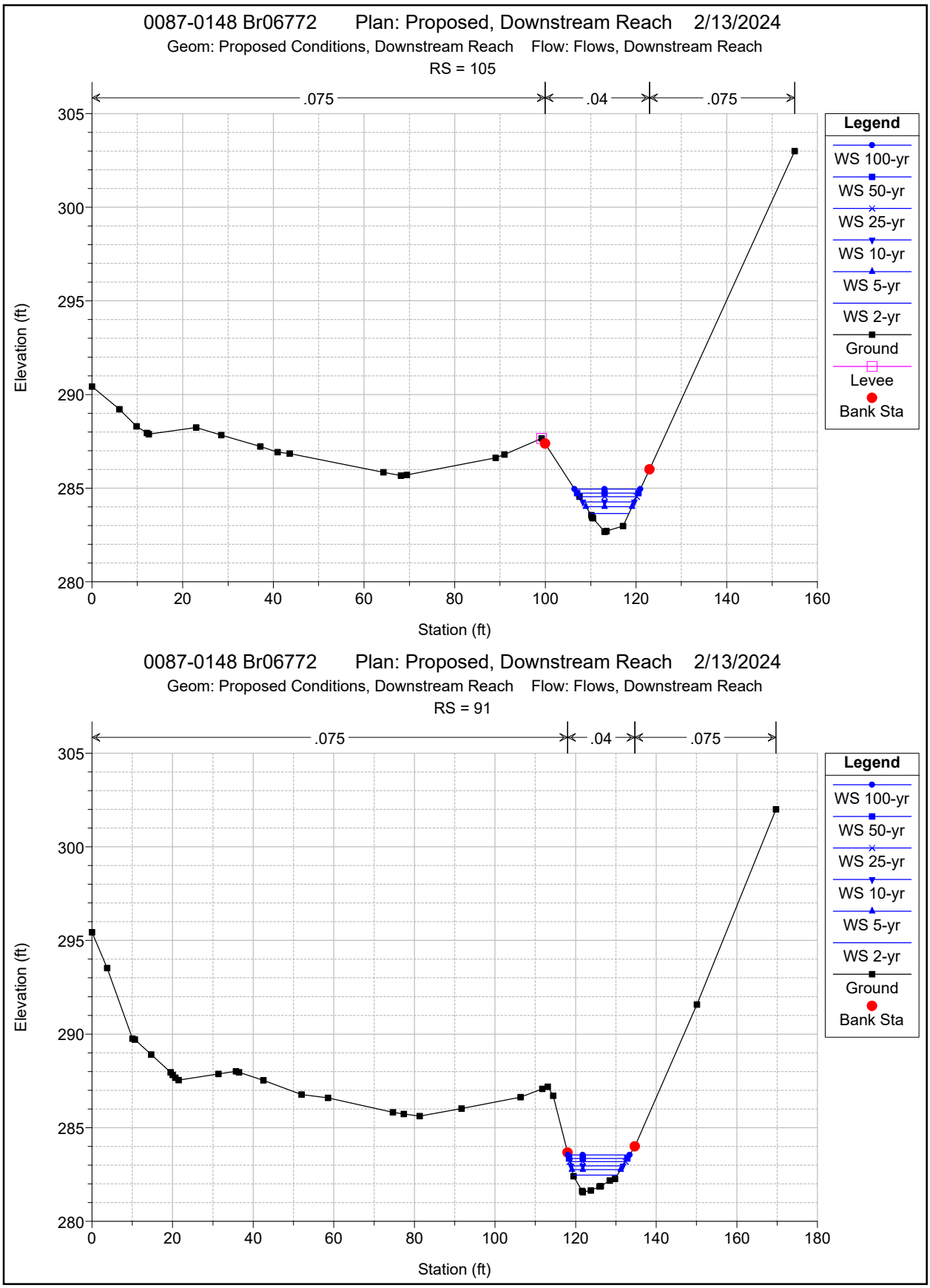
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Reach	400	2-yr	45.00	308.54	309.94	309.94	310.35	0.027281	5.15	8.74	10.94	1.01
Reach	400	5-yr	90.00	308.54	310.43	310.43	311.04	0.024591	6.26	14.39	12.14	1.01
Reach	400	10-yr	130.00	308.54	310.78	310.78	311.52	0.023301	6.90	18.85	13.01	1.01
Reach	400	25-yr	180.00	308.54	311.17	311.17	312.04	0.022315	7.50	23.99	13.94	1.01
Reach	400	50-yr	220.00	308.54	311.43	311.43	312.41	0.021697	7.94	27.73	14.56	1.01
Reach	400	100-yr	270.00	308.54	311.71	311.71	312.83	0.020660	8.47	31.99	15.23	1.01
Reach	372	2-yr	45.00	306.23	306.99	307.41	308.58	0.214919	10.14	4.44	9.57	2.62
Reach	372	5-yr	90.00	306.23	307.31	307.91	309.47	0.161641	11.79	7.64	10.42	2.43
Reach	372	10-yr	130.00	306.23	307.55	308.27	310.04	0.138530	12.67	10.26	11.07	2.32
Reach	372	25-yr	180.00	306.23	307.83	308.66	310.63	0.120452	13.42	13.41	11.79	2.22
Reach	372	50-yr	220.00	306.23	308.02	308.93	311.04	0.111517	13.93	15.79	12.32	2.17
Reach	372	100-yr	270.00	306.23	308.25	309.22	311.52	0.104440	14.50	18.61	12.91	2.13
Reach	323	2-yr	45.00	299.80	300.78	301.12	301.77	0.094103	7.98	5.64	9.27	1.80
Reach	323	5-yr	90.00	299.80	301.11	301.55	302.57	0.118270	9.69	9.29	13.63	2.07
Reach	323	10-yr	130.00	299.80	301.27	301.84	303.23	0.135275	11.24	11.56	15.02	2.26
Reach	323	25-yr	180.00	299.80	301.42	302.12	303.98	0.152775	12.82	14.04	16.40	2.44
Reach	323	50-yr	220.00	299.80	301.53	302.34	304.55	0.162336	13.95	15.78	16.97	2.55
Reach	323	100-yr	270.00	299.80	301.65	302.60	305.18	0.165302	15.06	17.93	17.35	2.61
Reach	218	2-yr	45.00	288.71	289.72	290.06	290.83	0.114177	8.45	5.32	9.39	1.98
Reach	218	5-yr	90.00	288.71	290.11	290.53	291.52	0.092875	9.54	9.44	11.84	1.88
Reach	218	10-yr	130.00	288.71	290.36	290.86	292.02	0.084201	10.35	12.56	12.87	1.85
Reach	218	25-yr	180.00	288.71	290.62	291.22	292.59	0.078067	11.25	15.99	13.48	1.82
Reach	218	50-yr	220.00	288.71	290.80	291.47	293.00	0.075764	11.90	18.48	13.89	1.82
Reach	218	100-yr	270.00	288.71	291.00	291.77	293.51	0.075580	12.71	21.25	14.34	1.84
Reach	187	2-yr	45.00	287.69	289.05	289.05	289.45	0.026076	5.10	8.83	10.80	0.99
Reach	187	5-yr	90.00	287.69	289.56	289.56	290.12	0.023813	6.05	14.87	13.02	1.00
Reach	187	10-yr	130.00	287.69	289.83	289.90	290.59	0.026505	7.01	18.54	14.16	1.08
Reach	187	25-yr	180.00	287.69	290.22	290.25	291.08	0.022548	7.44	24.37	15.67	1.03
Reach	187	50-yr	220.00	287.69	290.40	290.51	291.43	0.024140	8.14	27.36	16.39	1.08
Reach	187	100-yr	270.00	287.69	290.61	290.79	291.84	0.026020	8.94	30.76	17.17	1.13
Reach	155	2-yr	45.00	286.21	287.04	287.29	287.86	0.121362	7.30	6.17	14.39	1.97
Reach	155	5-yr	90.00	286.21	287.27	287.67	288.61	0.121758	9.28	9.70	15.74	2.08
Reach	155	10-yr	130.00	286.21	287.47	287.94	289.04	0.102738	10.05	12.94	16.54	1.99
Reach	155	25-yr	180.00	286.21	287.65	288.25	289.64	0.102893	11.33	15.95	17.26	2.05
Reach	155	50-yr	220.00	286.21	287.81	288.46	289.98	0.093650	11.82	18.76	17.91	2.00
Reach	155	100-yr	270.00	286.21	287.99	288.70	290.36	0.086018	12.38	22.11	18.66	1.96
Reach	133	2-yr	45.00	285.42	286.58	286.58	286.98	0.026771	5.07	8.87	11.23	1.01
Reach	133	5-yr	90.00	285.42	287.07	287.07	287.64	0.023705	6.04	14.89	13.04	1.00
Reach	133	10-yr	130.00	285.42	287.42	287.42	288.10	0.022663	6.64	19.58	14.30	1.00
Reach	133	25-yr	180.00	285.42	287.78	287.78	288.58	0.021637	7.17	25.09	15.65	1.00
Reach	133	50-yr	220.00	285.42	288.04	288.04	288.92	0.021262	7.55	29.16	16.58	1.00
Reach	133	100-yr	270.00	285.42	288.32	288.32	289.30	0.020512	7.96	33.96	17.64	1.00
Reach	117	2-yr	45.00	284.11	284.86	285.23	286.08	0.138771	8.86	5.08	9.69	2.16
Reach	117	5-yr	90.00	284.11	285.22	285.72	286.84	0.109309	10.23	8.80	11.18	2.03
Reach	117	10-yr	130.00	284.11	285.48	286.06	287.34	0.094509	10.93	11.89	12.17	1.95
Reach	117	25-yr	180.00	284.11	285.77	286.43	287.86	0.084402	11.60	15.51	13.24	1.89
Reach	117	50-yr	220.00	284.11	285.97	286.69	288.21	0.078451	12.00	18.33	14.02	1.85
Reach	117	100-yr	270.00	284.11	286.21	286.99	288.61	0.073397	12.44	21.70	14.90	1.82
Reach	105	2-yr	45.00	282.67	283.65	283.99	284.70	0.093556	8.22	5.47	8.55	1.81
Reach	105	5-yr	90.00	282.67	284.01	284.52	285.62	0.097484	10.21	8.82	10.19	1.93
Reach	105	10-yr	130.00	282.67	284.26	284.89	286.21	0.094733	11.20	11.61	11.38	1.95
Reach	105	25-yr	180.00	282.67	284.54	285.26	286.81	0.091385	12.08	14.90	12.64	1.96
Reach	105	50-yr	220.00	282.67	284.73	285.52	287.21	0.088787	12.61	17.44	13.54	1.96
Reach	105	100-yr	270.00	282.67	284.95	285.81	287.64	0.085999	13.17	20.51	14.54	1.95
Reach	91	2-yr	45.00	281.56	282.47	282.74	283.35	0.093385	7.50	6.00	10.93	1.78
Reach	91	5-yr	90.00	281.56	282.76	283.21	284.21	0.099926	9.66	9.32	12.09	1.94
Reach	91	10-yr	130.00	281.56	282.97	283.53	284.82	0.101831	10.93	11.89	12.92	2.01
Reach	91	25-yr	180.00	281.56	283.19	283.88	285.47	0.102354	12.11	14.86	13.81	2.06
Reach	91	50-yr	220.00	281.56	283.35	284.11	285.89	0.100475	12.79	17.20	14.48	2.07
Reach	91	100-yr	270.00	281.56	283.54	284.37	286.37	0.098271	13.49	20.02	15.24	2.07
Reach	53	2-yr	45.00	279.77	281.22	281.22	281.64	0.027045	5.19	8.66	10.58	1.01
Reach	53	5-yr	90.00	279.77	281.70	281.74	282.30	0.027000	6.23	14.45	13.38	1.06
Reach	53	10-yr	130.00	279.77	282.03	282.07	282.75	0.025584	6.80	19.12	15.05	1.06
Reach	53	25-yr	180.00	279.77	282.27	282.40	283.24	0.027752	7.88	22.97	16.03	1.13
Reach	53	50-yr	220.00	279.77	282.44	282.65	283.60	0.029014	8.64	25.74	16.69	1.18
Reach	53	100-yr	270.00	279.77	282.64	282.92	284.03	0.030107	9.48	29.09	17.47	1.22

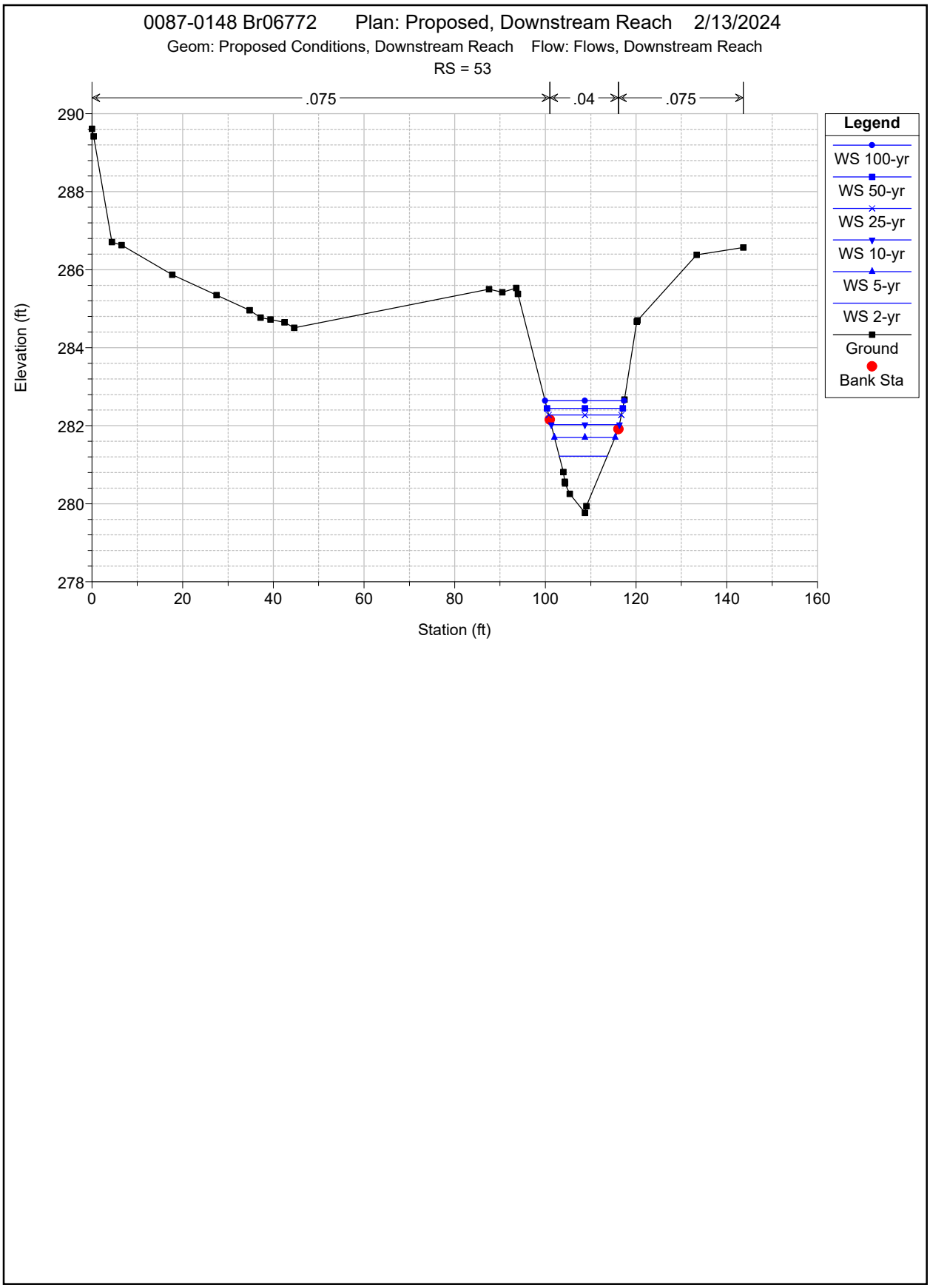

0087-0148 Br06772 Plan: Proposed, Downstream Reach 2/13/2024
Geom: Proposed Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 400
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta
0087-0148 Br06772 Plan: Proposed, Downstream Reach 2/13/2024
Geom: Proposed Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 372
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta


0087-0148 Br06772 Plan: Proposed, Downstream Reach 2/13/2024
Geom: Proposed Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 323
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta
0087-0148 Br06772 Plan: Proposed, Downstream Reach 2/13/2024
Geom: Proposed Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 218
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta


0087-0148 Br06772 Plan: Proposed, Downstream Reach 2/13/2024
Geom: Proposed Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 187
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Levee
Bank Sta
0087-0148 Br06772 Plan: Proposed, Downstream Reach 2/13/2024
Geom: Proposed Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 155
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Levee
Bank Sta


0087-0148 Br06772 Plan: Proposed, Downstream Reach 2/13/2024
Geom: Proposed Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 133
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Levee
Bank Sta
0087-0148 Br06772 Plan: Proposed, Downstream Reach 2/13/2024
Geom: Proposed Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 117
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Levee
Bank Sta


0087-0148 Br06772 Plan: Proposed, Downstream Reach 2/13/2024
Geom: Proposed Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 105
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Levee
Bank Sta
0087-0148 Br06772 Plan: Proposed, Downstream Reach 2/13/2024
Geom: Proposed Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 91
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta


0087-0148 Br06772 Plan: Proposed, Downstream Reach 2/13/2024
Geom: Proposed Conditions, Downstream Reach Flow: Flows, Downstream Reach
RS = 53
.075
.04
.075
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta
Elevation (ft)
290
288
286
284
282
280
278
0
20
40
60
80
100
120
140
160
Station (ft)

HY-8 Culvert Analysis Report - Proposed

Crossing Discharge Data

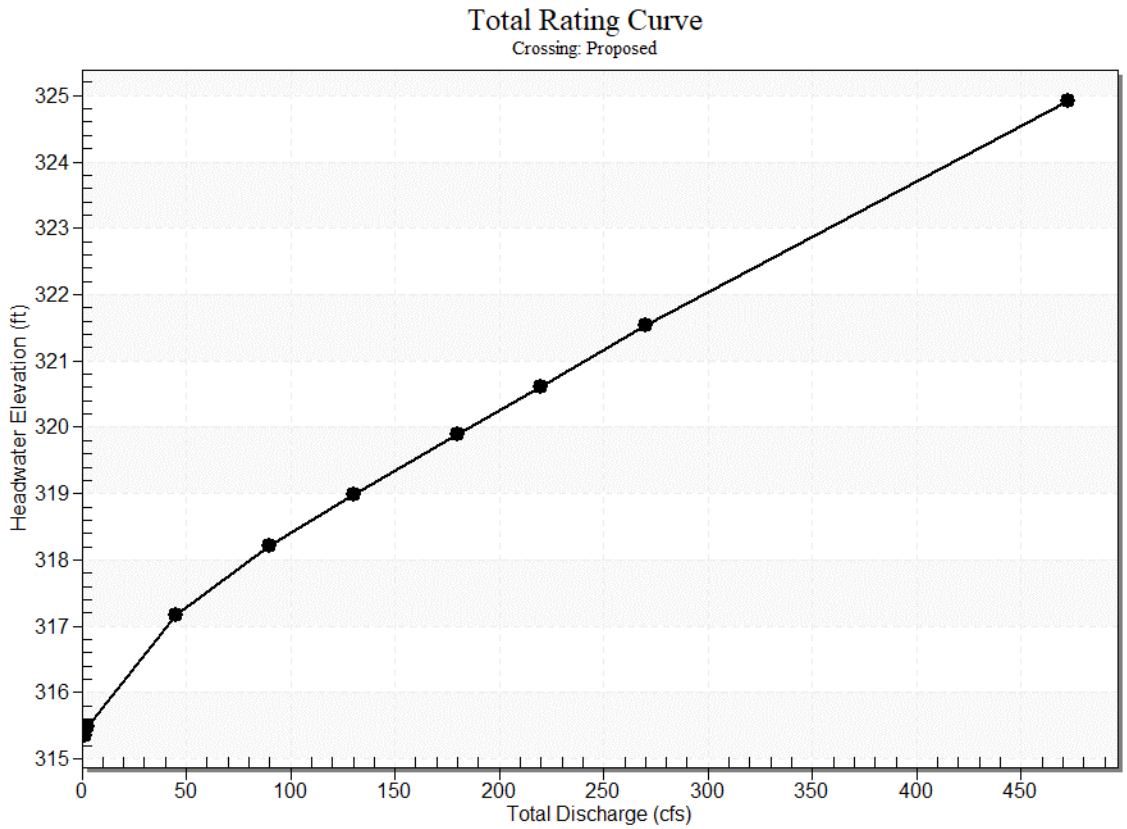
Discharge Selection Method: User Defined

Known WSELs for upstream HEC-RAS model downstream boundary condition

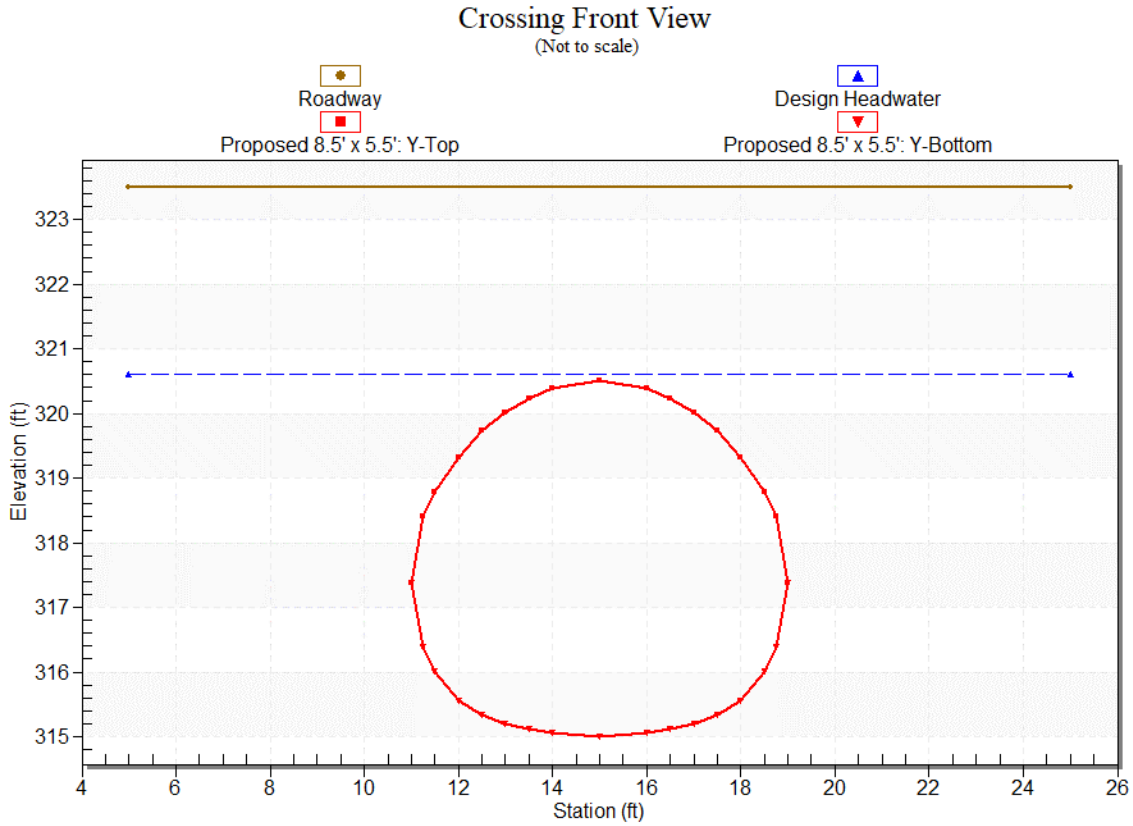
Table 1 - Summary of Culvert Flows at Crossing: Proposed

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Proposed 8.5' x 5.5' Discharge (cfs)	Roadway Discharge (cfs)	Iterations
315.36	1	1.30	1.30	0.00	1
315.49	2	2.50	2.50	0.00	1
317.17	3	45.00	45.00	0.00	1
318.21	4	90.00	90.00	0.00	1
318.99	5	130.00	130.00	0.00	1
319.90	6	180.00	180.00	0.00	1
320.61	7	220.00	220.00	0.00	1
321.54	8	270.00	270.00	0.00	1
323.50	Overtopping	347.87	347.87	0.00	Overtopping

Rating Curve Plot for Crossing: Proposed



Crossing Front View (Roadway Profile): Proposed



Culvert Data: Proposed 8.5' x 5.5'

Table 1 - Culvert Summary Table: Proposed 8.5' x 5.5'

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
1	1.30 cfs	1.30 cfs	315.36	0.33	0.355	2-M2c	0.32	0.22	0.22	0.40	2.16	2.50
2	2.50 cfs	2.50 cfs	315.49	0.45	0.489	2-M2c	0.43	0.31	0.31	0.50	2.56	2.80
3	45.00 cfs	45.00 cfs	317.17	1.81	2.168	2-M2c	1.84	1.36	1.36	1.40	5.79	5.20
4	90.00 cfs	90.00 cfs	318.21	2.68	3.211	2-M2c	2.75	1.98	1.98	1.90	7.19	6.30

5	130.00 cfs	130.00 cfs	318.99	3.40	3.994	2-M 2c	3.53	2.43	2.43	2.30	8.07	6.90
6	180.00 cfs	180.00 cfs	319.90	4.27	4.896	2-M 2c	5.50	2.90	2.90	2.70	9.08	7.50
7	220.00 cfs	220.00 cfs	320.61	4.89	5.609	7-M 2c	5.50	3.25	3.25	2.90	9.78	7.90
8	270.00 cfs	270.00 cfs	321.54	5.79	6.544	7-M 2c	5.50	3.64	3.64	3.20	10.65	8.50

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

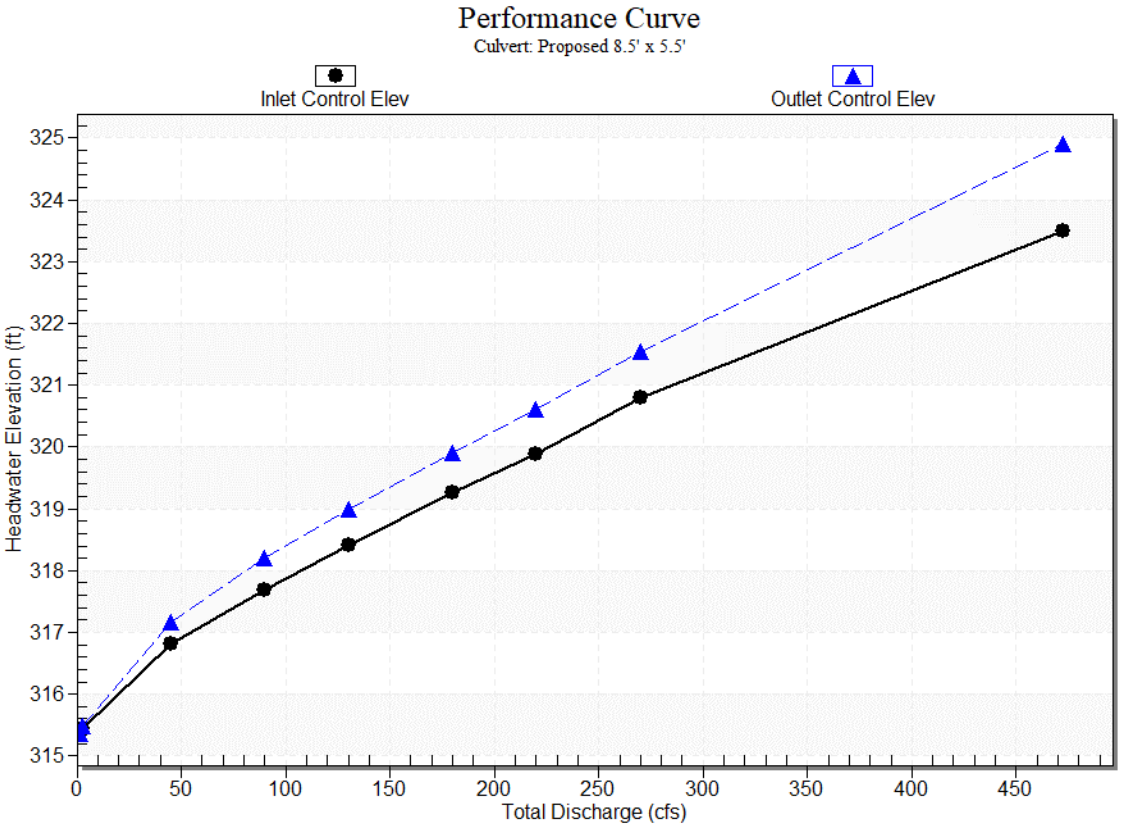
Inlet Elevation (invert): 315.00 ft,

Outlet Elevation (invert): 314.60 ft

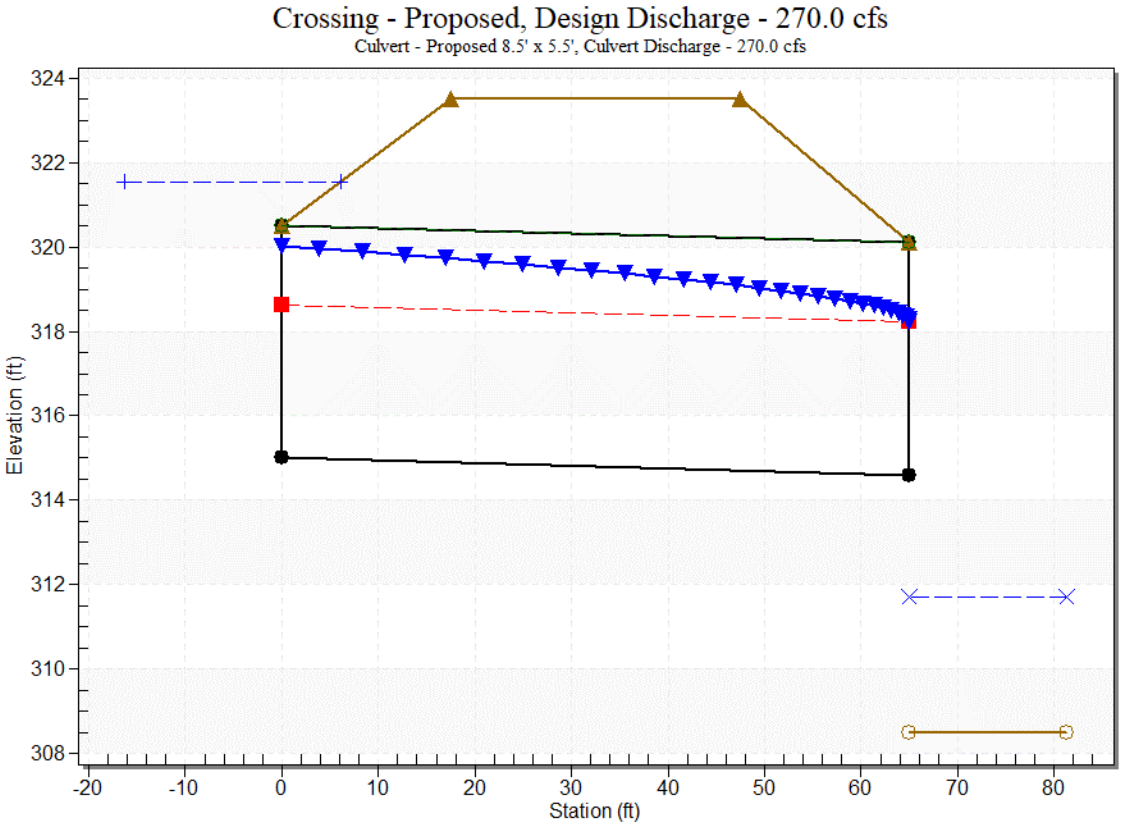
Culvert Length: 65.00 ft,

Culvert Slope: 0.0062

Culvert Performance Curve Plot: Proposed 8.5' x 5.5'



Water Surface Profile Plot for Culvert: Proposed 8.5' x 5.5'



Site Data - Proposed 8.5' x 5.5'

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 315.00 ft

Outlet Station: 65.00 ft

Outlet Elevation: 314.60 ft

Number of Barrels: 1

Culvert Data Summary - Proposed 8.5' x 5.5'

Barrel Shape: User Defined

Barrel Span: 8.00 ft

Barrel Rise: 5.50 ft

Barrel Material: Corrugated Metal Riveted or Welded

Embedment: 0.00 in

Barrel Manning's n: 0.0340 (top and sides)

Manning's n: 0.0340 (bottom)

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall (Ke=0.5)

Inlet Depression: None

WSELs and Velocities from downstream HEC-RAS model

Tailwater Data for Crossing: Proposed

Table 2 - Downstream Channel Rating Curve (Crossing: Proposed)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)
0.00	308.54	0.00	0.00
1.30	308.90	0.36	2.50
2.50	309.00	0.46	2.80
45.00	309.90	1.36	5.20
90.00	310.40	1.86	6.30
130.00	310.80	2.26	6.90
180.00	311.20	2.66	7.50
220.00	311.40	2.86	7.90
270.00	311.70	3.16	8.50

Tailwater Channel Data - Proposed

Tailwater Channel Option: Enter Rating Curve

Channel Invert Elevation: Enter Rating Curve

Roadway Data for Crossing: Proposed

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 20.00 ft

Crest Elevation: 323.50 ft

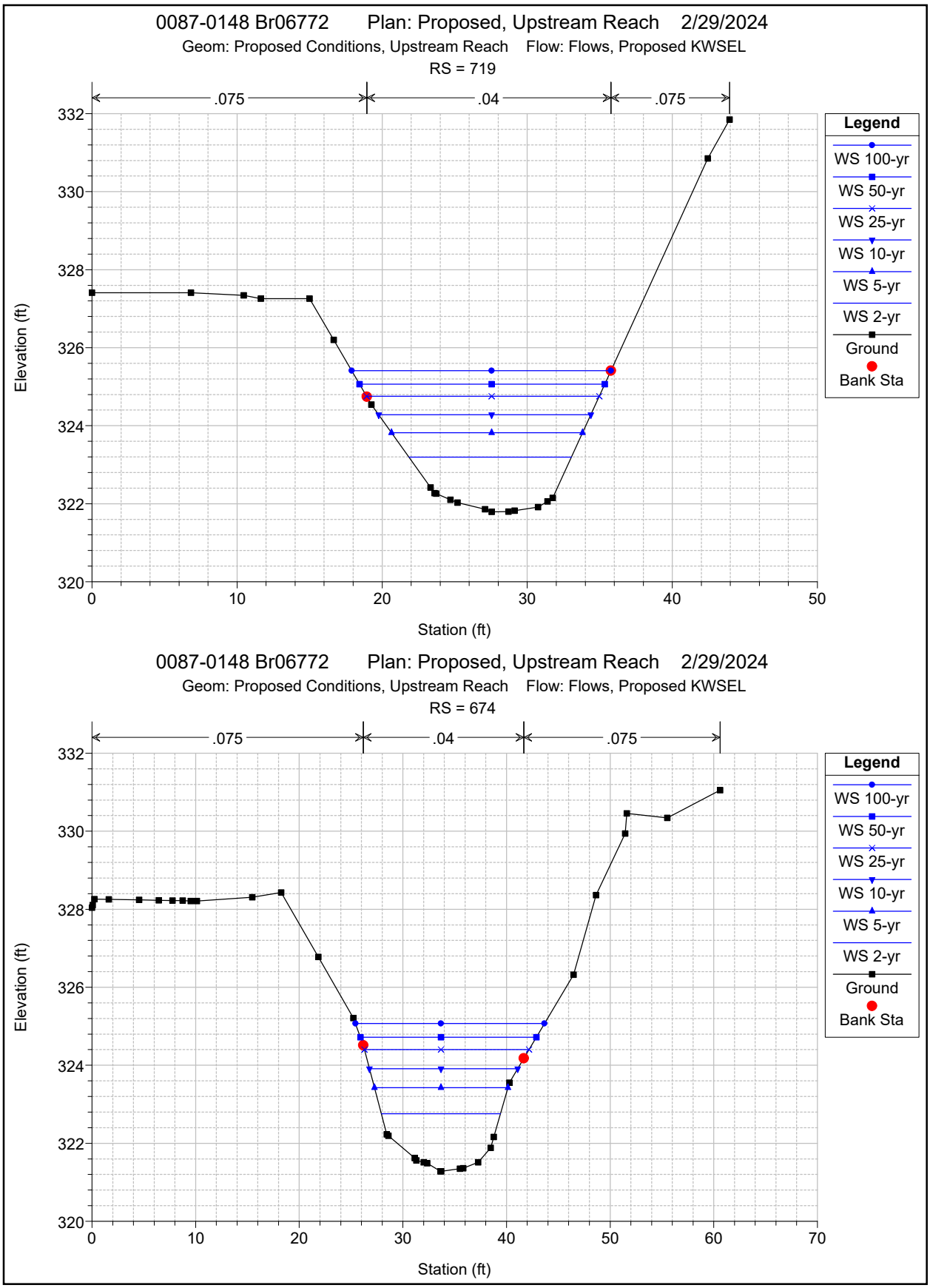
Roadway Surface: Paved

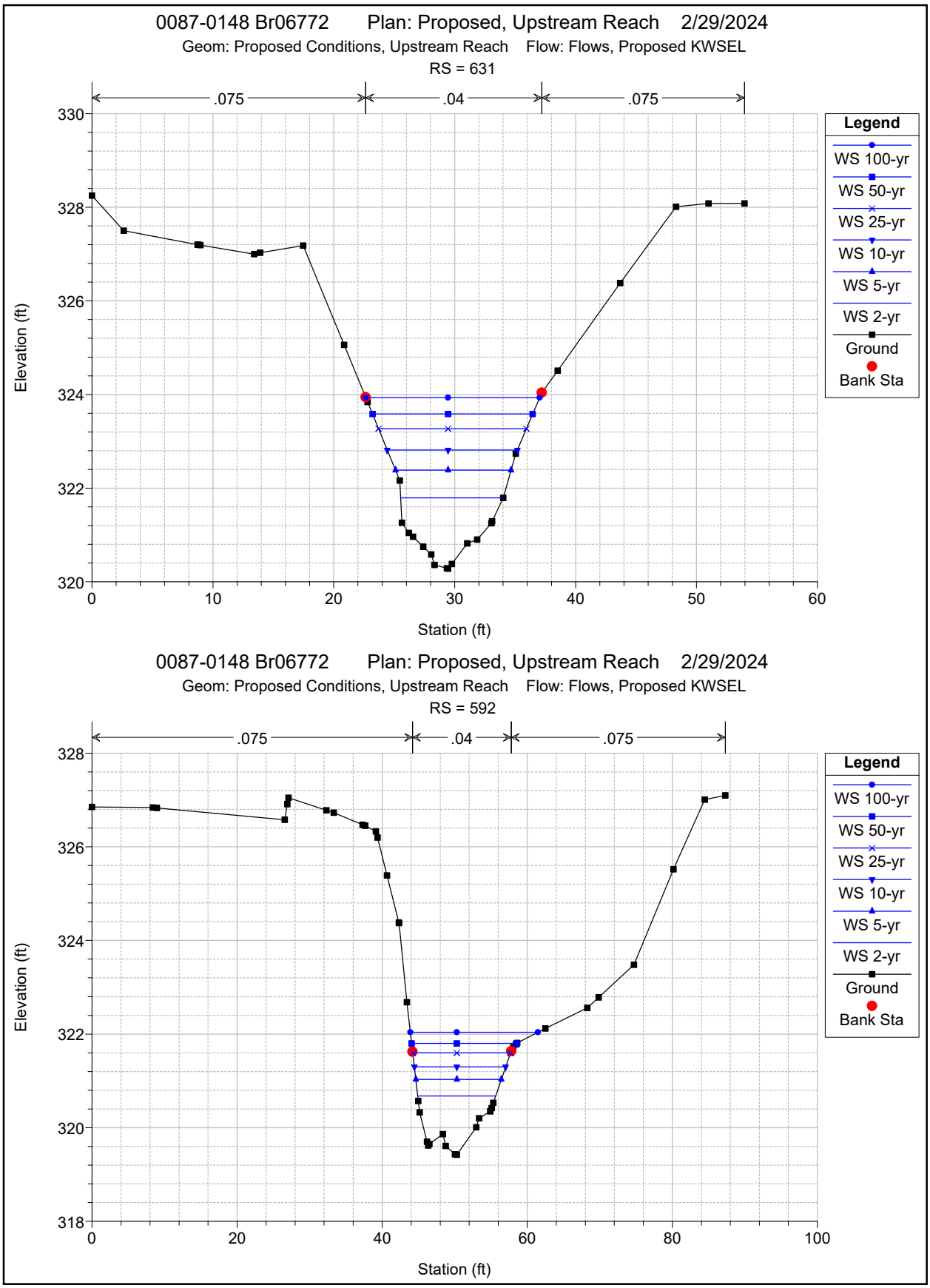
Roadway Top Width: 30.00 ft

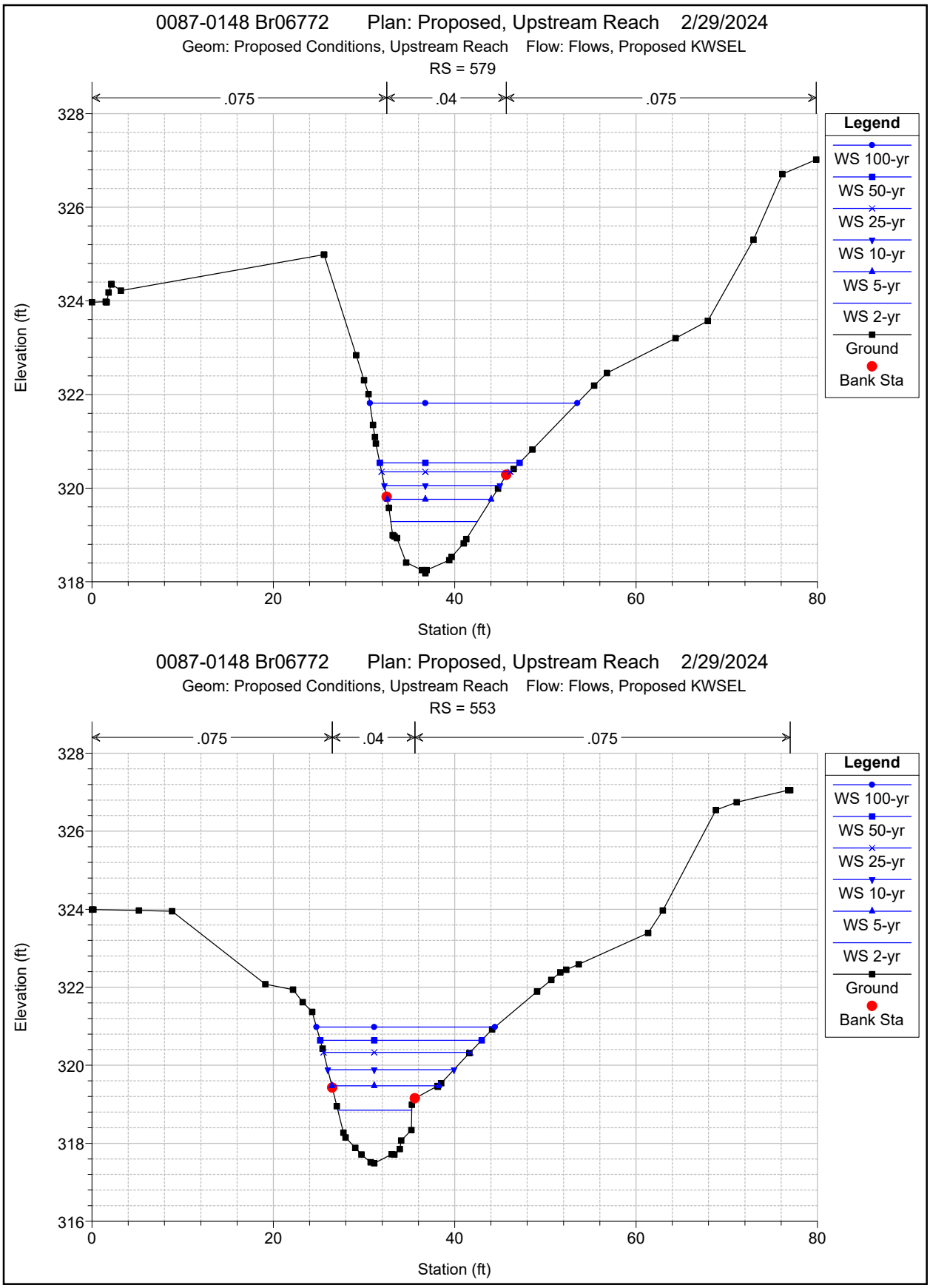
HEC-RAS Plan: Prop US River: Stream Reach: Reach

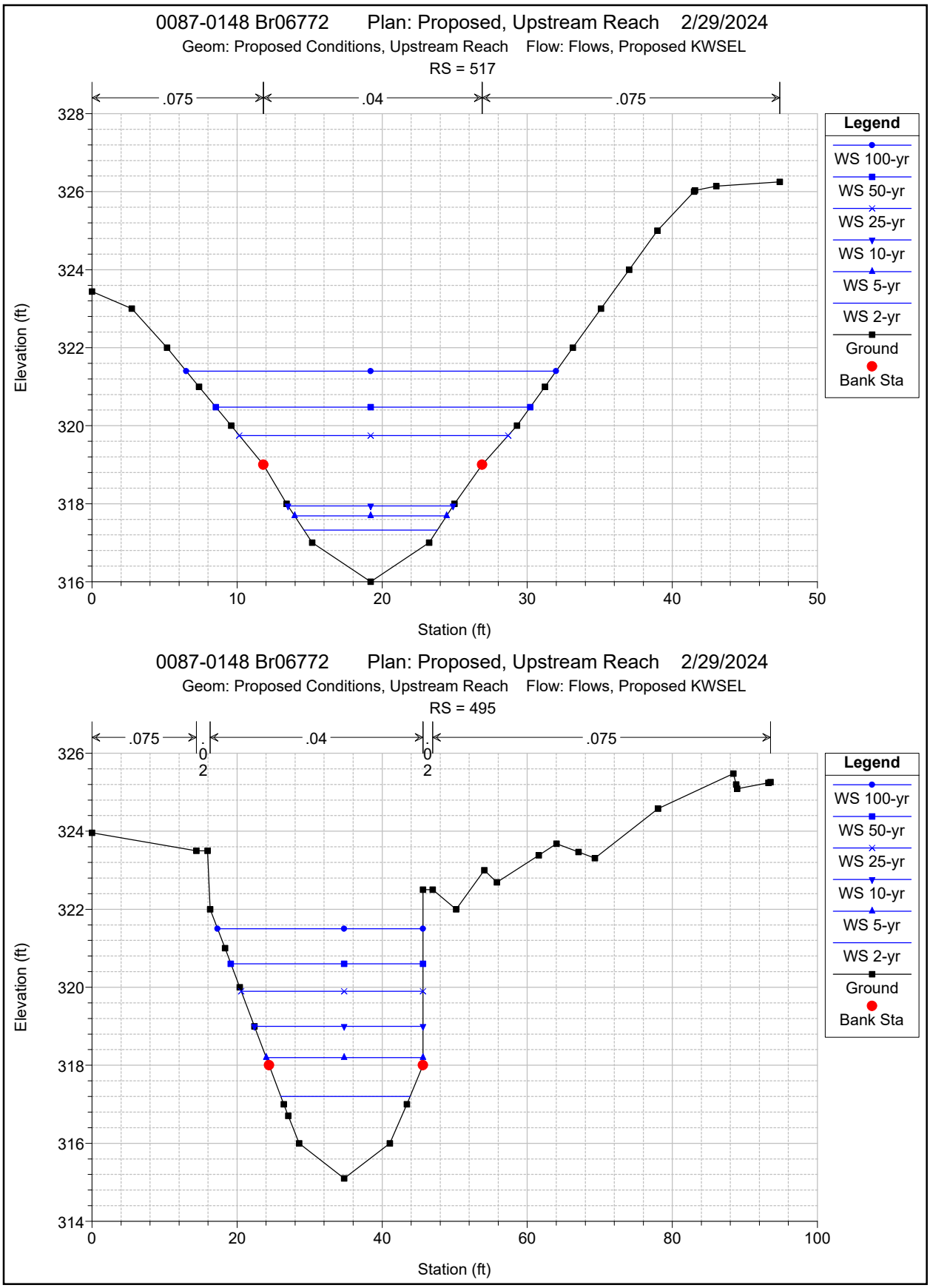
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach	719	2-yr	45.00	321.79	323.19	322.91	323.43	0.011026	3.86	11.66	11.20	0.67
Reach	719	5-yr	90.00	321.79	323.82	323.43	324.16	0.010536	4.67	19.26	13.16	0.68
Reach	719	10-yr	130.00	321.79	324.28	323.79	324.68	0.009785	5.05	25.72	14.63	0.67
Reach	719	25-yr	180.00	321.79	324.76	324.18	325.22	0.009331	5.45	33.01	16.04	0.67
Reach	719	50-yr	220.00	321.79	325.06	324.45	325.59	0.009048	5.79	38.07	16.90	0.67
Reach	719	100-yr	270.00	321.79	325.41	324.75	326.00	0.008869	6.17	44.05	17.87	0.67
Reach	674	2-yr	45.00	321.28	322.75		322.96	0.009475	3.64	12.35	11.49	0.62
Reach	674	5-yr	90.00	321.28	323.42		323.72	0.008504	4.39	20.50	12.87	0.61
Reach	674	10-yr	130.00	321.28	323.91		324.27	0.008185	4.80	27.10	14.29	0.61
Reach	674	25-yr	180.00	321.28	324.40		324.83	0.007864	5.23	34.49	15.87	0.62
Reach	674	50-yr	220.00	321.28	324.72		325.20	0.007590	5.58	39.74	16.98	0.62
Reach	674	100-yr	270.00	321.28	325.07		325.63	0.007411	6.01	45.88	18.24	0.62
Reach	631	2-yr	45.00	320.28	321.79	321.79	322.28	0.027817	5.59	8.04	8.48	1.01
Reach	631	5-yr	90.00	320.28	322.38	322.38	323.09	0.025777	6.76	13.32	9.56	1.01
Reach	631	10-yr	130.00	320.28	322.82	322.82	323.65	0.024610	7.34	17.72	10.76	1.01
Reach	631	25-yr	180.00	320.28	323.27	323.27	324.23	0.023632	7.84	22.96	12.23	1.01
Reach	631	50-yr	220.00	320.28	323.58	323.58	324.62	0.023021	8.16	26.95	13.25	1.01
Reach	631	100-yr	270.00	320.28	323.93	323.93	325.06	0.022417	8.51	31.74	14.37	1.01
Reach	592	2-yr	45.00	319.42	320.68	320.70	321.11	0.030445	5.32	8.46	10.73	1.06
Reach	592	5-yr	90.00	319.42	321.03	321.20	321.84	0.038449	7.20	12.49	11.80	1.23
Reach	592	10-yr	130.00	319.42	321.30	321.56	322.36	0.040865	8.25	15.76	12.59	1.30
Reach	592	25-yr	180.00	319.42	321.60	321.92	322.91	0.041853	9.18	19.62	13.47	1.34
Reach	592	50-yr	220.00	319.42	321.80	322.21	323.30	0.040742	9.82	22.46	14.47	1.35
Reach	592	100-yr	270.00	319.42	322.04	322.56	323.75	0.038849	10.50	26.29	17.61	1.35
Reach	579	2-yr	45.00	318.18	319.29	319.48	319.99	0.055396	6.71	6.71	9.54	1.41
Reach	579	5-yr	90.00	318.18	319.76	319.99	320.68	0.045515	7.70	11.69	11.48	1.35
Reach	579	10-yr	130.00	318.18	320.06	320.35	321.19	0.043879	8.53	15.27	12.74	1.36
Reach	579	25-yr	180.00	318.18	320.35	320.72	321.74	0.043034	9.45	19.20	14.19	1.39
Reach	579	50-yr	220.00	318.18	320.54	320.98	322.15	0.042480	10.19	22.00	15.41	1.41
Reach	579	100-yr	270.00	318.18	321.81	321.29	322.49	0.008549	6.72	46.47	22.87	0.69
Reach	553	2-yr	45.00	317.49	318.85	318.85	319.34	0.027862	5.66	7.95	8.15	1.01
Reach	553	5-yr	90.00	317.49	319.47	319.47	320.17	0.023368	6.69	13.81	11.79	0.97
Reach	553	10-yr	130.00	317.49	319.89	319.89	320.72	0.020447	7.39	19.15	13.91	0.95
Reach	553	25-yr	180.00	317.49	320.33	320.33	321.29	0.018406	8.06	25.78	16.17	0.93
Reach	553	50-yr	220.00	317.49	320.64	320.64	321.69	0.017347	8.51	31.06	17.81	0.92
Reach	553	100-yr	270.00	317.49	320.98	320.98	322.14	0.016650	9.03	37.38	19.67	0.92
Reach	517	2-yr	45.00	316.00	317.32	317.50	318.00	0.049882	6.60	6.82	9.20	1.35
Reach	517	5-yr	90.00	316.00	317.69	318.03	318.85	0.058380	8.62	10.44	10.48	1.52
Reach	517	10-yr	130.00	316.00	317.95	318.41	319.45	0.062241	9.83	13.23	11.37	1.61
Reach	517	25-yr	180.00	316.00	319.75	318.80	320.08	0.005047	4.66	39.73	18.53	0.51
Reach	517	50-yr	220.00	316.00	320.47	319.06	320.76	0.003172	4.37	54.37	21.66	0.43
Reach	517	100-yr	270.00	316.00	321.40	319.36	321.65	0.001975	4.07	76.21	25.49	0.35
Reach	495	2-yr	45.00	315.10	317.20	316.29	317.25	0.001836	1.89	23.85	17.83	0.29
Reach	495	5-yr	90.00	315.10	318.20	316.71	318.26	0.001248	2.06	43.73	21.62	0.25
Reach	495	10-yr	130.00	315.10	319.00	317.01	319.07	0.000864	2.13	61.68	23.24	0.22
Reach	495	25-yr	180.00	315.10	319.90		319.97	0.000648	2.22	83.44	25.07	0.20
Reach	495	50-yr	220.00	315.10	320.60		320.68	0.000534	2.26	101.51	26.49	0.19
Reach	495	100-yr	270.00	315.10	321.50		321.58	0.000420	2.26	126.23	28.33	0.17
Reach	487	2-yr	45.00	314.90	317.20	315.99	317.23	0.000907	1.47	30.68	19.78	0.21
Reach	487	5-yr	90.00	314.90	318.20	316.40	318.25	0.000719	1.75	51.50	22.20	0.20
Reach	487	10-yr	130.00	314.90	319.00	316.70	319.06	0.000582	1.89	68.72	24.13	0.19
Reach	487	25-yr	180.00	314.90	319.90	317.00	319.96	0.000486	2.04	88.37	24.69	0.18
Reach	487	50-yr	220.00	314.90	320.60	317.22	320.67	0.000427	2.13	103.86	25.13	0.17
Reach	487	100-yr	270.00	314.90	321.50	317.45	321.57	0.000360	2.19	124.05	25.70	0.16

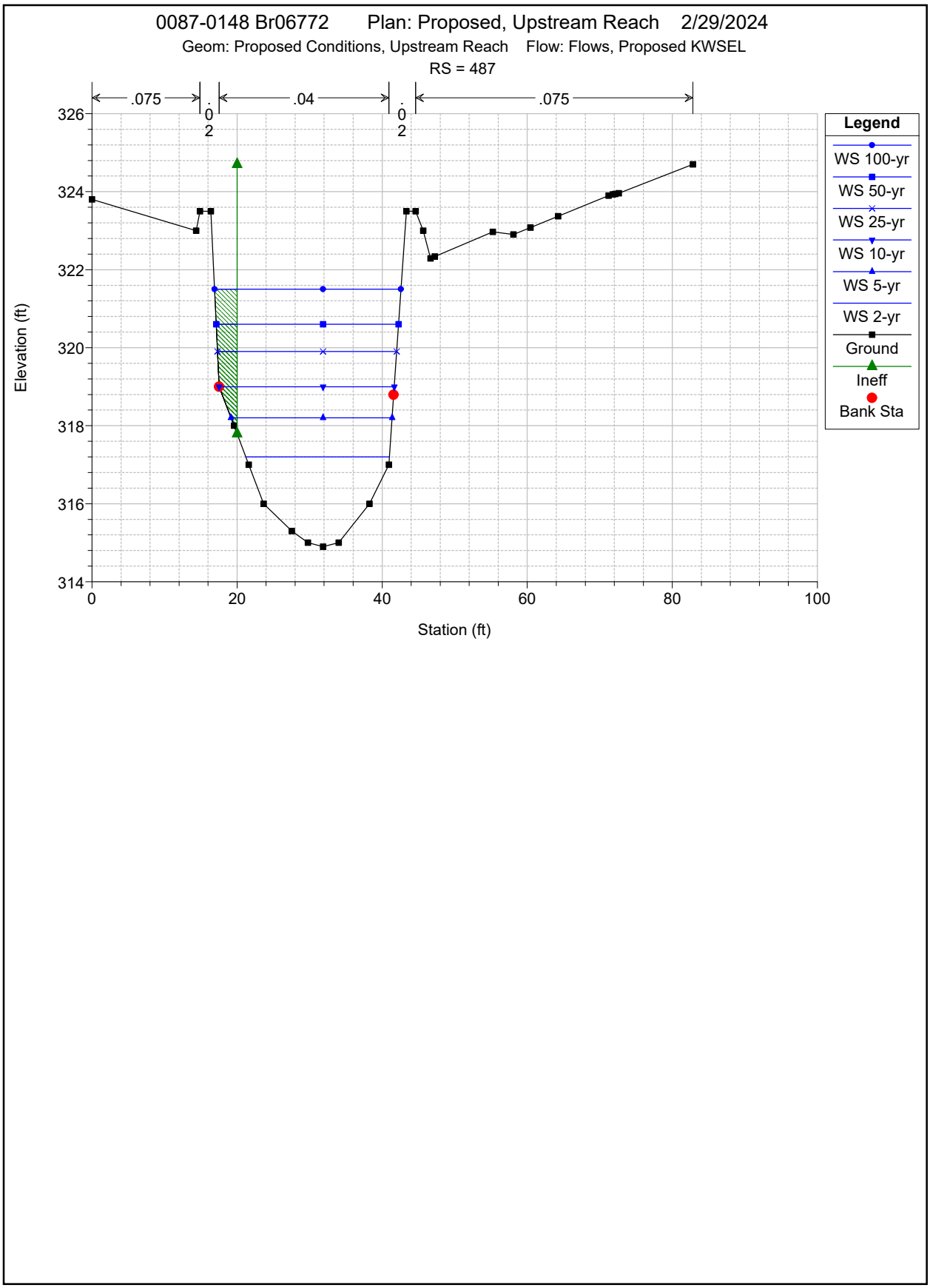
Known WSELs calculated by HY-8


0087-0148 Br06772 Plan: Proposed, Upstream Reach 2/29/2024
Geom: Proposed Conditions, Upstream Reach Flow: Flows, Proposed KWSEL
RS = 719
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta
0087-0148 Br06772 Plan: Proposed, Upstream Reach 2/29/2024
Geom: Proposed Conditions, Upstream Reach Flow: Flows, Proposed KWSEL
RS = 674
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta


0087-0148 Br06772 Plan: Proposed, Upstream Reach 2/29/2024
Geom: Proposed Conditions, Upstream Reach Flow: Flows, Proposed KWSEL
RS = 631
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta
0087-0148 Br06772 Plan: Proposed, Upstream Reach 2/29/2024
Geom: Proposed Conditions, Upstream Reach Flow: Flows, Proposed KWSEL
RS = 592
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta


0087-0148 Br06772 Plan: Proposed, Upstream Reach 2/29/2024
Geom: Proposed Conditions, Upstream Reach Flow: Flows, Proposed KWSEL
RS = 579
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta
0087-0148 Br06772 Plan: Proposed, Upstream Reach 2/29/2024
Geom: Proposed Conditions, Upstream Reach Flow: Flows, Proposed KWSEL
RS = 553
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta

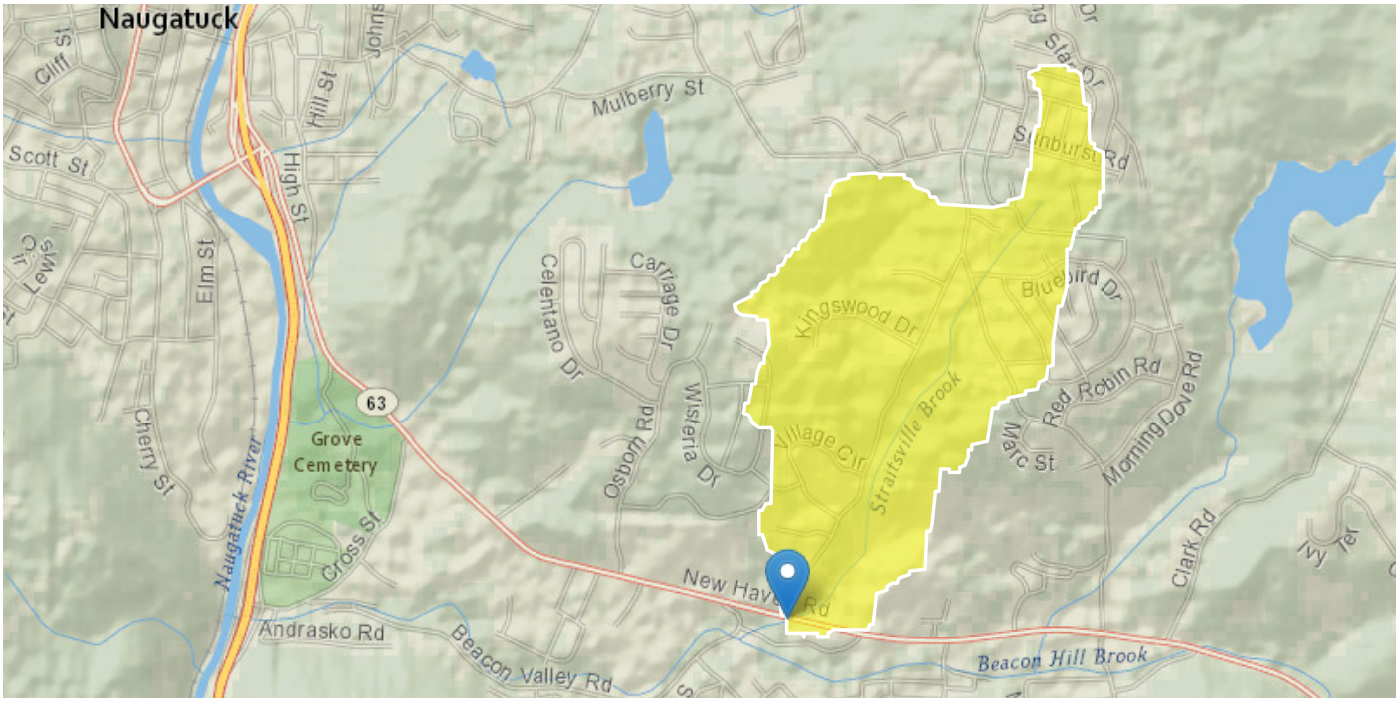

0087-0148 Br06772 Plan: Proposed, Upstream Reach 2/29/2024
Geom: Proposed Conditions, Upstream Reach Flow: Flows, Proposed KWSEL
RS = 517
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta
0087-0148 Br06772 Plan: Proposed, Upstream Reach 2/29/2024
Geom: Proposed Conditions, Upstream Reach Flow: Flows, Proposed KWSEL
RS = 495
.075
.04
.075
Elevation (ft)
Station (ft)
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Bank Sta


0087-0148 Br06772 Plan: Proposed, Upstream Reach 2/29/2024
Geom: Proposed Conditions, Upstream Reach Flow: Flows, Proposed KWSEL
RS = 487
.075
.02
.04
.02
.075
Elevation (ft)
Station (ft)
326
324
322
320
318
316
314
0
20
40
60
80
100
Legend
WS 100-yr
WS 50-yr
WS 25-yr
WS 10-yr
WS 5-yr
WS 2-yr
Ground
Ineff
Bank Sta

C. Hydrology

StreamStats Report

Region ID: CT
Workspace ID: CT20231212125357395000
Clicked Point (Latitude, Longitude): 41.46838, -73.02466
Time: 2023-12-12 07:54:17 -0500



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.69	square miles
I24H100Y	Maximum 24-hour precipitation that occurs on average once in 100 years	8.81	inches
I24H10Y	Maximum 24-hour precipitation that occurs on average once in 10 years	5.55	inches
I24H200Y	Maximum 24-hour precipitation that occurs on average once in 200 years	10.26	inches
I24H25Y	Maximum 24-hour precipitation that occurs on average once in 25 years	6.84	inches
I24H2Y	Maximum 24-hour precipitation that occurs on average once in 2 years - Equivalent to precipitation intensity index	3.26	inches
I24H500Y	Maximum 24-hour precipitation that occurs on average once in 500 years	12.17	inches

Parameter Code	Parameter Description	Value	Unit
I24H50Y	Maximum 24-hour precipitation that occurs on average once in 50 years	7.83	inches
I24H5Y	Maximum 24-hour precipitation that occurs on average once in 5 years	4.56	inches
SSURGOCCDD	Percentage of area with hydrologic soil types C, D, or C/D from SSURGO	0.3615	percent

Peak-Flow Statistics

Peak-Flow Statistics Parameters [Statewide DA only SIR 2020 5054]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.69	square miles	0.69	325

Peak-Flow Statistics Parameters [Statewide Multiparameter SIR 2020 5054]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.69	square miles	0.69	325
I24H2Y	24 Hour 2 Year Precipitation	3.26	inches	2.77	3.32
SSURGOCCDD	Percent soil type C or D from SSURGO	0.3615	percent	0.118	0.945
I24H5Y	24 Hour 5 Year Precipitation	4.56	inches	4	4.7
I24H10Y	24 Hour 10 Year Precipitation	5.55	inches	4.86	5.79
I24H25Y	24 Hour 25 Year Precipitation	6.84	inches	5.99	7.22
I24H50Y	24 Hour 50 Year Precipitation	7.83	inches	6.81	8.3
I24H100Y	24 Hour 100 Year Precipitation	8.81	inches	7.62	9.38
I24H200Y	24 Hour 200 YearPrecipitation	10.26	inches	8.7	11.22
I24H500Y	24 Hour 500 Year Precipitation	12.17	inches	10.1	13.64

Peak-Flow Statistics Flow Report [Statewide DA only SIR 2020 5054]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	ASEp
Drainage Area Only 50-percent AEP flood	48	ft^3/s	35
Drainage Area Only 20-percent AEP flood	85	ft^3/s	35
Drainage Area Only 10-percent AEP flood	116	ft^3/s	36.3
Drainage Area Only 4-percent AEP flood	162	ft^3/s	37.8
Drainage Area Only 2-percent AEP flood	200	ft^3/s	39.8

Statistic	Value	Unit	ASEp
Drainage Area Only 1-percent AEP flood	243	ft^3/s	42.4
Drainage Area Only 0.5-percent AEP flood	290	ft^3/s	44.4
Drainage Area Only 0.2-percent AEP flood	361	ft^3/s	48

Peak-Flow Statistics Flow Report [Statewide Multiparameter SIR 2020 5054]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
50-percent AEP flood	46.3	ft^3/s	11.1	193	26.5
20-percent AEP flood	91.4	ft^3/s	20.1	415	26.3
10-percent AEP flood	126	ft^3/s	25.6	620	28.4
4-percent AEP flood	176	ft^3/s	32.3	958	31.5
2-percent AEP flood	220	ft^3/s	36.7	1320	34.3
1-percent AEP flood	268	ft^3/s	40.7	1770	37.1
0.5-percent AEP flood	309	ft^3/s	53.1	1800	40.6
0.2-percent AEP flood	378	ft^3/s	69.2	2070	45

Peak-Flow Statistics Flow Report [Area-Averaged]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	ASEp		
Drainage Area Only 50-percent AEP flood	48	ft^3/s	35		
Drainage Area Only 20-percent AEP flood	85	ft^3/s	35		
Drainage Area Only 10-percent AEP flood	116	ft^3/s	36.3		
Drainage Area Only 4-percent AEP flood	162	ft^3/s	37.8		
Drainage Area Only 2-percent AEP flood	200	ft^3/s	39.8		
Drainage Area Only 1-percent AEP flood	243	ft^3/s	42.4		
Drainage Area Only 0.5-percent AEP flood	290	ft^3/s	44.4		
Drainage Area Only 0.2-percent AEP flood	361	ft^3/s	48		
50-percent AEP flood	46.3	ft^3/s	11.1	193	26.5
20-percent AEP flood	91.4	ft^3/s	20.1	415	26.3
10-percent AEP flood	126	ft^3/s	25.6	620	28.4
4-percent AEP flood	176	ft^3/s	32.3	958	31.5
2-percent AEP flood	220	ft^3/s	36.7	1320	34.3
1-percent AEP flood	268	ft^3/s	40.7	1770	37.1
0.5-percent AEP flood	309	ft^3/s	53.1	1800	40.6
0.2-percent AEP flood	378	ft^3/s	69.2	2070	45

Peak-Flow Statistics Citations

Ahearn, E.A., and Hodgkins, G.A.,2020, Estimating flood magnitude and frequency on streams and rivers in Connecticut, based on data through water year 2015: U.S. Geological Survey Scientific Investigations Report 2020–5054, 42 p. (https://doi.org/10.3133/sir20205054)

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Application Version: 4.19.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.3.2

D. Streambank/Channel/Embankment Protection

Riprap Sizing Using HEC-23 DG 4

$$d_{30} = y(S_f C_S C_V C_T)\left[\frac{(V_{des})}{\sqrt{K_1(S_g-1)gy}}\right]^{2.5} \quad (4.1)$$

where:
- d_{30} = Particle size for which 30% is finer by weight, ft (m)
- y = Local depth of flow, ft (m)
- S_f = Safety factor (must be > 1.0)
- C_S = Stability coefficient (for blanket thickness = d_{100} or $1.5d_{50}$, whichever is greater, and uniformity ratio d_{85}/d_{15} = 1.7 to 5.2)
  - = 0.30 for angular rock
  - = 0.375 for rounded rock
- C_V = Velocity distribution coefficient
  - = 1.0 for straight channels or the inside of bends
  - = 1.283 - 0.2log(R_c/W) for the outside of bends (1.0 for R_c/W > 26)
  - = 1.25 downstream from concrete channels
  - = 1.25 at the end of dikes
- C_T = Blanket thickness coefficient given as a function of the uniformity ratio d_{85}/d_{15}. C_T = 1.0 is recommended because it is based on very limited data.
- V_{des} = Characteristic velocity for design, defined as the depth-averaged velocity at a point 20% upslope from the toe of the revetment, ft/s (m/s)
  - For natural channels, $V_{des} = V_{avg}(1.74 - 0.52\log(R_c/W))$; $V_{des} = V_{avg}$ for $R_c/W > 26$
  - For trapezoidal channels, $V_{des} = V_{avg}(1.71 - 0.78\log(R_c/W))$; $V_{des} = V_{avg}$ for $R_c/W > 8$
- V_{avg} = Channel cross-sectional average velocity, ft/s (m/s)
- K_1 = Side slope correction factor

$$K_1 = \sqrt{1-\left(\frac{\sin(\theta-14^\circ)}{\sin(32^\circ)}\right)^{1.6}}$$

where: θ is the bank angle in degrees

- R_c = Centerline radius of curvature of channel bend, ft (m)
- W = Width of water surface at upstream end of channel bend, ft (m)
- S_g = Specific gravity of riprap (usually taken as 2.65)
- g = Acceleration due to gravity, 32.2 ft/s^2 (9.81 m/s^2)

DG4.4

$$d_{50} = 1.20\,d_{30} \quad (4.2)$$

The flow depth "y" used in Equation 4.1 is defined as the local flow depth. The flow depth at the toe of slope is typically used for bank revetment applications; alternatively, the average channel depth can be used. The smaller of these values will result in a slightly larger computed d_{30} size, since riprap size is inversely proportional to ($y^{0.25}$).

The blanket thickness coefficient (C_T) is 1.0 for standard riprap applications where the thickness is equal to $1.5d_{50}$ or d_{100}, whichever is greater. Because only limited data is available for selecting lower values of C_T when greater thicknesses of riprap are used, a value of 1.0 is reasonable for all applications.

The recommended Safety Factor S_f is 1.1 for bank revetment. Greater values should be considered where there is significant potential for ice or impact from large debris, freeze-thaw degradation that would significantly decrease particle size, or large uncertainty in the design variables, especially velocity.

A limitation to Equation 4.1 is that the longitudinal slope of the channel should not be steeper than 2.0% (0.02 ft/ft). For steeper channels, the riprap sizing approach for overtopping flows should be considered and the results compared with Equation 4.1 (see Design Guide 5).

		HEC-23 Design Guide 4 - Riprap Revetment									Design By: IAM	
		50-Yr									Checked By: APP	
		XS				91		105		117		133
	Eq 4.2	d50				1.91		1.76		1.6		0.47
	Eq 4.1	d30				1.59		1.47		1.33		0.39
		y				1.79		2.06		1.86		2.62
		Sf				1.1		1.1		1.1		1.1
		Cs(angular rock)				0.3		0.3		0.3		0.3
		Cv(outside of bend, Rc/W<26)				1.15		1.14		1.14		1.16
		Ct				1		1		1		1
		Vdes(natural channel, Rc/W<26)				12.79		12.61		12		7.55
		Vavg				12.79		12.61		12		7.55
		K1				0.87		0.87		0.87		0.87
		θ				26.57		26.57		26.57		26.57
		Rc				70		70		70		70
		W				14.48		13.54		14.02		16.58
		Sg				2.65		2.65		2.65		2.65
		g				32.2		32.2		32.2		32.2
		100-Yr										
		XS				91		105		117		133
	Eq 4.2	d50				2.12		1.93		1.72		0.53
	Eq 4.1	d30				1.77		1.61		1.43		0.44
		y				1.98		2.28		2.1		2.9
		Sf				1.1		1.1		1.1		1.1
		Cs(angular rock)				0.3		0.3		0.3		0.3
		Cv(outside of bend, Rc/W<26)				1.15		1.15		1.15		1.16
		Ct				1		1		1		1
		Vdes(natural channel, Rc/W<26)				13.49		13.17		12.44		7.96
		Vavg				13.49		13.17		12.44		7.96
		K1				0.87		0.87		0.87		0.87
		θ				26.57		26.57		26.57		26.57
		Rc				70		70		70		70
		W				15.24		14.54		14.9		17.64
		Sg				2.65		2.65		2.65		2.65
		g				32.2		32.2		32.2		32.2
		D50	> 1.25'		D50 is larger than standard riprap, use custom heavy riprap							

See Riprap Gradation on next page

See next page for comparison of results with HEC-23 DG 5

HEC-23 DG 5 Results for Comparison with HEC-23 DG 4 Results

$$V_i = 2.48\sqrt{g d_{50}}\left(\frac{S^{0.58}}{C_u^{2.22}}\right) \quad (5.1)$$

where:
- V_i = Interstitial velocity, ft/s (m/s)
- g = Acceleration due to gravity, 32.2 ft/s^2 (9.81 m/s^2)
- d_{50} = Particle size for which 50% is finer by weight, ft (m)
- C_u = Coefficient of uniformity of the riprap, d_{60}/d_{10}
- S = Slope of the embankment, ft/ft (m/m)

$$d_{50} = \frac{K_u q_f^{0.52}}{C_u^{0.25} S^{0.75}}\left(\frac{\sin\alpha}{(S_g\cos\alpha - 1)(\cos\alpha\tan\phi - \sin\alpha)}\right)^{1.11} \quad (5.2)$$

where:
- d_{50} = Particle size for which 50% is finer by weight, ft (m)
- K_u = 0.525 for English units; 0.55 for SI units
- q_f = Unit discharge at failure, ft^3/s/ft (m^3/s/m)
- C_u = Coefficient of uniformity of the riprap, d_{60}/d_{10}
- S = Slope of the embankment, ft/ft (m/m)
- S_g = Specific gravity of the riprap
- α = Slope of the embankment, degrees
- φ = Angle of repose of the riprap, degrees

When the embankment slope is less than 1V:4H (25%), the allowable depth of flow (h) over the riprap is given by:

$$h = \frac{0.06(S_g - 1)d_{50}\tan\phi}{0.97(S)} \quad (5.3)$$

	HEC-23 Design Guide 5 - Riprap Design for Embankment Overtopping							Design By: IAM	
	50-Yr							Checked By: APP	
	XS		91		105		117		133
Eq 5.2	d50		2.72		2.08		2.32		2.55
	Ku		0.525		0.525		0.525		0.525
	qf		15.19		9.08		11.19		13.37
	Cu		2.1		2.1		2.1		2.1
	S		0.5		0.5		0.5		0.5
	Sg		2.65		2.65		2.65		2.65
	α		26.57		26.57		26.57		26.57
	φ		42		42		42		42
	100-Yr								
	XS		91		105		117		133
Eq 5.2	d50		2.95		3.02		2.99		2.74
	Ku		0.525		0.525		0.525		0.525
	qf		17.7		18.57		18.12		15.31
	Cu		2.1		2.1		2.1		2.1
	S		0.5		0.5		0.5		0.5
	Sg		2.65		2.65		2.65		2.65
	α		26.57		26.57		26.57		26.57
	φ		42		42		42		42

Proposed Heavy Riprap Gradation

Table 705-1
Gradation Requirements for Riprap(1)

Class	% of Rock Equal or Smaller	Range of Intermediate Dimensions,(2)	Range of Rock Mass,(3) pounds (kilograms)
7	100	45 – 54 (1140 – 1370)	7400 – 12,800 (3350 – 5800)
	85	32 – 38 (810 – 970)	2650 – 4450 (1200 – 2000)
	50	23 – 28 (580 – 710)	990 – 1800 (450 – 820)
	15	15 – 20 (380 – 510)	270 – 650 (120 – 290)

(1) Gradation includes spalls and rock fragments to provide a stable, dense mass.

(2) The intermediate dimension is the longest straight-line distance across the rock that is perpendicular to the rock's longest axis on the rock face with the largest projection plane.

(3) Rock mass is based on a specific gravity of 2.65 and 85 percent of the cubic volume as calculated using the intermediate dimension.

Source: FHWA FP-14 *The Standard Specifications for the Construction of Roads and Bridges on Federal Highway Projects*, Table 705-1

Additional Stability Check Based on "Stability Thresholds for Stream Restoration Materials"

Table 1. Limiting Shear Stress and Ve locity for Uniform Noncohesive Sediments

Class name	d_s (in)	ϕ (deg)	τ_c	τ_{cr} (lb/sf)	V_c (ft/s)
Boulder					
Very large	>80	42	0.054	37.4	4.36
Large	>40	42	0.054	18.7	3.08
Medium	>20	42	0.054	9.3	2.20
Small	>10	42	0.054	4.7	1.54
Cobble					
Large	>5	42	0.054	2.3	1.08
Small	>2.5	41	0.052	1.1	0.75
Gravel					
Very coarse	>1.3	40	0.050	0.54	0.52
Coarse	>0.6	38	0.047	0.25	0.36
Medium	>0.3	36	0.044	0.12	0.24
Fine	>0.16	35	0.042	0.06	0.17
Very fine	>0.08	33	0.039	0.03	0.12
Sands					
Very coarse	>0.04	32	0.029	0.01	0.070
Coarse	>0.02	31	0.033	0.006	0.055
Medium	>0.01	30	0.048	0.004	0.045
Fine	>0.005	30	0.072	0.003	0.040
Very fine	>0.003	30	0.109	0.002	0.035
Silts					
Coarse	>0.002	30	0.165	0.001	0.030
Medium	>0.001	30	0.25	0.001	0.025

		50-yr	
		XC	Shear Stress
		91	7.1
		105	6.74
		117	6.07
		133	2.18
		100-yr	
		XC	Shear Stress
		91	7.65
		105	7.13
		117	6.3
		133	2.3

Required Revetment Toe Depth Calculation

Project	**0087-0148**		
SR Route	**63**	**Stream Name**	**Stratisville Brook**
Designer	**Ian MacDonald**	**Date**	**2/13/2024**
Checked by	**Andy Puhlick**	**Date**	**2/13/2024**

Computation of Bend Scour

Variables and Equations

References: *FHWA. 2009. Hydraulic Engineering Circular No. 23 Third Edition, Volume 1 Chapter 4*
Maynord, S. 1996. Toe Scour Estimation on Stabilized Bendways. Journal of Hydraulic Engineering, American Society of Civil Engineers, Vol. 122, No.8.

Maynord's method for estimating scour depth at bend:

$$\frac{D_{mxb}}{D_{mnc}} = 1.8 - 0.051\left(\frac{R_c}{W}\right) + 0.0084\left(\frac{W}{D_{mnc}}\right)$$

(FHWA HEC 23 (2009) Equation 4.5)

Limitations/Notes:

- Equation based on empirical relationships of meandering sand bed channels having naturally developed widths and depths.
- Equation developed for discharges that were within channel banks with mean return intervals (MRI) of 1 to 5 years.
- Method is valid until there is signficant interaction between main channel flow and overbank flow. Should be limited to overbank depth less than 20% of main channel depth.
- For channels with Rc/W < 1.5 or W/Dmnc < 20, the scour depth calculations should use Rc/W = 1.5 and W/Dmnc = 20, respectively.
- Equation originally developed for bank stabilization projects
- Maynord method agrees reasonably well with limited number of gravel-bed data points obtained by Thorne and Abt (1993)

Inputs

R_c	ft	Centerline radius of the bend
W	ft	Water surface width (crossing section) at upstream end of bend (typically active channel)
D_{mnc}	ft	Average water depth in crossing section upstream of the bend

Calculated Paramaters

D_{mxb}	ft	Maximum water depth in the bend (bend section)
y_{bs}	ft	Depth of bend scour (Dmxb - Dmnc)
y_{bsf}	ft	Depth of bend scour (Dmxb - Dmnc) **including factor of safety**
FOS		Default to 1.08;

Computation of Bend Scour

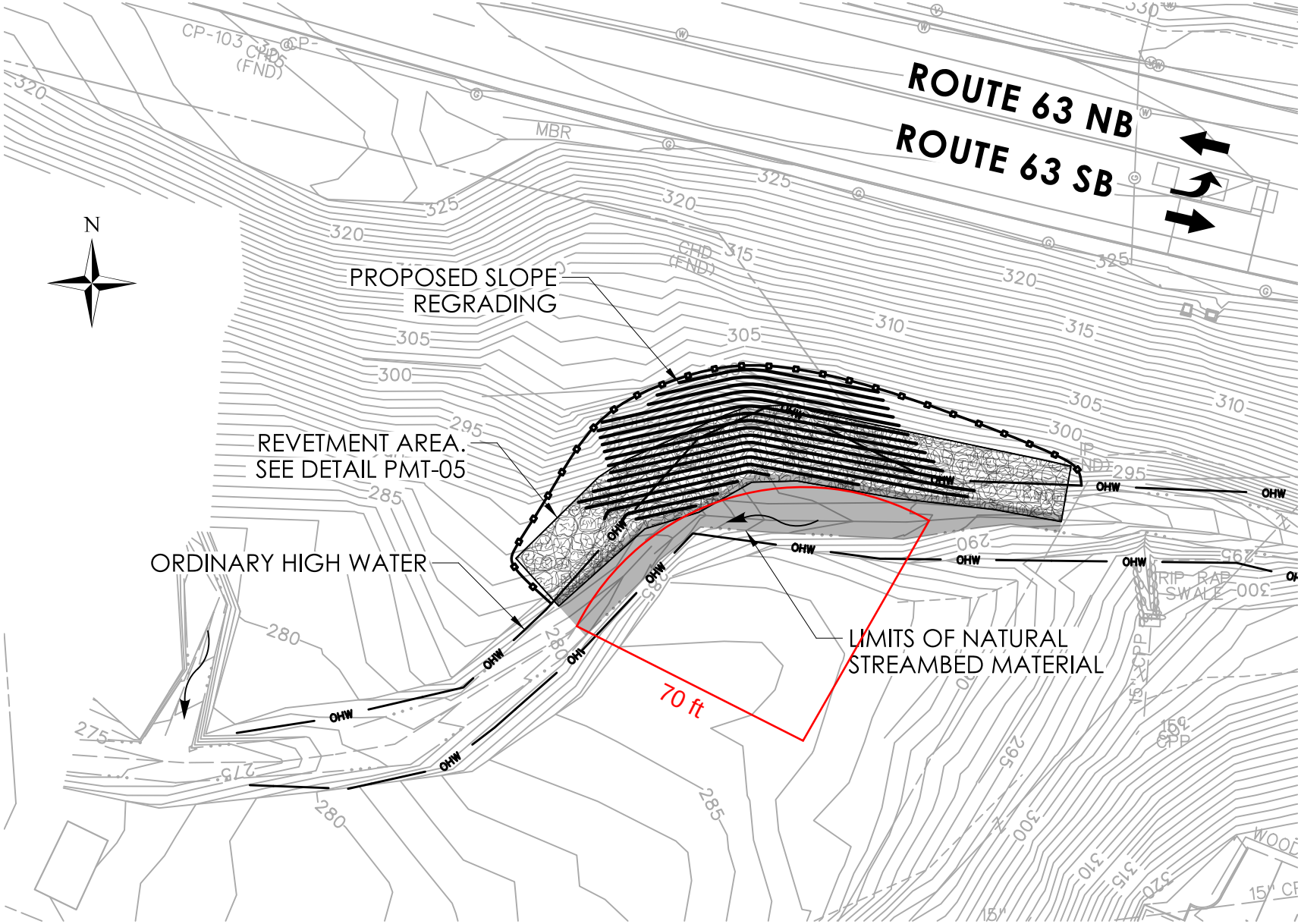
	50-year 220 cfs	100-year 270 cfs	X-year X cfs	X-year X cfs	
R_c	70.0	70.0			ft
W	17.9	18.7			ft
D_{mnc}	1.1	1.2			ft
		Blue cells are user inputs			
Calculated Ratios					
R_c/W =	3.9	3.7	#DIV/0!	#DIV/0!	
W/D_{mnc} =	16.3	15.6	#DIV/0!	#DIV/0!	
Limitations Check (True = within recommended limits)					
R_c/W =	TRUE	TRUE	#DIV/0!	#DIV/0!	
Ratio Used	3.9	3.7	#DIV/0!	#DIV/0!	
W/D_{mnc} =	FALSE	FALSE	#DIV/0!	#DIV/0!	
Ratio Used	20.0	20.0	#DIV/0!	#DIV/0!	
Dmxb =	1.9	2.1	#DIV/0!	#DIV/0!	ft
y_{bs} =	**0.8**	**0.9**	**#DIV/0!**	**#DIV/0!**	**ft**

Notes (results pulled from main channel only)

Cross section 155 used for data inputs

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Top Width (ft)	Hydr Depth (ft)
Stream	Reach	155	50-yr	220.00	286.21	287.81	17.91	1.05
Stream	Reach	155	100-yr	270.00	286.21	287.99	18.66	1.18
Stream	Reach	133	50-yr	220.00	285.42	288.04	16.58	1.76
Stream	Reach	133	100-yr	270.00	285.42	288.32	17.64	1.93
Stream	Reach	117	50-yr	220.00	284.11	285.97	14.02	1.31
Stream	Reach	117	100-yr	270.00	284.11	286.21	14.90	1.46
Stream	Reach	105	50-yr	220.00	282.67	284.73	13.54	1.29
Stream	Reach	105	100-yr	270.00	282.67	284.95	14.54	1.41
Stream	Reach	91	50-yr	220.00	281.56	283.35	14.48	1.19
Stream	Reach	91	100-yr	270.00	281.56	283.54	15.24	1.31
Stream	Reach	53	50-yr	220.00	279.77	282.44	16.69	1.54
Stream	Reach	53	100-yr	270.00	279.77	282.64	17.47	1.67

Bend Radius Measurement



E. Temporary Hydraulic Facilities – Water Handling

Appendix F – Hydrology for Temporary Facilities

Step 1: Determine Impact Ratings

The following selection factors are rated considering their severity as 1, 2, or 3 for low, medium or high conditions.

Potential Loss of Life - If inhabited structures, permanent or temporary, can be inundated or are in the path of a flood wave caused by an embankment failure, then this item will have a multiple of 15 applied. If no possibility of the above exists, then loss of life will be the same as the severity used for the A.D.T.

Property Damages - Private and public structures (houses, commercial, or manufacturing); appurtenances such as sewage treatment and water supply; utility structures either above or below ground, are to have a multiple of 10 applied. Active cropland, parking lots, recreational areas are to have a multiple of 5 applied. All other areas shall use the severity determined by site conditions.

Traffic Interruption - Includes consideration for emergency supplies and rescue; delays; alternate routes; busses; etc. Short duration flooding of a low volume roadway might be acceptable. If the duration of flooding is long (more than a day), and there is a nearby good quality alternate route, then the flooding of a higher volume highway might also be acceptable. The severity of this component is determined by the detour length multiplied by the average daily traffic projected for bi-directional travel.

Detour Length - The length in kilometers (miles) of an emergency detour by other roads should the temporary facility fail.

Height Above Streambed - The difference in elevation in meters (feet) between the traveled roadway and the bed of the waterway.

Drainage Area - The total area contributing runoff to the temporary facility, in km^2 (mi^2).

Average Daily Traffic - The average amount of vehicles traveling bi-directional through the area in a 24-h period.

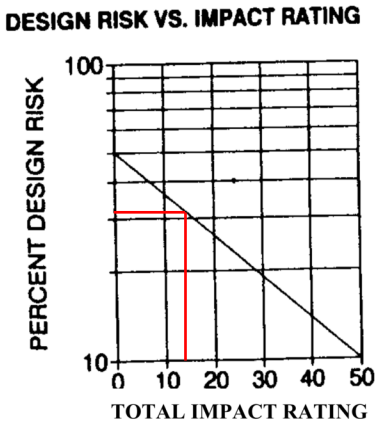
RATING SELECTION

Factor	Rating		
	1	2	3
Loss of Life	See Instructions		
Property Damage	See Instructions		
Traffic Interruptions	< 2000	2000-4000	> 4000
Detour Length, km (mi)	< 8 (< 5)	8-16 (5-10)	> 16 (> 10)
Height Above Streambed, m (ft)	< 3 (< 10)	3-6 (10-20)	> 6 (> 20)
Drainage Area, km^2 (mi^2)	< 2.6 (< 1)	2.6-26.0 (1-10)	> 26.0 (> 10)
Rural ADT	< 400	400-1500	> 1500
Suburban ADT	< 750	750-1500	> 1500
Urban ADT	< 1500	1500-3000	> 3000

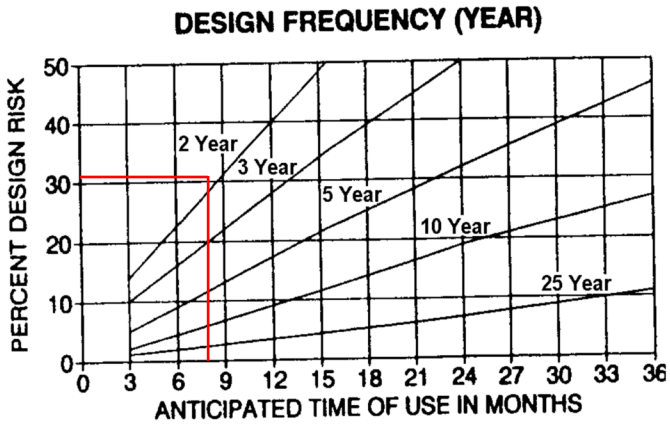
IMPACT RATING TABLE

Loss of Life Rating (See Instructions)=	3
Property Damage Rating (See Instructions) =	1
Traffic Interruption Rating =	3
Detour Length Rating =	1
Height Above Streambed Rating =	1
Drainage Area Rating =	1
Average Daily Traffic Rating =	3
Total Impact Rating = (sum of the above) =	13

Step 2: Determine risk percentage



Step 3: Determine Temporary Design Frequency



(for temporary facility)

Percent Design Risk = 31

Design Frequency = 3 X ASF

Step 4: Determine Temporary Design Discharge

A. If sufficient discharges have been developed either by the designer or a Flood Insurance Study, then the Temporary Design Discharge should be taken either directly or from a frequency curve plot of the data, based on the design frequency determined in Step 3. Enter the Temporary Design Discharge below. *If Discharge – Frequency information is unavailable, proceed to Step 4 B.*

Temporary Design Discharge = 7.5 **cfs**

HEC-RAS Plan: Temp River: Stream Reach: Reach Profile: 3xASF

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach	719	3xASF	7.50	321.79	322.40	322.24	322.46	0.009056	1.99	3.76	8.70	0.53
Reach	674	3xASF	7.50	321.28	321.87	321.76	321.95	0.014683	2.34	3.20	8.40	0.67
Reach	631	3xASF	7.50	320.28	321.09	321.01	321.21	0.019925	2.83	2.65	6.42	0.78
Reach	592	3xASF	7.50	319.42	320.00	320.00	320.17	0.036892	3.25	2.31	7.26	1.01
Reach	579	3xASF	7.50	318.18	319.69	318.75	319.70	0.000386	0.69	10.89	11.17	0.12
Reach	553	3xASF	7.50	317.49	319.69	318.07	319.69	0.000101	0.48	16.45	12.88	0.07
Reach	550		Culvert									
Reach	400	3xASF	7.50	308.54	309.21	309.21	309.40	0.034936	3.43	2.19	6.14	1.01
Reach	372	3xASF	7.50	306.23	306.54	306.78	307.28	0.250929	6.89	1.09	4.76	2.54
Reach	323	3xASF	7.50	299.80	300.25	300.34	300.57	0.084459	4.60	1.63	5.73	1.52
Reach	218	3xASF	7.50	288.71	291.49	289.35	291.49	0.000025	0.26	28.61	15.47	0.03
Reach	215		Culvert									
Reach	53	3xASF	7.50	279.77	280.45	280.45	280.63	0.034946	3.40	2.21	6.27	1.01

Plan: Temp Stream Reach RS: 550 Culv Group: Culvert #1 Profile: 3xASF

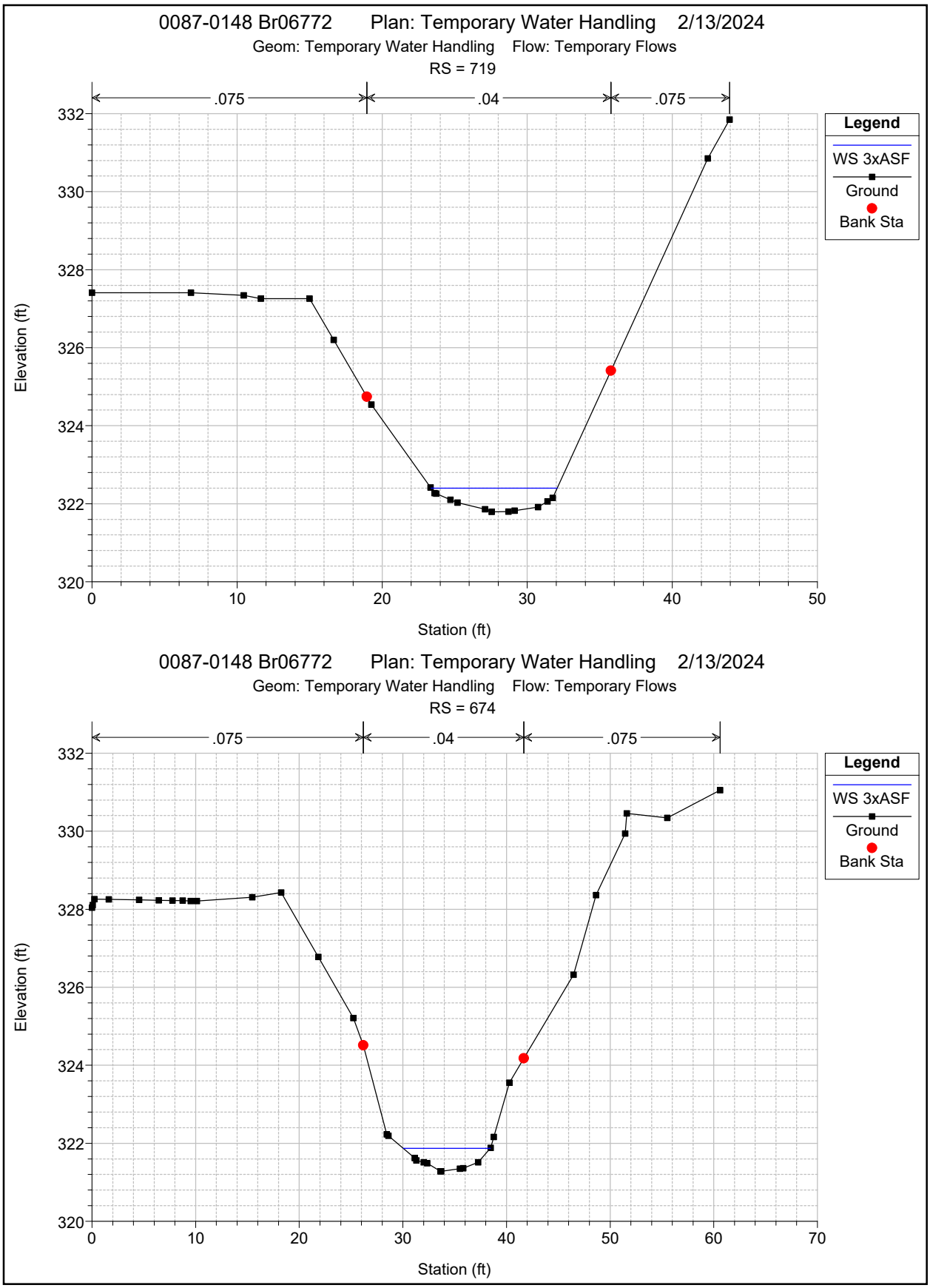
Water Handling for Culvert Reline

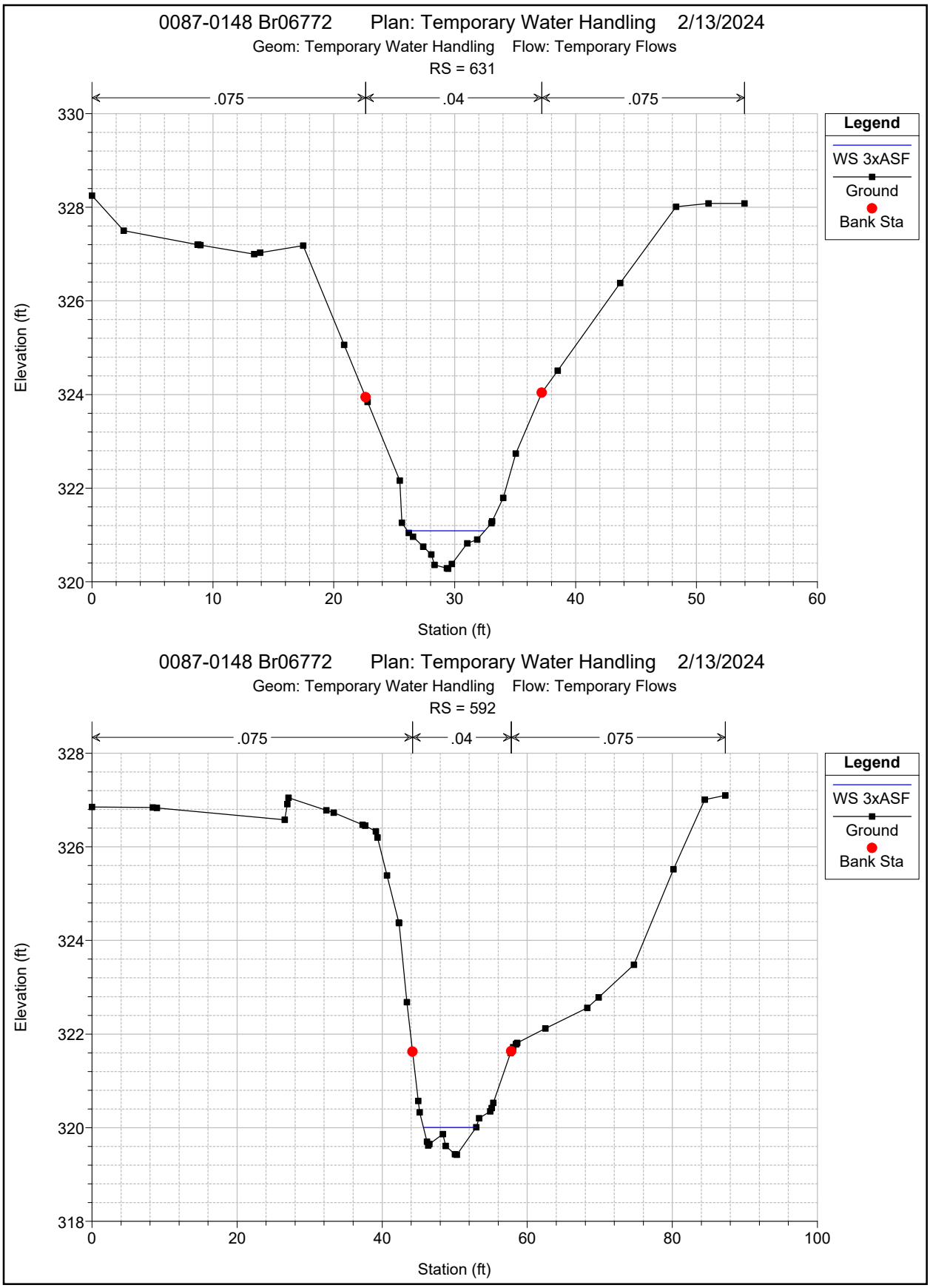
Q Culv Group (cfs)	7.50	Culv Full Len (ft)	
# Barrels	1	Culv Vel US (ft/s)	5.61
Q Barrel (cfs)	7.50	Culv Vel DS (ft/s)	9.76
E.G. US. (ft)	319.69	Culv Inv El Up (ft)	317.70
W.S. US. (ft)	319.69	Culv Inv El Dn (ft)	314.50
E.G. DS (ft)	309.40	Culv Frctn Ls (ft)	2.60
W.S. DS (ft)	309.21	Culv Exit Loss (ft)	7.26
Delta EG (ft)	10.29	Culv Entr Loss (ft)	0.44
Delta WS (ft)	10.47	Q Weir (cfs)	
E.G. IC (ft)	319.41	Weir Sta Lft (ft)	
E.G. OC (ft)	319.69	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	318.76	Weir Max Depth (ft)	
Culv WS Outlet (ft)	315.17	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	0.67	Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	1.06	Min El Weir Flow (ft)	320.51

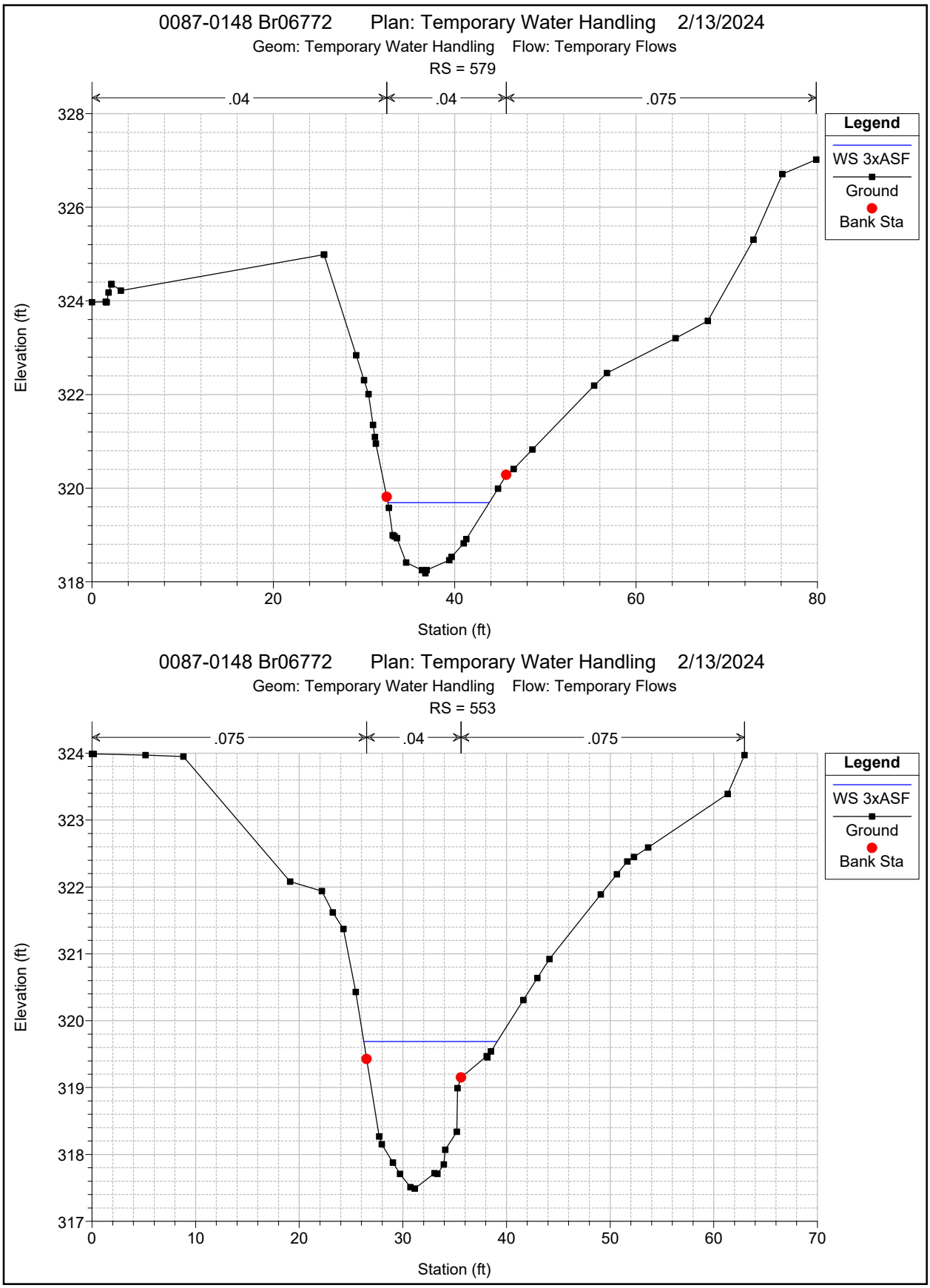
Plan: Temp Stream Reach RS: 215 Culv Group: Culvert #1 Profile: 3xASF

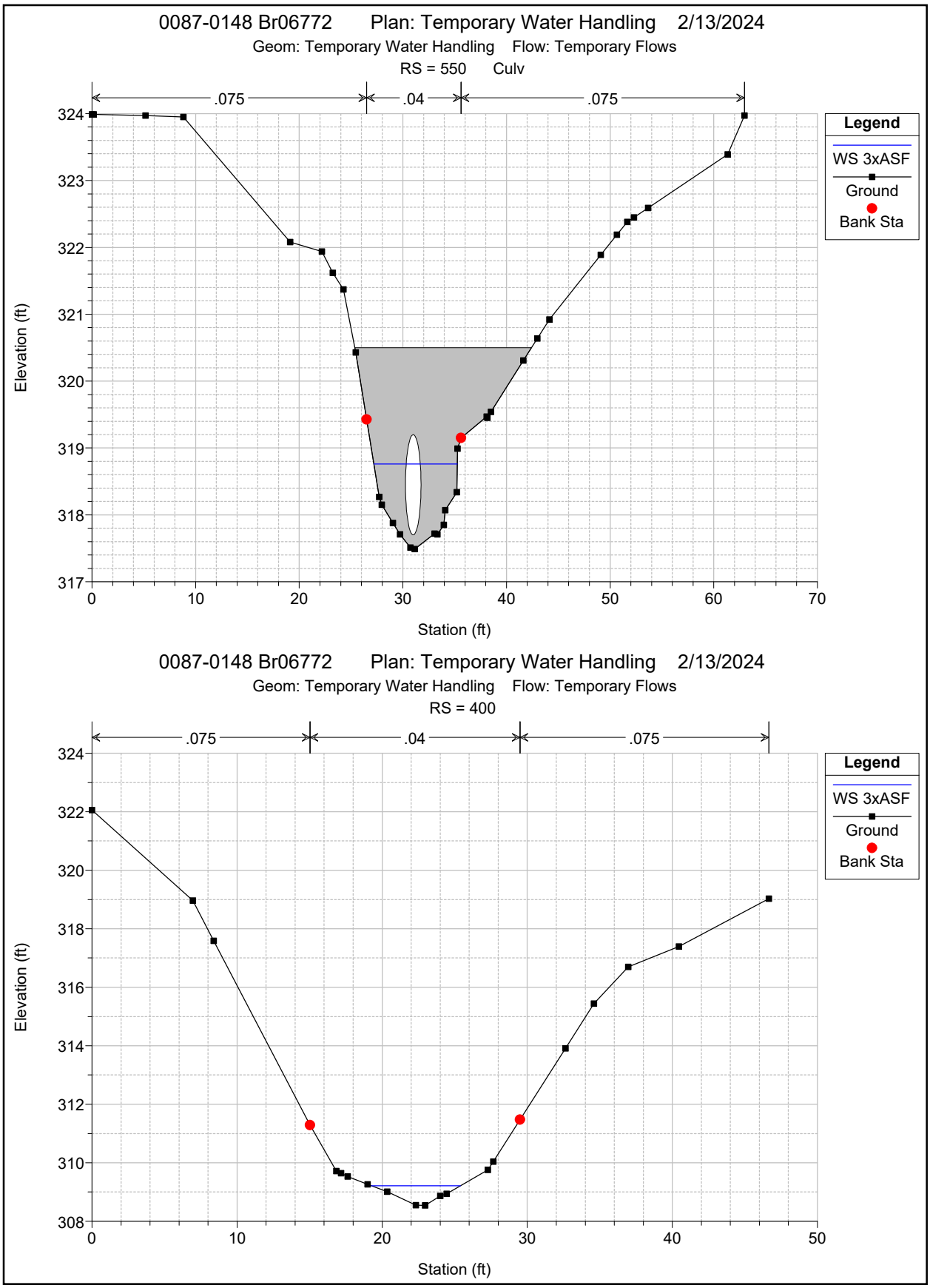
Water Handling for Revetment Construction

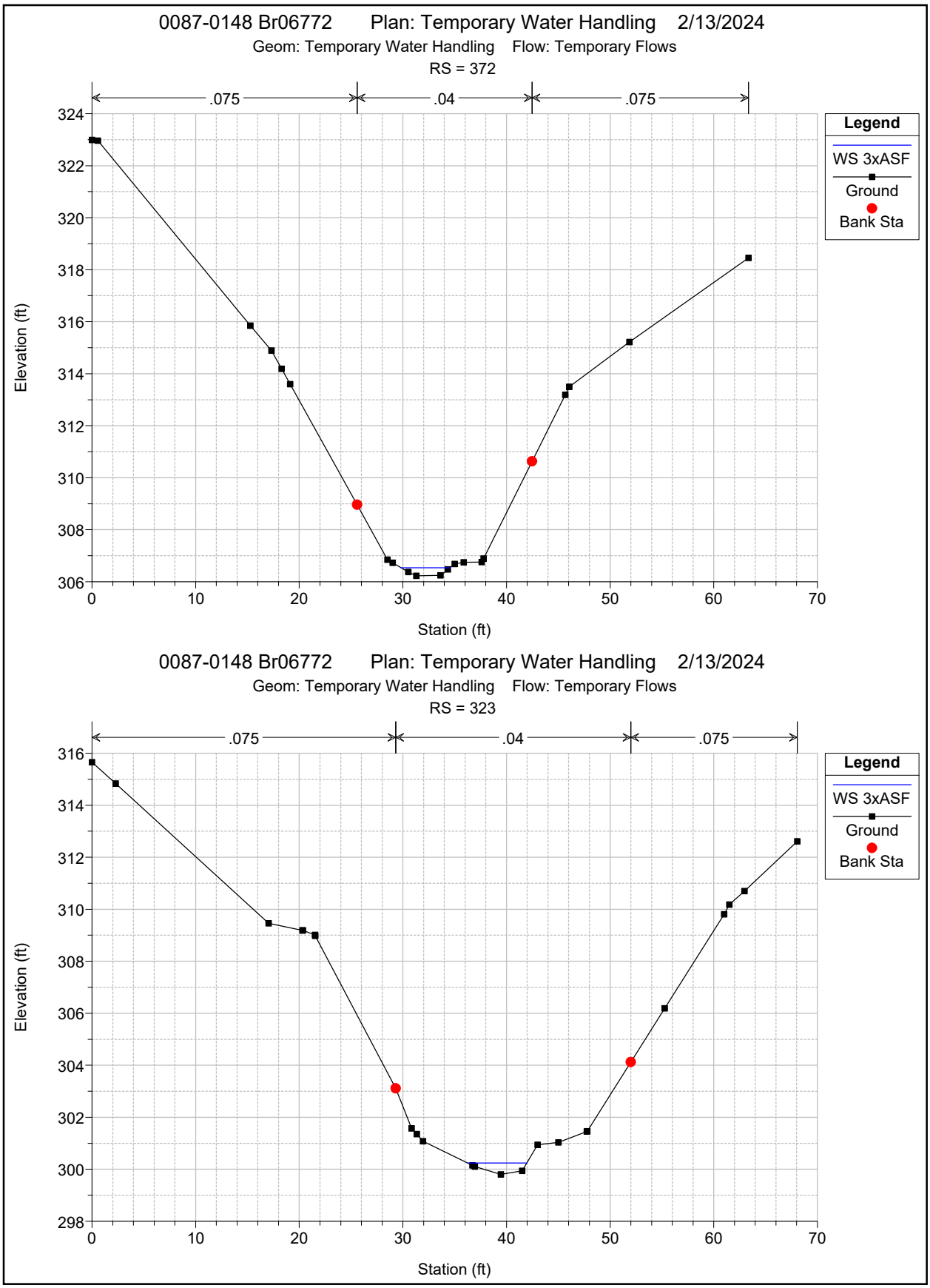
Q Culv Group (cfs)	7.50	Culv Full Len (ft)	
# Barrels	1	Culv Vel US (ft/s)	5.61
Q Barrel (cfs)	7.50	Culv Vel DS (ft/s)	14.01
E.G. US. (ft)	291.49	Culv Inv El Up (ft)	289.50
W.S. US. (ft)	291.49	Culv Inv El Dn (ft)	280.50
E.G. DS (ft)	280.63	Culv Frctn Ls (ft)	6.99
W.S. DS (ft)	280.45	Culv Exit Loss (ft)	3.43
Delta EG (ft)	10.86	Culv Entr Loss (ft)	0.44
Delta WS (ft)	11.04	Q Weir (cfs)	
E.G. IC (ft)	291.09	Weir Sta Lft (ft)	
E.G. OC (ft)	291.49	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	290.56	Weir Max Depth (ft)	
Culv WS Outlet (ft)	281.01	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	0.51	Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	1.06	Min El Weir Flow (ft)	295.82

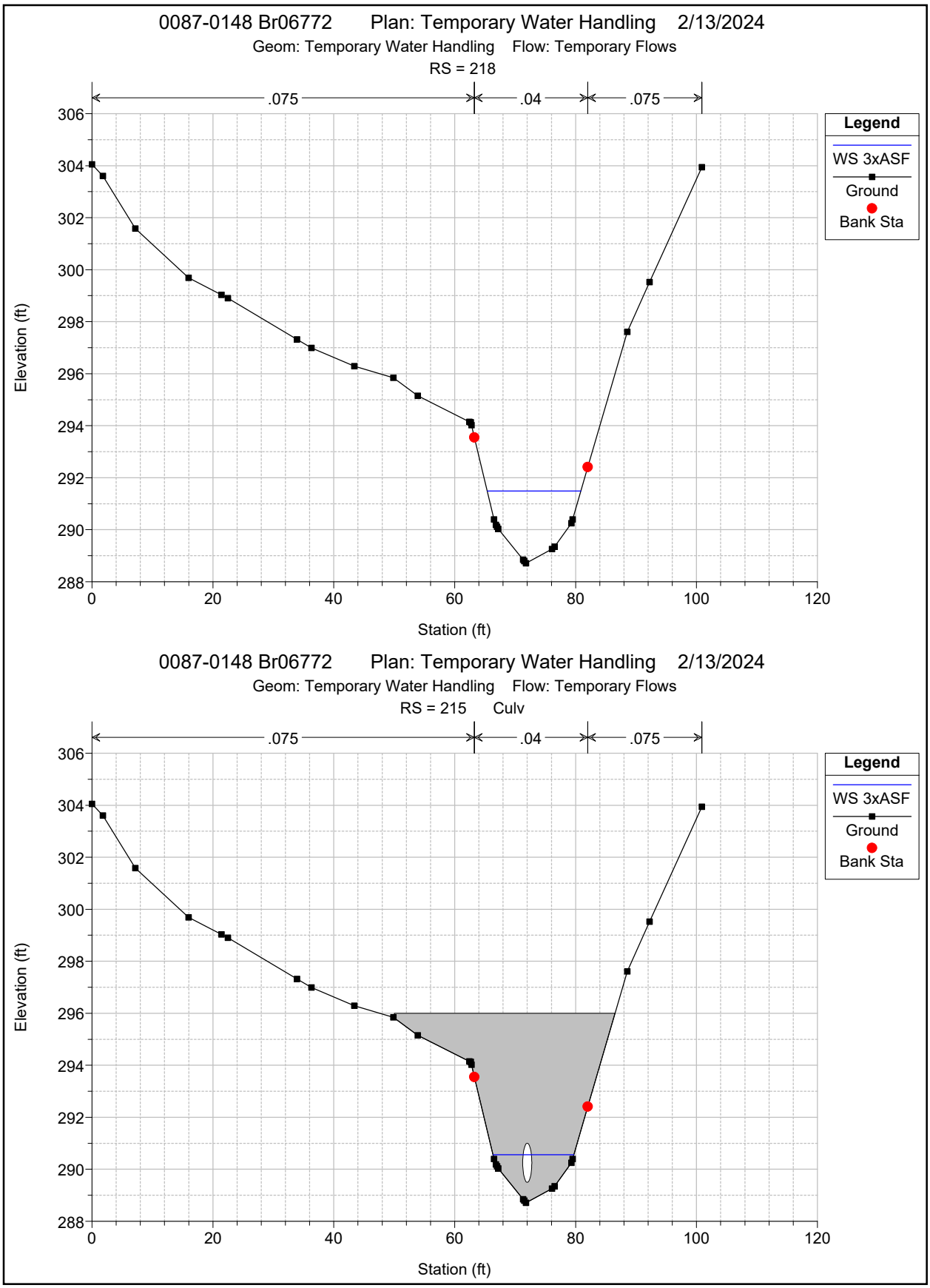

0087-0148 Br06772 Plan: Temporary Water Handling 2/13/2024
Geom: Temporary Water Handling Flow: Temporary Flows
RS = 719
.075
.04
.075
Legend
WS 3xASF
Ground
Bank Sta
Elevation (ft)
Station (ft)
0087-0148 Br06772 Plan: Temporary Water Handling 2/13/2024
Geom: Temporary Water Handling Flow: Temporary Flows
RS = 674
.075
.04
.075
Legend
WS 3xASF
Ground
Bank Sta
Elevation (ft)
Station (ft)

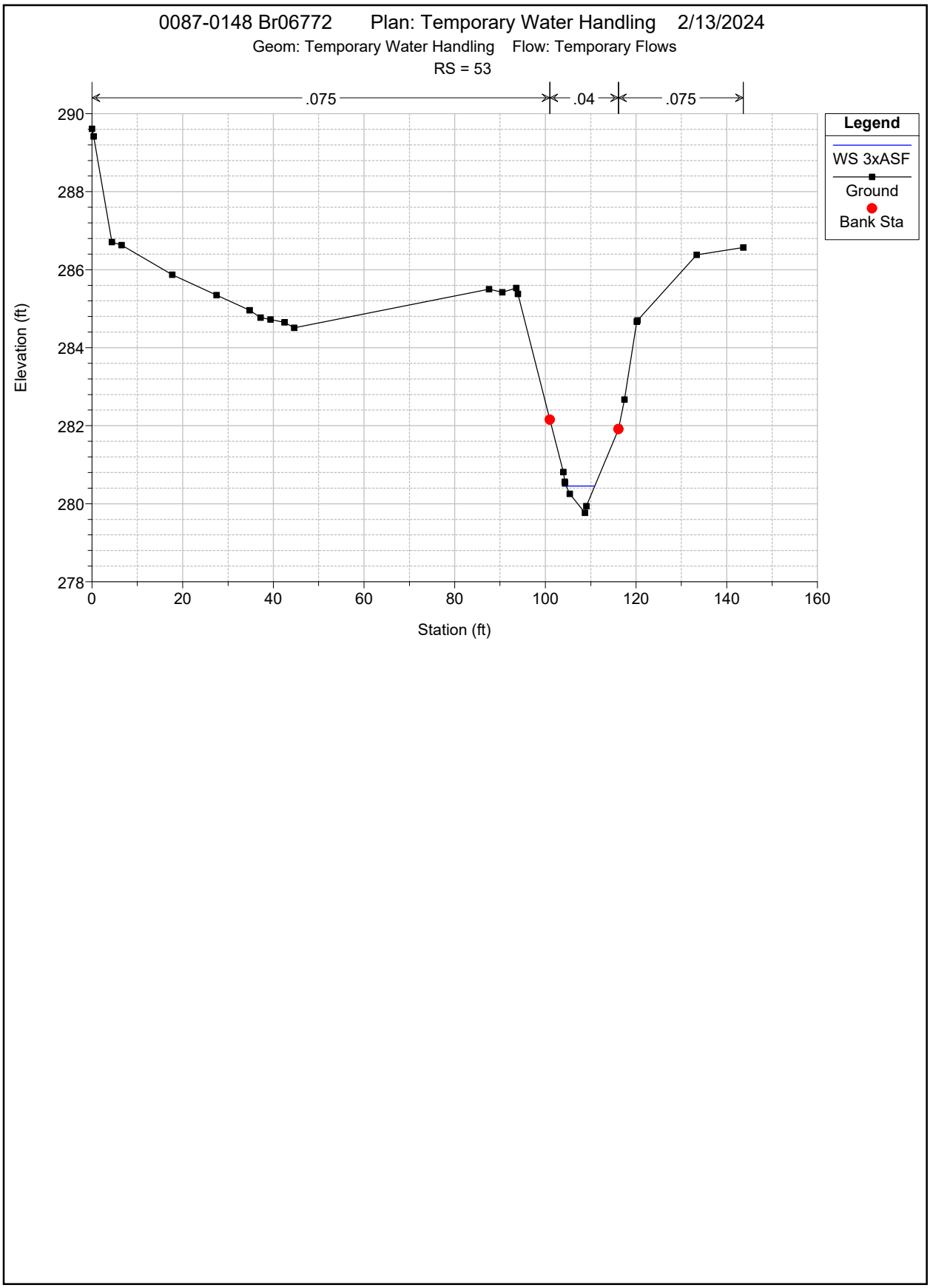

0087-0148 Br06772 Plan: Temporary Water Handling 2/13/2024
Geom: Temporary Water Handling Flow: Temporary Flows
RS = 631
.075
.04
.075
Legend
WS 3xASF
Ground
Bank Sta
Elevation (ft)
Station (ft)
0087-0148 Br06772 Plan: Temporary Water Handling 2/13/2024
Geom: Temporary Water Handling Flow: Temporary Flows
RS = 592
.075
.04
.075
Legend
WS 3xASF
Ground
Bank Sta
Elevation (ft)
Station (ft)


0087-0148 Br06772 Plan: Temporary Water Handling 2/13/2024
Geom: Temporary Water Handling Flow: Temporary Flows
RS = 579
.04
.04
.075
Legend
WS 3xASF
Ground
Bank Sta
Elevation (ft)
Station (ft)
0087-0148 Br06772 Plan: Temporary Water Handling 2/13/2024
Geom: Temporary Water Handling Flow: Temporary Flows
RS = 553
.075
.04
.075
Legend
WS 3xASF
Ground
Bank Sta
Elevation (ft)
Station (ft)


0087-0148 Br06772 Plan: Temporary Water Handling 2/13/2024
Geom: Temporary Water Handling Flow: Temporary Flows
RS = 550 Culv
.075
.04
.075
Legend
WS 3xASF
Ground
Bank Sta
Elevation (ft)
Station (ft)
0087-0148 Br06772 Plan: Temporary Water Handling 2/13/2024
Geom: Temporary Water Handling Flow: Temporary Flows
RS = 400
.075
.04
.075
Legend
WS 3xASF
Ground
Bank Sta
Elevation (ft)
Station (ft)


0087-0148 Br06772 Plan: Temporary Water Handling 2/13/2024
Geom: Temporary Water Handling Flow: Temporary Flows
RS = 372
.075
.04
.075
Legend
WS 3xASF
Ground
Bank Sta
Elevation (ft)
Station (ft)
0087-0148 Br06772 Plan: Temporary Water Handling 2/13/2024
Geom: Temporary Water Handling Flow: Temporary Flows
RS = 323
.075
.04
.075
Legend
WS 3xASF
Ground
Bank Sta
Elevation (ft)
Station (ft)


0087-0148 Br06772 Plan: Temporary Water Handling 2/13/2024
Geom: Temporary Water Handling Flow: Temporary Flows
RS = 218
.075
.04
.075
Legend
WS 3xASF
Ground
Bank Sta
Elevation (ft)
Station (ft)
0087-0148 Br06772 Plan: Temporary Water Handling 2/13/2024
Geom: Temporary Water Handling Flow: Temporary Flows
RS = 215 Culv
.075
.04
.075
Legend
WS 3xASF
Ground
Bank Sta
Elevation (ft)
Station (ft)


0087-0148 Br06772 Plan: Temporary Water Handling 2/13/2024
Geom: Temporary Water Handling Flow: Temporary Flows
RS = 53
.075
.04
.075
Legend
WS 3xASF
Ground
Bank Sta
Elevation (ft)
290
288
286
284
282
280
278
0
20
40
60
80
100
120
140
160
Station (ft)

OUTLET PROTECTION - OUTLET VELOCITY ≤ 14 feet/sec

DISCHARGE (cfs)	OUTLET PIPE DIAMETER OR SPAN (in)									
	12	15	18	24	30	36	42	48	54	60
0-5	***10***	***10***		***USE***						
6	12	11								
7		13	***12***							
8		14	13	***12***		***MINIMUM***				
9			14	13						
10			15	13						
11			16	14				***LENGTH***		
12				14						
14				16	***14***					
16				17	15	***14***			***OUTLINED***	
18				18	16	15				
20					17	15	***14***			
22		***USE***			18	16	15			
24						17	15	***14***		
26						17	16	15		
28						18	16	15		
30						19	17	16		
35						20	18	17	***16***	
40			***PREFORMED***				20	18	17	***16***
45							21	19	18	16
50							22	20	18	17
55								21	19	18
60								22	20	19
65								24	21	20
70					***SCOUR***			25	22	20
75								26	23	21
80									24	22
90									26	24
100									28	25
110										27
125							***HOLE***			29
130										30

Table 11-12.1 - Length - L_a (feet)
Type A Riprap Apron

Notes: 1. Bold face outlined boxes indicate minimum L_a to be used for a given pipe diameter or span.
2. Rounding and interpolating are acceptable.

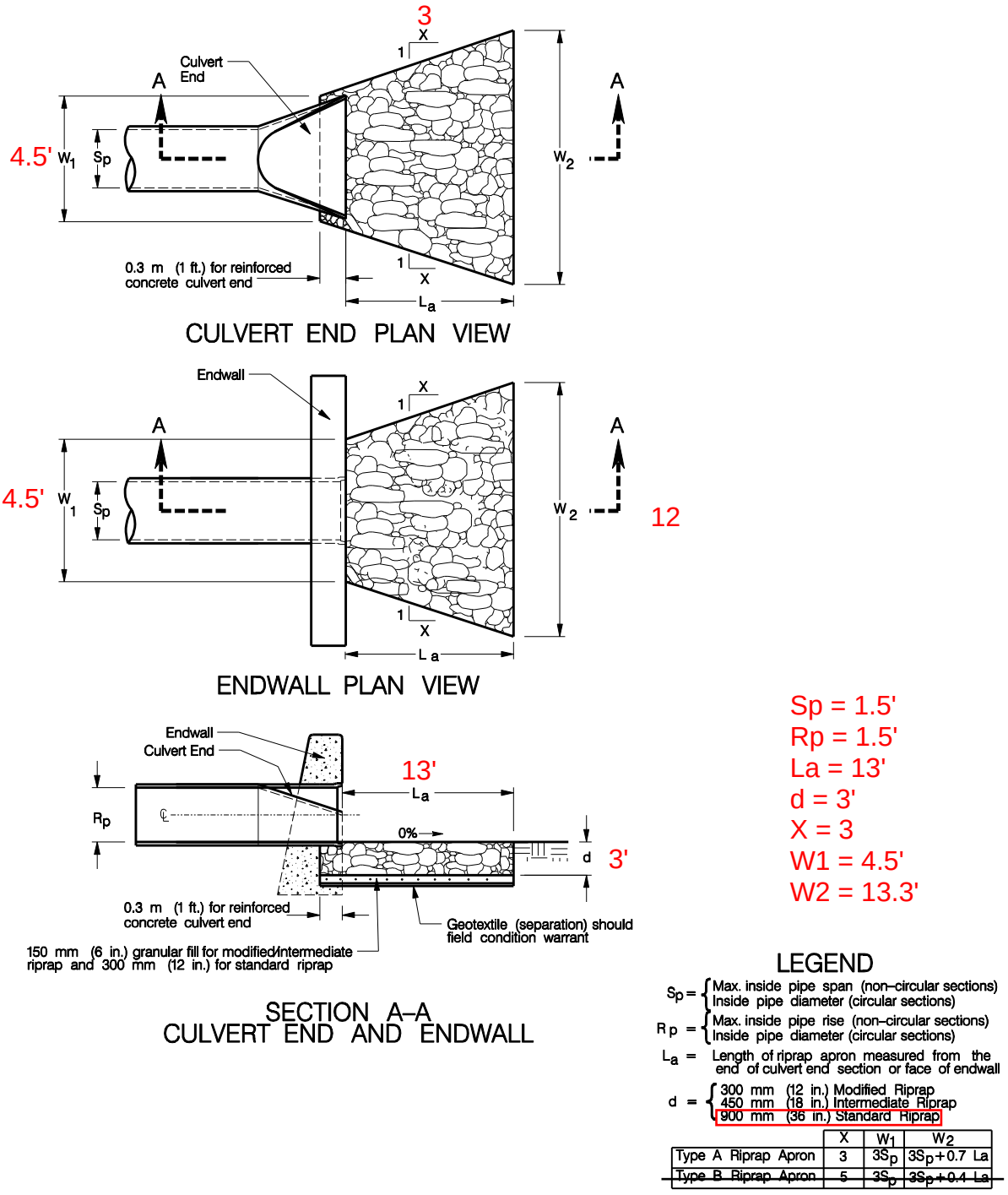


Figure 11-13 Type A ~~and B~~ Riprap Apron
(to be used where there is no defined channel downstream of the outlet)

F. Flood Contingency Plan

Flood Contingency Plan

State of Connecticut, Department of Transportation
State Project No.: 0087-0148
Project Decription: Replacement of Bridge No. 06772
Watercourse: Straitsville Brook
Town: Naugatuck, CT

Construction Flood Contingency Operations Plan

In accordance with the Department's "Standard Specifications for Roads, Bridge and Incidental Construction," Form 817, Section 1.10.03–Water Pollution Control: Required Best Management Practices and R.C.S.A 25-68h-2, the Contractor shall not store below the 500-year flood elevation any materials that are buoyant, hazardous, flammable, explosive, soluble, expansive radioactive, or any other materials that could be injurious to human, animal or plant life in the event of a flood.

Other material or equipment may be stored below the elevation of the 500-year flood elevation provided that such material or equipment is not subject to major damage by floods, and provided that such material or equipment is firmly anchored, restrained or enclosed to prevent it from floating away or is removed prior to flooding.

Prior to commencement of any construction, the Contractor shall submit to the Engineer for approval, a written Flood Contingency Plan. The plan shall include but not limited to the following:

- A description of the means by which the Contractor shall remove from within the floodplain, all material, equipment and personnel prior to a predicted major storm within a 24 hour period during the weekday including weekends and holidays. A site map shall be provided to identify the location of where all material and equipment will be stored temporarily outside of the floodplain. The Contractor is responsible for monitoring local weather conditions and will secure the worksite before predicted major storms. A major storm shall be defined as a storm predicted by the NOAA weather service with warnings of flooding, severe thunderstorms, or similarly severe weather conditions or effects.
- Provisions for notifying workers engaged in work on or near the bridge or watercourse of an impending storm.
- Provisions for removing buoyant, hazardous or injurious materials prior to major storms.
- Contractor's emergency contact information.

The Department will have District inspection personnel assigned to the project to ensure compliance with the provisions of the Standard Specifications. In addition, the Office of Environmental Planning will assign personnel to oversee the Contractor for the duration of the contract as necessary to ensure compliance with all environmental requirements.

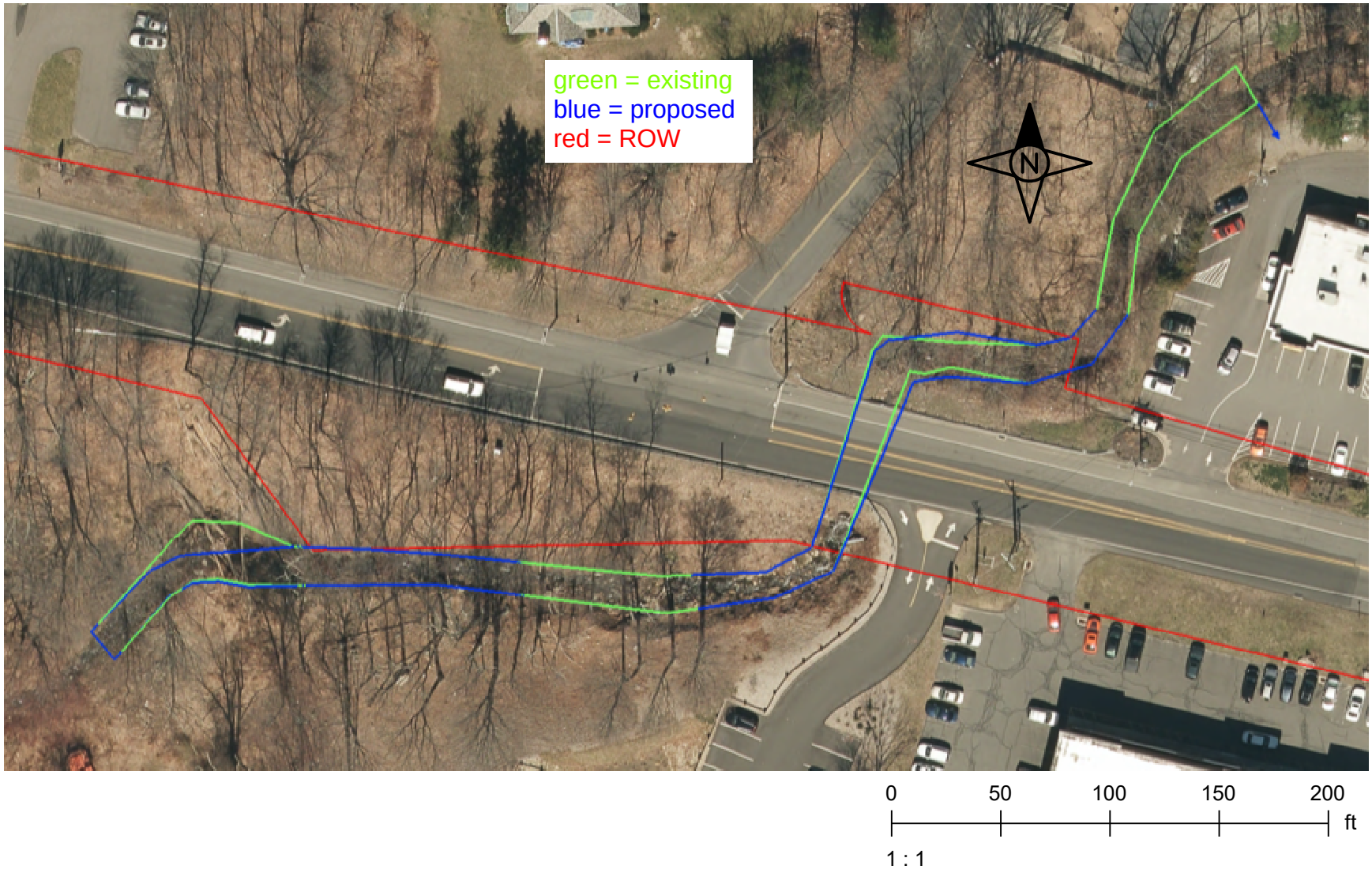
Post-Construction Flood Contingency Operations Plan

The Department is responsible for maintaining the integrity of the facility after completion of the project. Therefore, the need for a special flood operation plan upon completion of the project is not foreseen, since all facilities have been designed to be hydraulically adequate for the design flow. Any deficiencies will be noted and corrected in a timely manner.

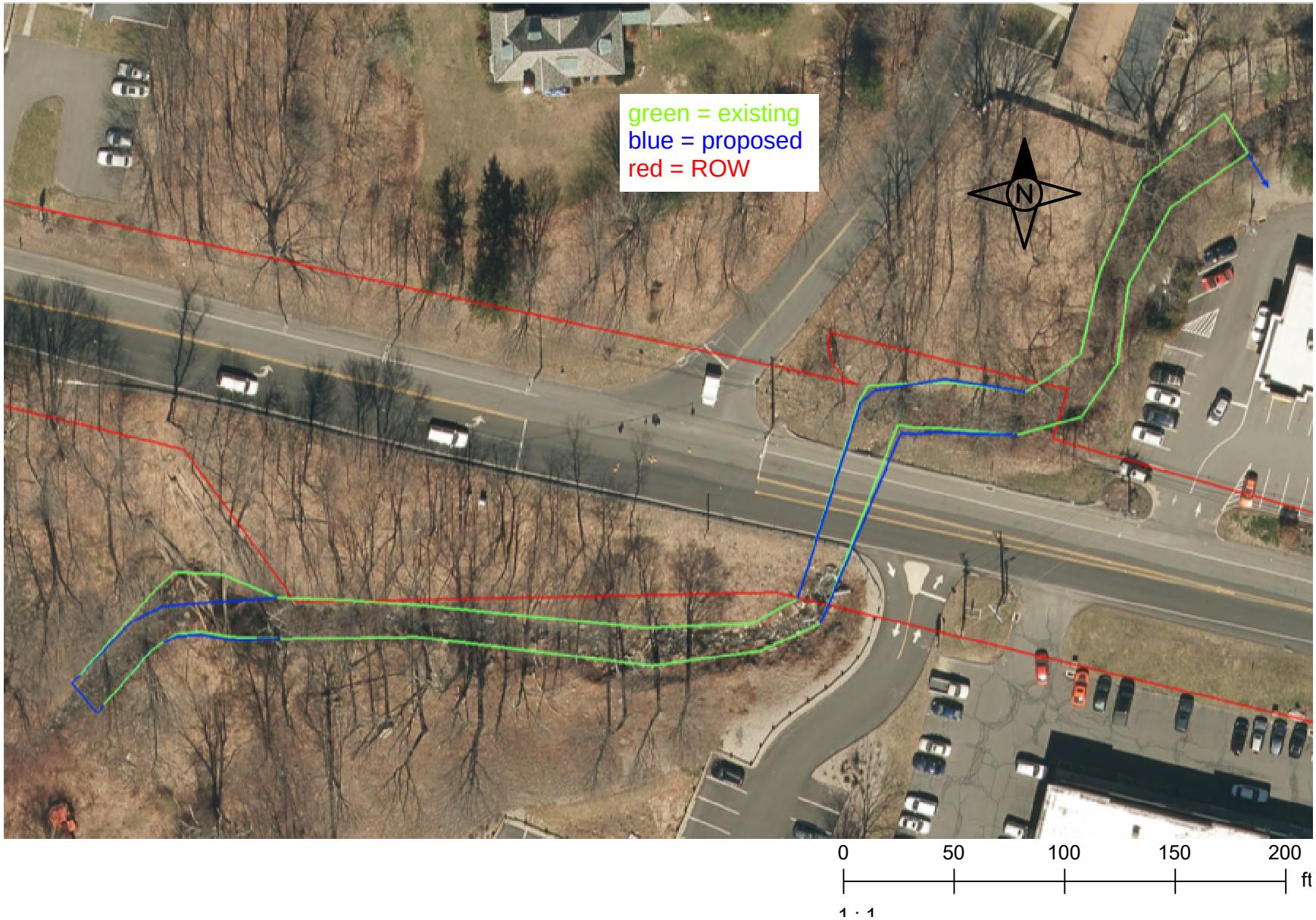
During Construction:	**Post Construction:**
Name: John R. Lee, P.E. Title: District Engineer Location: Thomaston Phone Number: (203) 591-3574	Name: Douglas Harris Title: District Maintenance Director Location: Thomaston Phone Number: (203) 591-3605

G. Inundation Area Mapping

50-Yr Existing and Proposed Flood Extents



100-Yr Existing and Proposed Flood Extents



H. List of Hydraulic Analysis (HEC-RAS) Data Files

Project File Name: 00870148Br06772.prj
Project Title: 0087-0148 Br06772

HEC-RAS Plans

Plan Title: Existing, Downstream Reach
Short ID: Ex DS
File Name: 00870148Br06772.p01
Geometry Title: Existing Conditions, Downstream Reach
Geometry File Name: 00870148Br06772.g01
Flow Title: Flows, Downstream Reach
Flow File Name: 00870148Br06772.f04

Plan Title: Existing, Upstream Reach
Short ID: Ex US
File Name: 00870148Br06772.p04
Geometry Title: Existing Conditions, Upstream Reach
Geometry File Name: 00870148Br06772.g04
Flow Title: Flows, Existing KWSEL
Flow File Name: 00870148Br06772.f05

Plan Title: Proposed, Downstream Reach
Short ID: Prop DS
File Name: 00870148Br06772.p07
Geometry Title: Proposed Conditions, Downstream Reach
Geometry File Name: 00870148Br06772.g07
Flow Title: Flows, Downstream Reach
Flow File Name: 00870148Br06772.f04

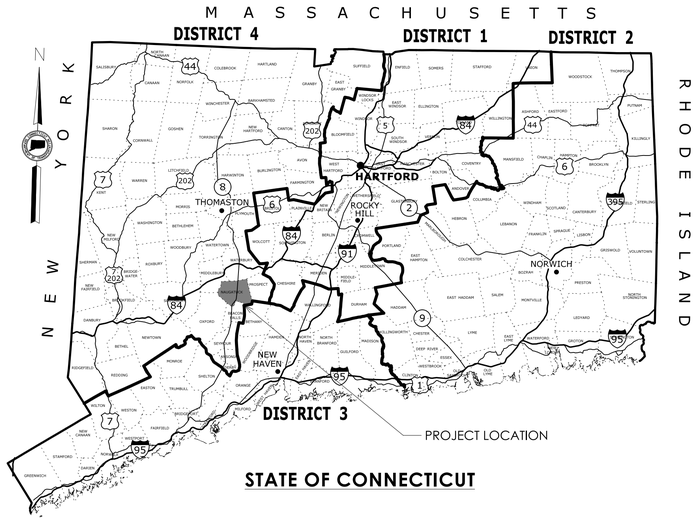
Plan Title: Proposed, Upstream Reach
Short ID: Prop US
File Name: 00870148Br06772.p08
Geometry Title: Proposed Conditions, Upstream Reach
Geometry File Name: 00870148Br06772.g08
Flow Title: Flows, Proposed KWSEL
Flow File Name: 00870148Br06772.f03

Plan Title: Temporary Water Handling
Short ID: Temp
File Name: 00870148Br06772.p02
Geometry Title: Temporary Water Handling
Geometry File Name: 00870148Br06772.g02
Flow Title: Temporary Flows
Flow File Name: 00870148Br06772.f02

I. Plans

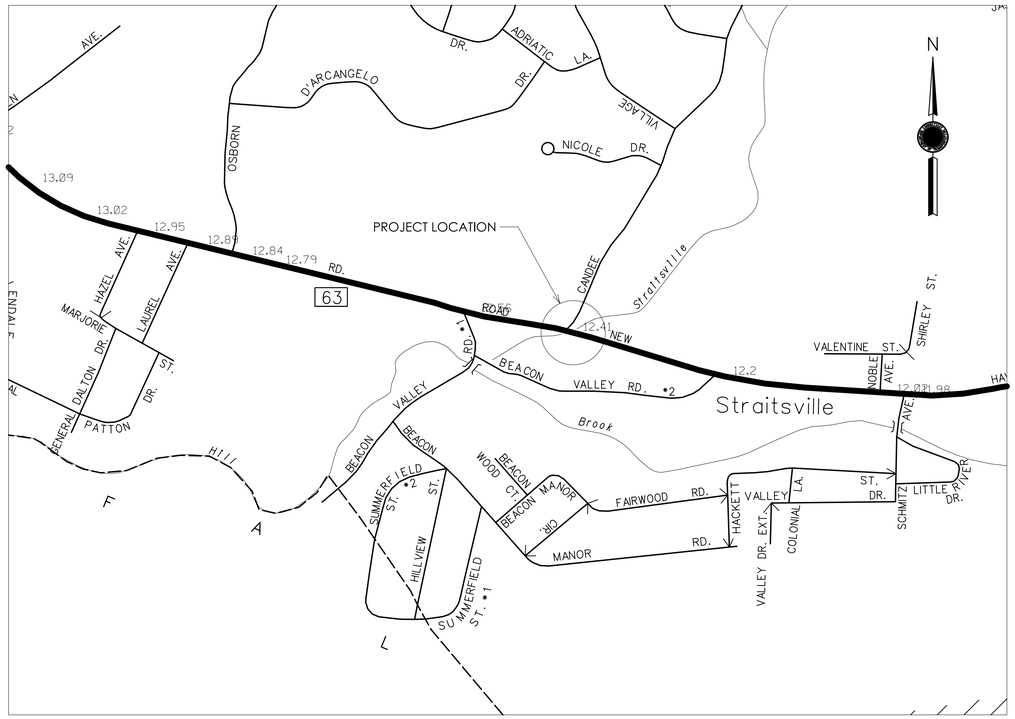
Environmental Permit Plan Set

As-Built Plans (1964)



STATE OF CONNECTICUT

ENVIRONMENTAL PERMIT PLANS
STATE PROJECT NO. 0087-0148
REHABILITATION OF BRIDGE NO. 06772
CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
IN THE TOWN OF NAUGATUCK, CT



LOCATION PLAN

1" = 500'-0"

GENERAL NOTES

1. THESE PLANS ARE NOT FOR CONSTRUCITON AND ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL EFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS, AND WETLAND SOILS, SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 1927 VERTICAL DATUM BASED ON NGVD OF 1929.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGES, FACILITIES AND INCIDENTAL CONSTRUCTION, FORM 818, SECTION 1.10 AND WILL ALSO FOLLOW REQUIRED BEST MANAGEMENT PRACTICES (BMP's) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION AND SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	TITLE SHEET
PMT-02	GENERAL SITE PLAN
PMT-03	WETLAND/ WATERCOURSE IMPACT PLAN
PMT-04	ELEVATIONS AND SECTION PLAN
PMT-05	REVETMENT SECTION
PMT-06	STAGING AND WATER HANDLING PLAN
PMT-07	PERMIT PLANTING PLAN

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: March 21, 2024

REV. | DATE | REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

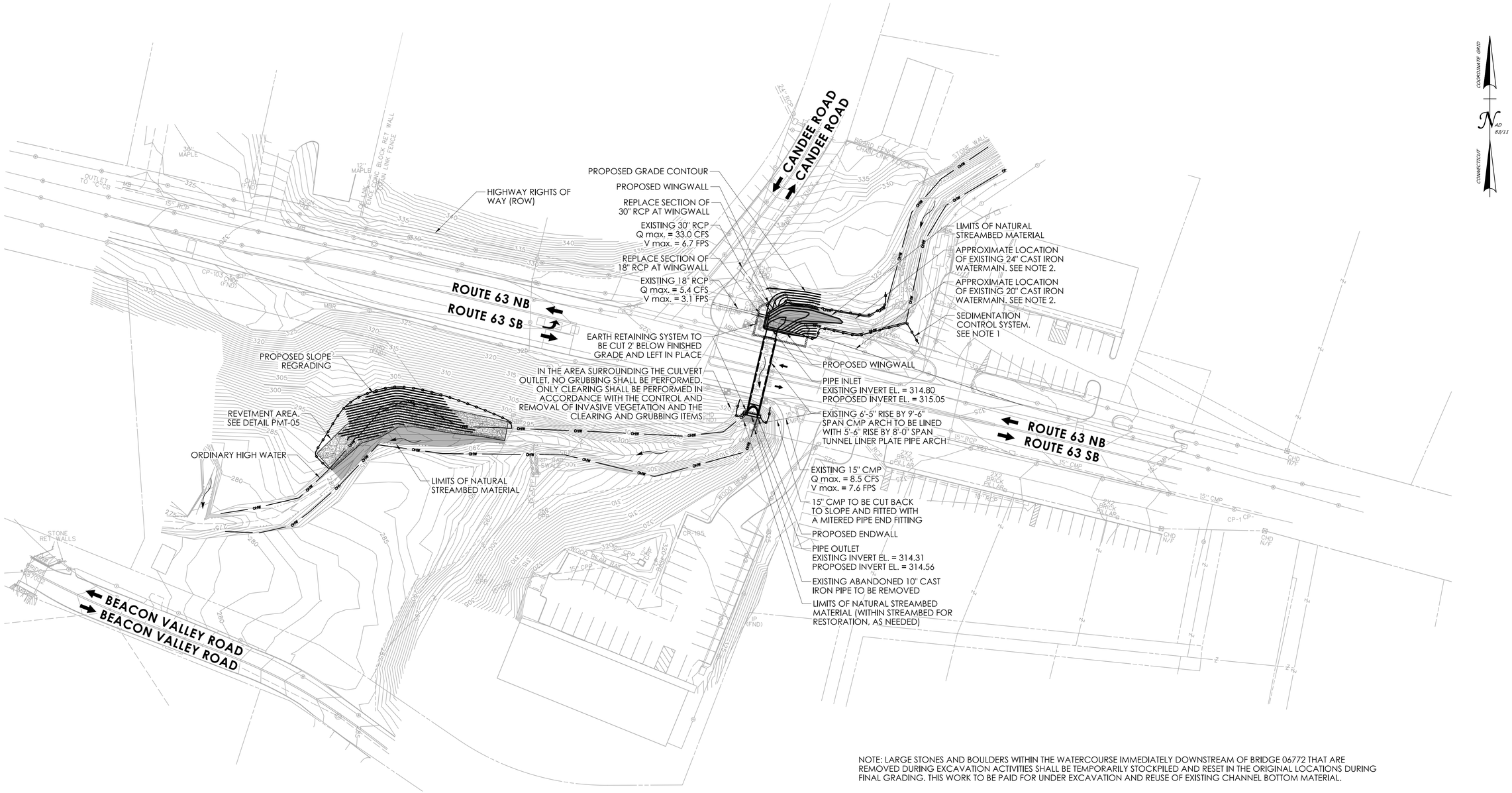
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: TITLE SHEET

DRAWING NO. PMT-01
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-1_Title Sheet.dgn
PLOTTED DATE: 3/21/2024



NOTE: LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.

BRIDGE NO. 06772 GENERAL SITE PLAN

SCALE: 1" = 40'

LEGEND

- OHW — ORDINARY HIGH WATER
- SURVEYED EDGE OF WATER
- SEDIMENTATION CONTROL SYSTEM

NOTES:

1. APPROXIMATE LOCATION OF SEDIMENTATION CONTROL SYSTEM SHOWN AT FINAL CONDITION
2. LOCATION OF EXISTING WATERMAINS ARE UNKNOWN. IF ENCOUNTERED DURING CONSTRUCTION THE ABANDONED WATERMAINS WITHIN THE REGULATED AREA WILL BE REMOVED AND THE DISTURBED AREA WILL BE RESTORED WITH NATURAL STREAMBED MATERIAL.
3. SEDIMENTATION CONTROL SYSTEM TO BE PLACED AT CATCH BASIN(S) AS NEEDED OR AS DIRECTED BY THE ENGINEER

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: March 21, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

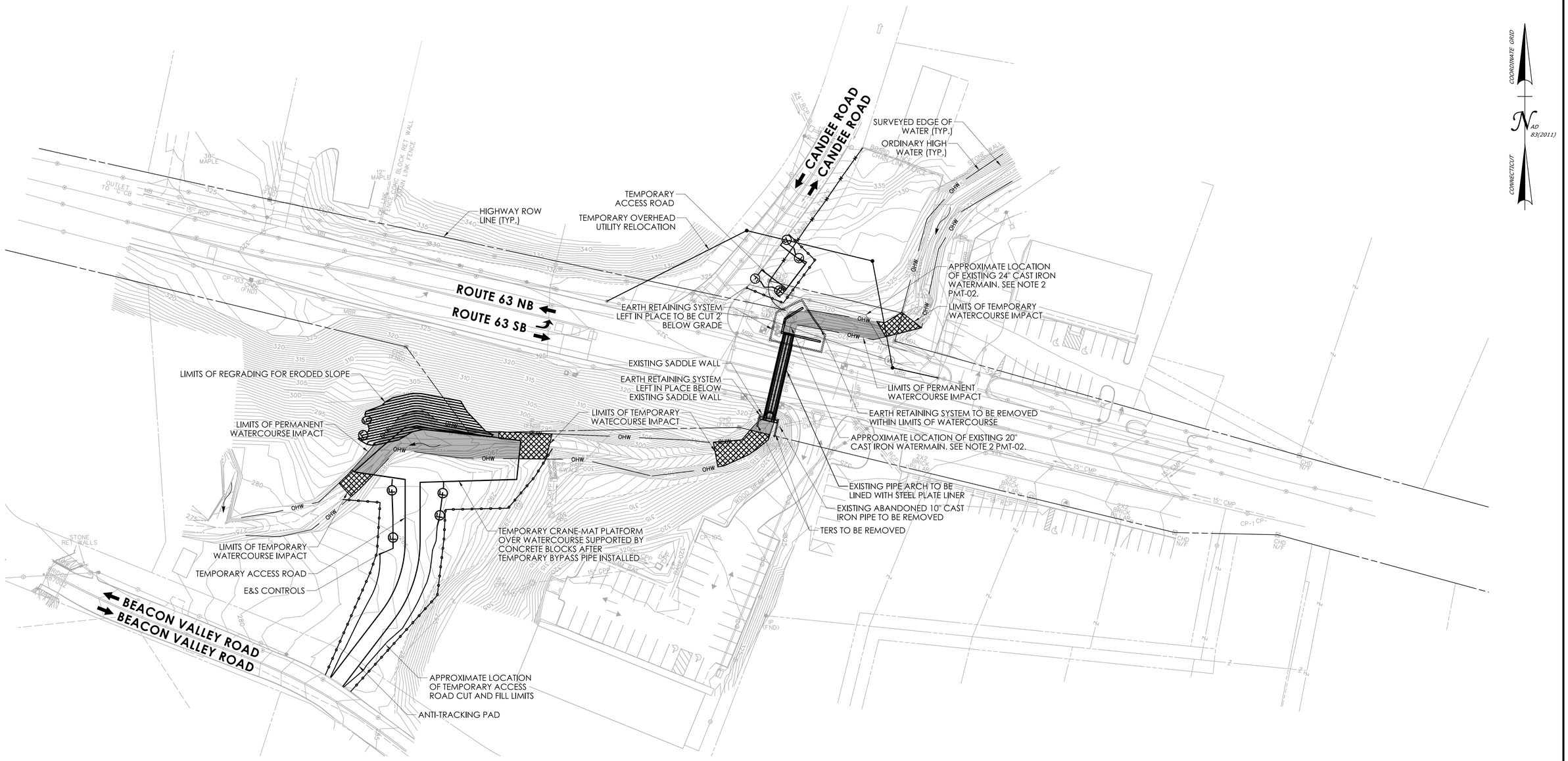
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: GENERAL SITE PLAN

DRAWING NO. PMT-02
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-2_GeneralSitePlan.dgn
PLOTTED DATE: 3/21/2024



LEGEND

- TEMPORARY WETLAND/WATERCOURSE IMPACT
- PERMANENT WETLAND/WATERCOURSE IMPACT

NOTE:

THE CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WERLANDS AND WATERCOURSE. ALL DISTURBED AREAS SHALL BE RESTORED

BRIDGE NO. 06772 IMPACT PLAN

SCALE: 1" = 40'

WETLAND/WATERCOURSE IMPACT TABLE

	WETLAND IMPACTS	WATERCOURSE IMPACTS	TOTAL
PERMANENT IMPACTS	0 S.F. (0 AC.)	5025 S.F. (0.116 AC)	5025 S.F. (0.116 AC)
TEMPORARY IMPACTS	0 S.F. (0 AC.)	1890 S.F. (0.043 AC)	1890 S.F. (0.043 AC)
TOTAL IMPACTS	0 S.F. (0 AC.)	6915 S.F. (0.159 AC)	6915 S.F. (0.159 AC)

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: March 21, 2024

REV. | DATE | REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: WATERCOURSE IMPACT PLAN

DRAWING NO. PMT-03
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-3_WetlandImpactPlan.dgn
PLOTTED DATE: 3/21/2024

HYDRAULIC DATA	
DRAINAGE AREA	0.69 SQ. MILE
DESIGN FREQUENCY	50 YEAR
DESIGN DISCHARGE	220 CFS
UPSTREAM AVERAGE DAILY FLOW ELEVATION	315.4 FT
DOWNSTREAM AVERAGE DAILY FLOW ELEVATION	308.9 FT
UPSTREAM DESIGN WATER SURFACE ELEVATION	320.6 FT
DOWNSTREAM DESIGN WATER SURFACE ELEVATION	311.4 FT

NATIVE STREAMBED MATERIAL NOTES:

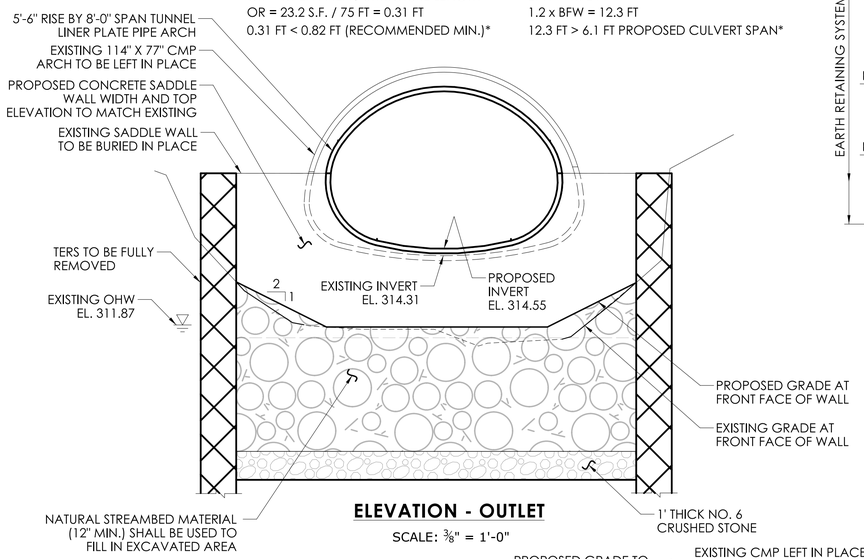
1. NATIVE STREAMBED MATERIAL EXCAVATED DURING THE PIPE RELINING, RIPRAP INSTALLATION AND CHANNEL REGRADING SHALL BE STOCKPILED AND THEN REPLACED OUTSIDE THE LIMITS OF THE RIPRAP AREAS AS NEEDED FOR REGRADING TO THE DEPTH SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH THE SPECIAL PROVISION "EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL."
2. ADDITIONAL STREAMBED MATERIAL, IF REQUIRED, SHALL BE IN ACCORDANCE WITH SPECIAL PROVISION "SUPPLEMENTAL STREAMBED CHANNEL MATERIAL."
3. THE STOCKPILE SHALL BE LOCATED OUTSIDE THE WETLAND LIMITS AND PROTECTED WITH SEDIMENTATION CONTROL SYSTEM.
4. LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.

OPENNESS RATIO (OR):

OR = OPEN AREA / STRUCTURE LENGTH
OR = 23.2 S.F. / 75 FT = 0.31 FT
0.31 FT < 0.82 FT (RECOMMENDED MIN.)*

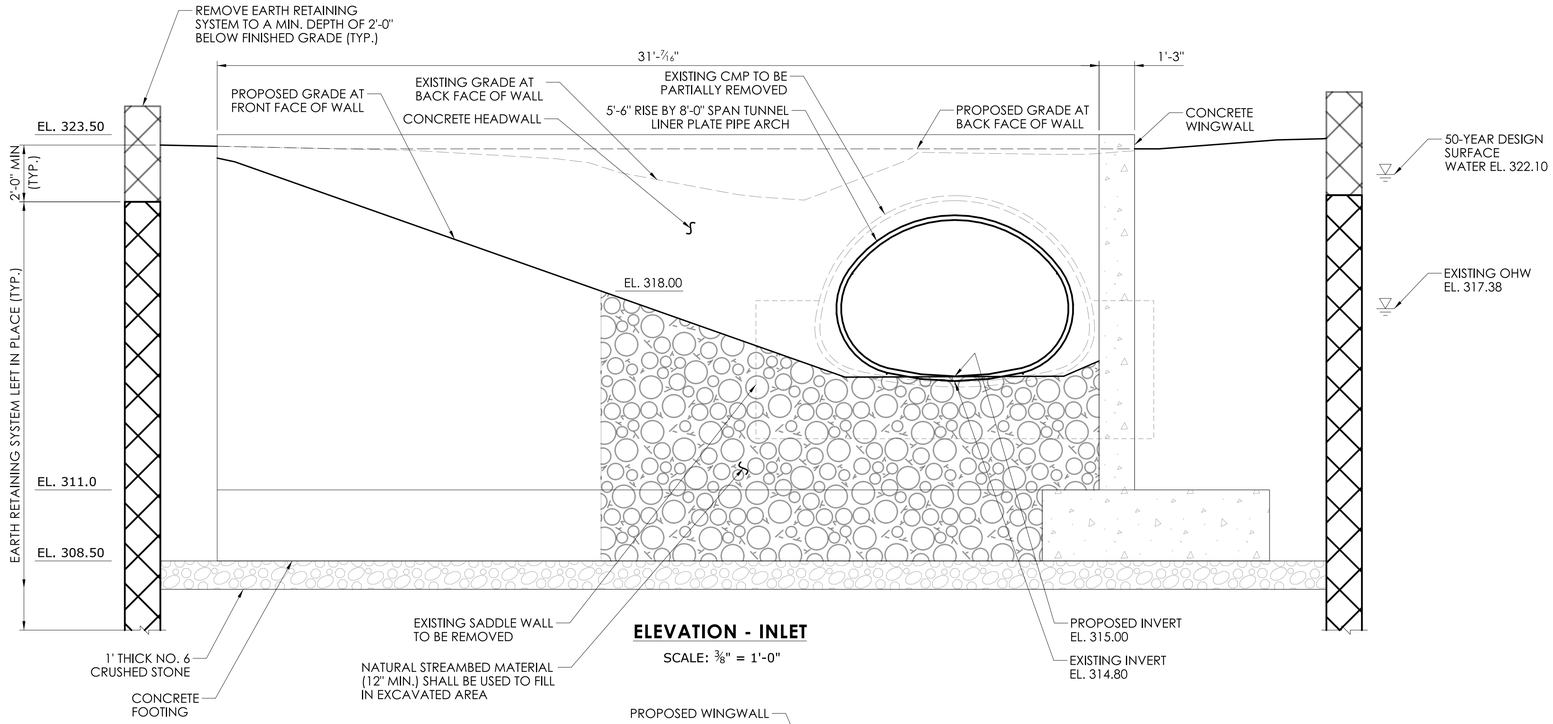
BANKFULL WIDTH (BFW):

BFW = 10.2 FT
1.2 x BFW = 12.3 FT
12.3 FT > 6.1 FT PROPOSED CULVERT SPAN*



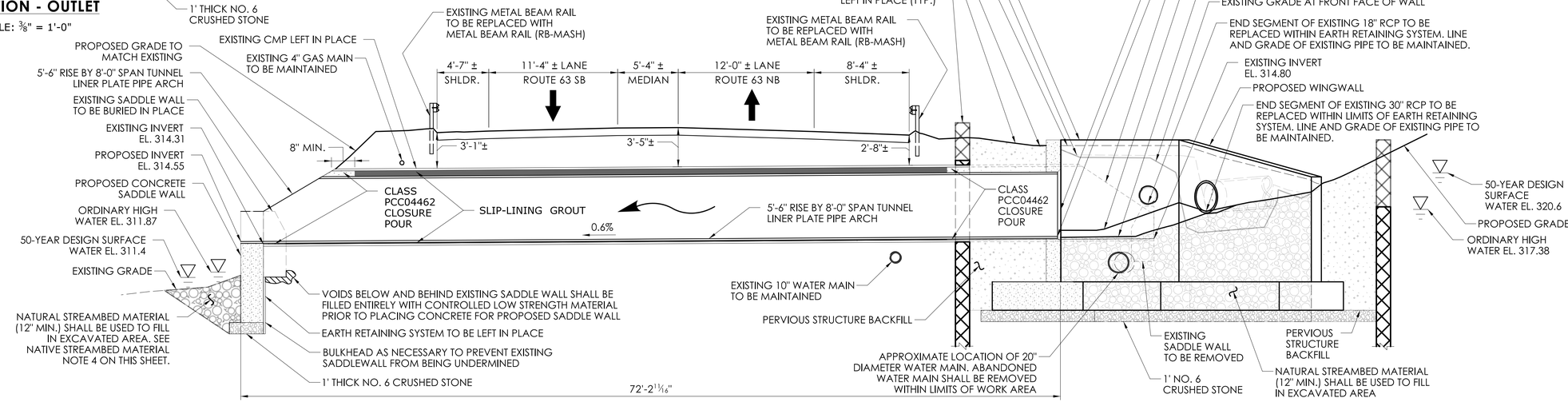
ELEVATION - OUTLET

SCALE: 3/8" = 1'-0"



ELEVATION - INLET

SCALE: 3/8" = 1'-0"



SECTION - INLET

SCALE: 3/16" = 1'-0"

NOTES:
IF LEDGE IS ENCOUNTERED PRIOR TO REACHING DEPTH OF EXCAVATION AS SHOWN ON THIS SHEET, LEDGE NEED NOT BE REMOVED AND PROPOSED SADDLEWALL SHAL BE CAST DIRECTLY AGAINST LEDGE.

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: March 21, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

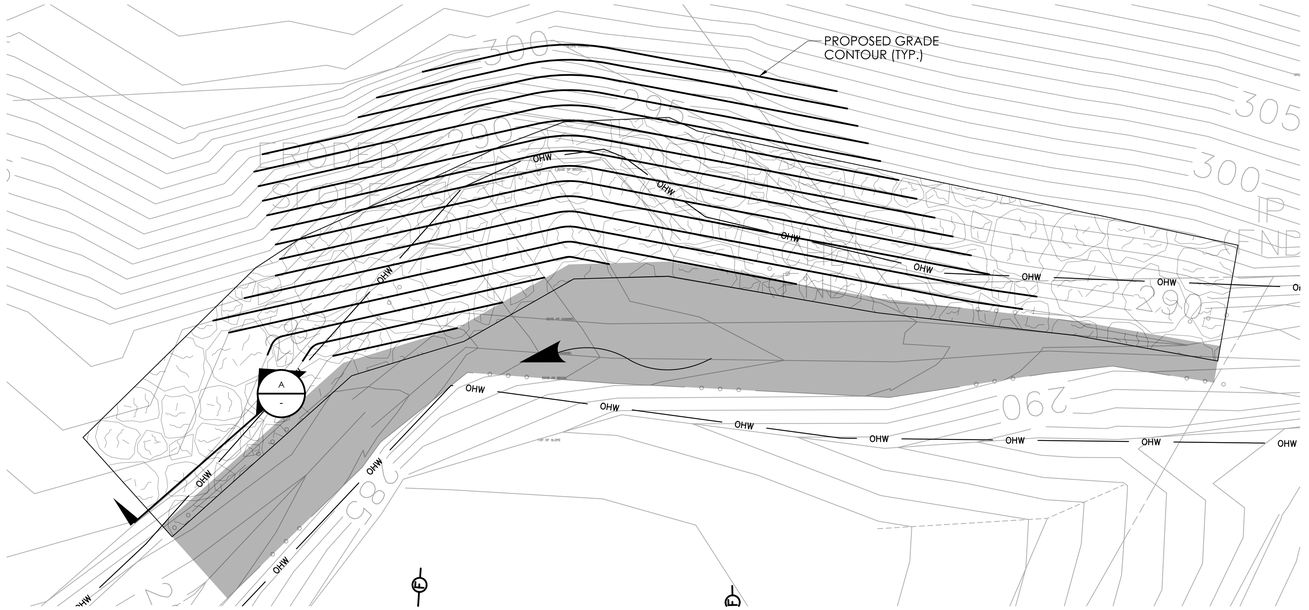
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: ELEVATION AND SECTION PLAN

DRAWING NO. PMT-04
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-4_ElevationSectionPlan.dgn
PLOTTED DATE: 3/22/2024

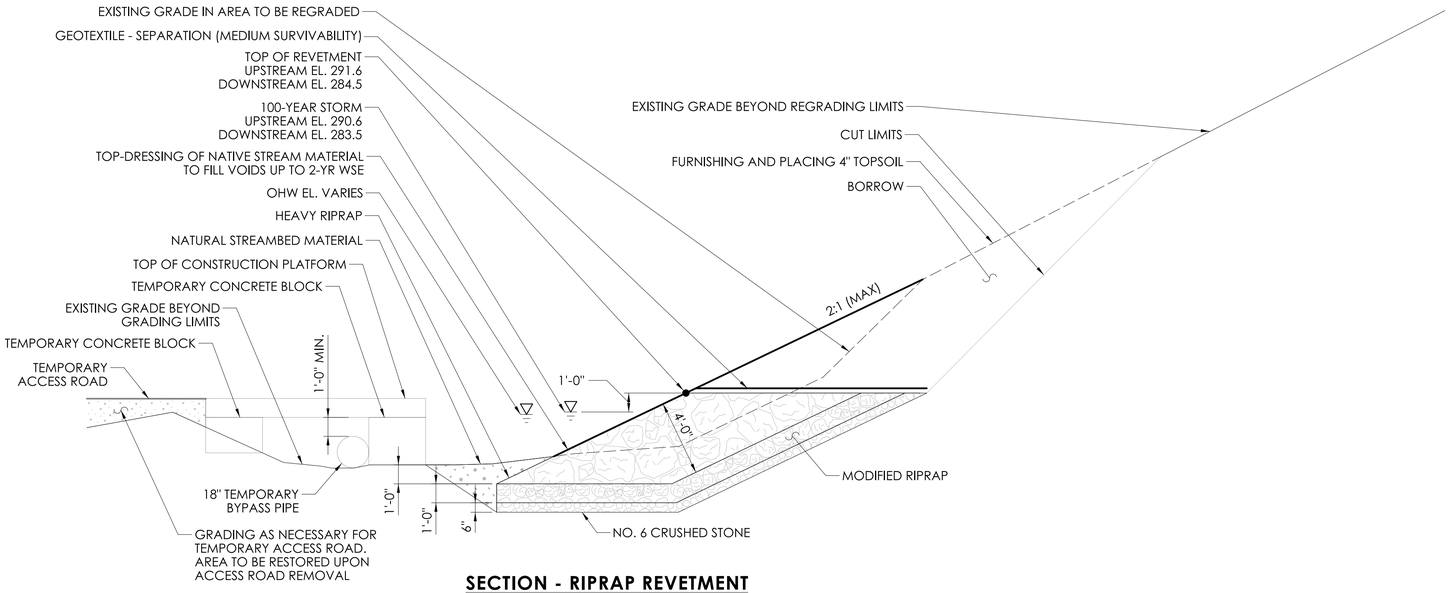


REVETMENT PLAN
SCALE: 1" = 10'

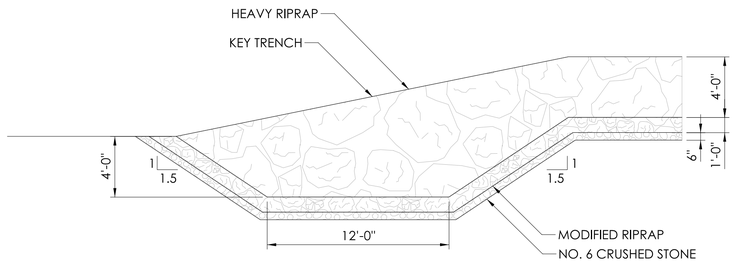
COORDINATE GRID
NAD 83(2011)
CONNECTICUT

4' HEAVY RIPRAP ON 1' MODIFIED RIPRAP, ON 6" NO. 6 CRUSHED STONE. NATURAL STREAMBED MATERIAL TO BE WASHED INTO RIPRAP UP TO 2-YR WSE.

NATURAL STREAMBED MATERIAL



SECTION - RIPRAP REVETMENT
SCALE: N.T.S.



SECTION - REVETMENT KEY-IN (A / -)
SCALE: 1" = 5'

ENVIRONMENTAL PERMIT PLANS
PLAN DATE: March 21, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: CHECKED BY:

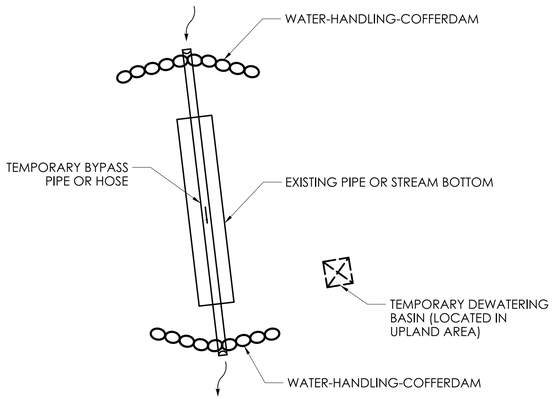
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: REVETMENT SECTION

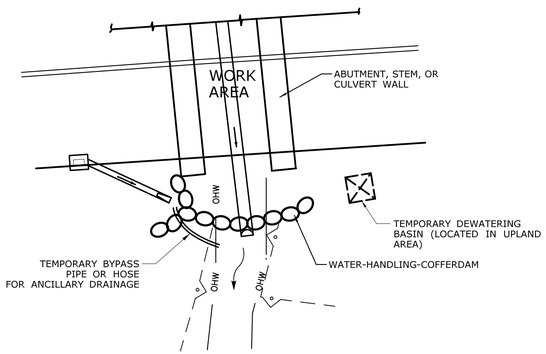
DRAWING NO. PMT-05
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-5_RevetmentSection.dgn
PLOTTED DATE: 3/21/2024



TEMPORARY PIPE

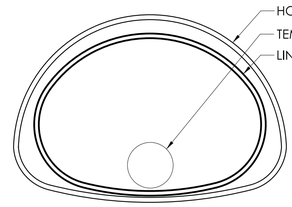
(NOT TO SCALE)



ANCILLARY STORM DRAINAGE NEAR WORK AREA

(NOT TO SCALE)

NOTE: ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING OR PROPOSED STORM DRAINAGE SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREAS. THE CONTRACTOR SHALL SUBMIT THE MEANS AND METHODS OF HANDLING STORM DRAINAGE TO THE ENGINEER FOR APROVAL.

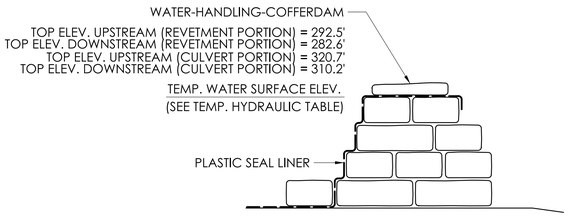


WATER HANDLING

SCALE: N.T.S.

TEMPORARY HYDRAULIC DATA	
AVERAGE DAILY FLOW	1.3 CFS
AVERAGE SPRING FLOW	2.5 CFS
2-YEAR FREQUENCY DISCHARGE	45 CFS
TEMPORARY DESIGN FREQUENCY	3 X A.S.F.
LOW FLOW PUMPING TEMPORARY DESIGN DISCHARGE	7.5 CFS
GRAVITY FLOW BYPASS PIPE TEMPORARY DESIGN DISCHARGE	7.5 CFS
UPSTREAM WATER SURFACE ELEVATION (CULVERT PORTION)	319.7 FT
DOWNSTREAM WATER SURFACE ELEVATION (CULVERT PORTION)	309.2 FT
UPSTREAM WATER SURFACE ELEVATION (REVETMENT PORTION)	291.5 FT
DOWNSTREAM WATER SURFACE ELEVATION (REVETMENT PORTION)	280.5 FT

NOTES:
1. TABLE IS APPLICABLE FOR BOTH CULVERT AND REVETMENT WATER HANDLING
2. VALUES AND ELEVATIONS MAY VARY SLIGHTLY FROM THE CONTRACT PLANS



WATER-HANDLING-COFFERDAM TYPICAL SECTION

SCALE: NOT TO SCALE

SUGGESTED CONSTRUCTION SEQUENCE - SLOPE REVETMENT

1. INSTALL SEDIMENTATION CONTROL SYSTEM.
2. PERFORM CLEARING AND GRUBBING AND CONTROL AND REMOVAL OF INVASIVE VEGETATION.
3. CONSTRUCT TEMPORARY ACCESS ROAD FROM BEACON VALLEY ROAD TO THE WORK AREA.
4. INSTALL TEMPORARY WATER HANDLING SYSTEM INCLUDING WATER-HANDLING-COFFERDAMS AND TEMPORARY BYPASS PIPE.
5. DIVERT WATER THROUGH THE TEMPORARY BYPASS PIPE TO DRY THE WORK AREA.
6. CONSTRUCT ACCESS PLATFORM WITH CRANE MATS AND CONCRETE BLOCKS TO SPAN THE TEMPORARY BYPASS PIPE AS NEEDED FOR ACCESS TO THE DOWNSTREAM REVETMENT WORK AREA.
7. CONSTRUCT SLOPE REVETMENT.
8. REMOVE TEMPORARY ACCESS ROADS, CRANE MATS, AND PERFORM FINAL GRADING.
9. REMOVE TEMPORARY WATER-HANDLING-COFFERDAMS AND BYPASS PIPE.
10. CONSERVATION SEEDING FOR SLOPES, PERMIT PLANTINGS. REMOVE SEDIMENTATION CONTROL SYSTEMS UPON FINAL STABILIZATION.

SUGGESTED CONSTRUCTION SEQUENCE - PIPE RELINING

1. RELOCATE OVERHEAD UTILITIES TEMPORARILY.
2. INSTALL SEDIMENTATION CONTROL SYSTEM.
3. PERFORM CLEARING AND GRUBBING AND CONTROL AND REMOVAL OF INVASIVE VEGETATION.
4. CONSTRUCT TEMPORARY ACCESS ROAD FROM CANDEE ROAD TO CULVERT INLET.
5. INSTALL TEMPORARY WATER HANDLING SYSTEM INCLUDING WATER-HANDLING-COFFERDAMS AND TEMPORARY BYPASS PIPE.
6. DIVERT WATER THROUGH THE TEMPORARY BYPASS PIPE TO DRY THE HOST STRUCTURE.
7. REMOVE SEDIMENT AND REGRADE AREA AT HOST STRUCTURE INLET.
8. CLEAN HOST STRUCTURE BY HAND THROUGH REMOVAL OF DEBRIS. THE CULVERT CLEANING AND THE GROUTING PROCESS SHALL NOT CAUSE TURBIDITY OF THE EXISTING WATER COURSE.
9. GROUT ALL VOIDS AND PERFORATIONS TO ENSURE FULL BEARING OF MATERIAL TO THE EXTRADOS OF THE EXISTING PIPE ARCH.
10. PLACE TEMPORARY EARTH RETAINING SYSTEM. REMOVE END SECTION OF EXISTING STRUCTURE AT THE INLET. REPLACE END SECTIONS OF 30" RCP AND 18" RCP AT INLET WINGWALL.
11. INSTALL TUNNEL LINER PLATE SECTIONS WITHIN THE HOST STRUCTURE. THE CONTRACTOR SHALL TAKE THE NECESSARY MEANS TO ENSURE THAT DEBRIS DOES NOT ENTER THE CULVERT SYSTEM DURING INSTALLATION OF THE CORRUGATED STEEL STRUCTURAL PLATE LINER.
12. INSTALL PCC00462 BULKHEADS AT THE INLET AND OUTLET.
13. PLACE SLIP-LINING GROUT.
14. EXCAVATE AND CONSTRUCT WINGWALLS AND HEADWALLS ON NO. 6 CRUSHED STONE. REMOVE ABANDONED WATER MAINS IF ENCOUNTERED. CUT LEFT IN PLACE EARTH RETAINING SYSTEM AT 2 FEET BELOW GRADE. BACKFILL AND REMOVE REMAINING TEMPORARY EARTH RETAINING SYSTEM.
15. PLACE NATURAL STREAMBED MATERIAL AND PERFORM FINAL GRADING. LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.
16. REMOVE TEMPORARY WATER-HANDLING-COFFERDAMS AND BYPASS PIPE AT BOTH INLET AND OUTLET. RETURN FLOW TO HOST STRUCTURE.
17. REMOVE TEMPORARY ACCESS ROAD AND RESTORE IMPACTED AREAS.
18. CONSERVATION SEEDING FOR SLOPES, PERMIT PLANTINGS. REMOVE SEDIMENTATION CONTROL SYSTEMS UPON FINAL STABILIZATION.
19. RELOCATE OVERHEAD UTILITIES TO FINAL POSITIONING.

WATER HANDLING NOTES:

1. THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE TEMPORARY GRAVITY FLOW BYPASS PIPE (OR PUMP AND HOSE SYSTEM DESIGNED BY THE CONTRACTOR) AS SHOWN ON THIS SHEET DURING CLEANING AND REPAIR OF THE HOST STRUCTURE, GROUTING OF THE ANNULAR SPACE BETWEEN THE HOST STRUCTURE AND THE LINER AND DURINGESTABLISHMENT OF FINAL GRADES AS REQUIRED BY THE STAGE CONSTRUCTION SEQUENCES.
2. A DEWATERING BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. THE LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.
3. TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF AN APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND SHALL CONFORM TO PERMITS.

   ANY WATER HANDLING SCHEME DEPICTED WITHIN THE DEPARTMENT'S 'HANDLING WATER TYPICAL SCHEMATICS' MAY BE UTILIZED UNLESS SPECIFICALLY PROHIBITED. A MEANS AND METHOD FOR WATER HANDLING SYSTEM SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR APPROVAL.
4. WATER HANDLING MEASURES SHALL NOT EXCEED IMPACT AREAS SHOWN ON THE WETLAND SHEET OF THE PERMIT PLANS.
5. ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING OR PROPOSED STORM DRAINAGE PIPES SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREAS. PUMPS/PIPES SHALL BE SIZED BY THE CONTRACTOR TO HANDLE THE EXPECTED FLOWS AND BE DISCHARGED TO A STABLE LOCATION. THE CONTRACTOR SHALL SUBMIT THE MEANS AND METHODS OF HANDLING STORM DRAINAGE TO THE ENGINEER FOR APPROVAL AND IS INCLUDED AS PART OF WATER HANDLING.
6. IF A SHORT DURATION PUMP SYSTEM IS PROPOSED DURING LOW FLOW CONDITIONS, THE PUMP SYSTEM SHALL BE DESIGNED BY THE CONTRACTOR AND HAVE A MINIMUM CAPACITY AS SHOWN IN THE TEMPORARY HYDRAULIC TABLE. PUMP SYSTEM PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

   BASED UPON FIELD CONDITIONS, WORK DURATION, AND EXPECTED WEATHER CONDITIONS, THE ENGINEER MAY APPROVE A WATER HANDLING PLAN WITH LOWER PUMPING FLOWS, PROVIDED THAT THIS INCLUDES A CONTINGENCY PLAN, WHICH MINIMIZES NEGATIVE IMPACTS AND SAFELY CONVEYS LARGER FLOWS THROUGH THE WORK AREA.

UNCONFINED IN-STREAM WORK BMP NOTE:

ANY UNCONFINED IN-STREAM WORK WITHIN THE WATERCOURSE SHALL BE RESTRICTED TO THE PERIOD FROM JUNE 1 TO SEPTEMBER 30, INCLUSIVE. UNLESS OTHERWISE INCLUDED AS A SPECIAL PROVISION OF THE LICENSE, THE CONDITION SHALL APPLY TO PROJECTS IN NON-COASTAL WATERS.

THE DEPARTMENT WILL REVIEW AND MAY APPROVE THE METHODS OF UNCONFINED IN-WATER WORK WITH CONSIDERATION OF THE FOLLOWING:

- PROPOSED SCHEDULE FOR WORK OPERATIONS
- ALL UNCONFINED IN-WATER WORK SHALL BE MINOR IN NATURE
- DISTURBANCE SHALL BE LIMITED TO AREAS THAT HAVE BEEN APPROVED FOR TEMPORARY AND PERMANENT IMPACT
- BEST MANAGEMENT PRACTICE SHALL BE UTILIZED WHEREVER POSSIBLE TO MINIMIZE TURBIDITY/SEDIMENT TRANSPORT DOWNSTREAM
- DISTURBED AREAS AND THE DURATION OF DISTURBANCE SHALL BE MINIMIZED TO THE EXTENT POSSIBLE
- INSTREAM WORK SHALL BE DONE DURING PERIODS OF LOW FLOW

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: March 21, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

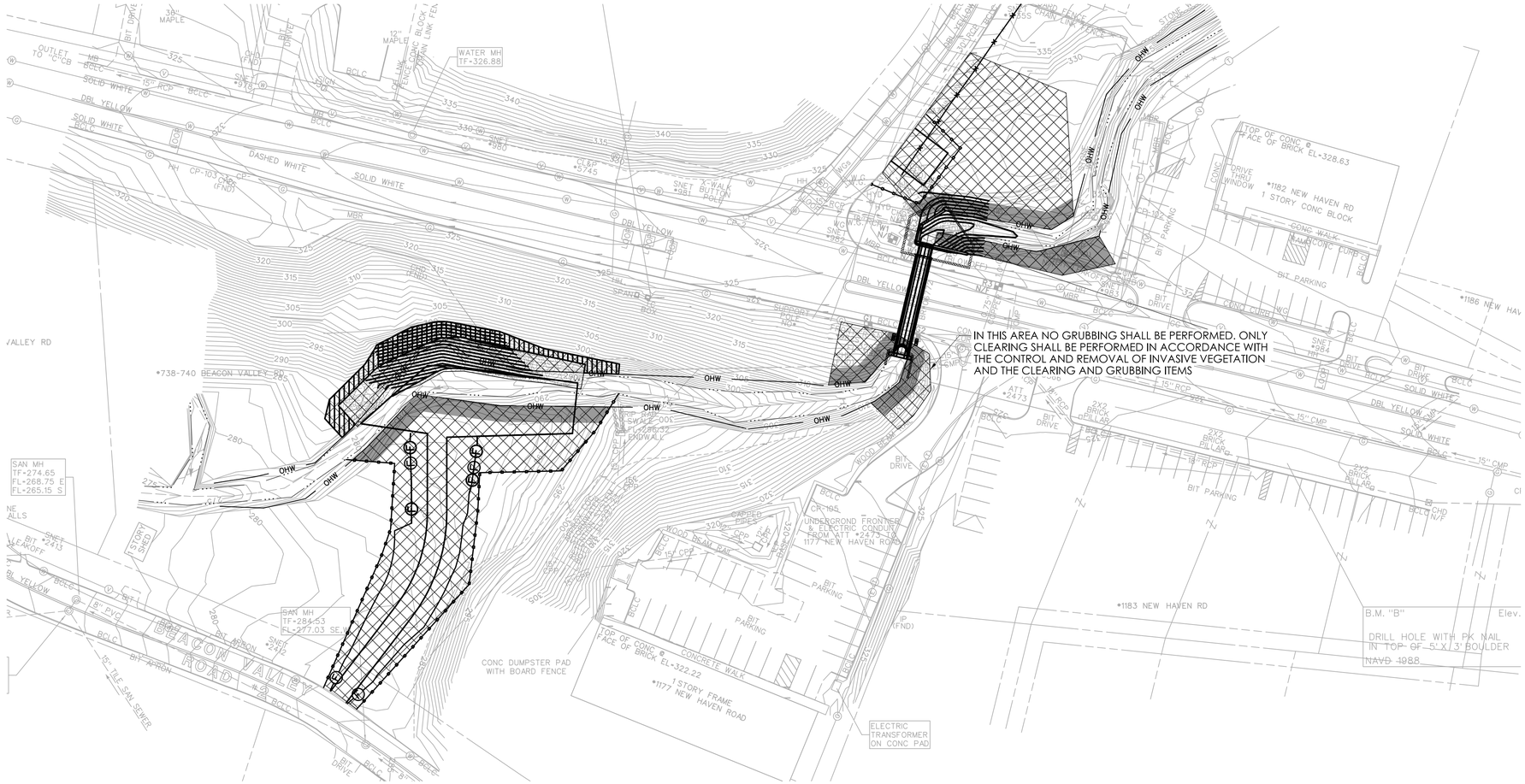
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: STAGING AND WATER HANDLING

DRAWING NO. PMT-06
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-6_StagingWaterHandling.dgn
PLOTTED DATE: 3/21/2024



PERMIT PLANTING PLAN

SCALE: 1" = 40'

NOTES

1. PLANTINGS ON THIS SHEET ARE FOR ENVIRONMENTAL PERMITTING. ANY SUBSTITUTIONS TO THE PERMIT PLANTINGS SHALL BE COORDINATED WITH THE DEPARTMENT'S OFFICE OF ENVIRONMENTAL PLANNING (OEP).

2. PROPOSED PLANTINGS TO BE FIELD LOCATED BY CTDOT OEP OR THEIR DESIGNATED REPRESENTATIVE.

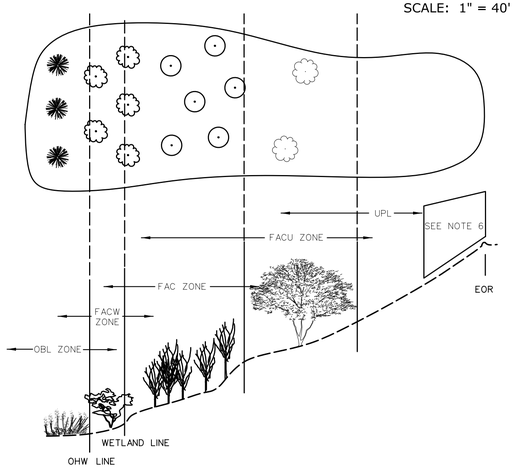
3. WOOD CHIP MULCH SHALL NOT BE PLACED IN THE WETLAND AREA.

4. DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH WETLAND GRASS ESTABLISHMENT. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE SEEDED WITH CONSERVATION SEEDING FOR SLOPES, OR OTHER SEED MIX AS SPECIFIED. ALL AREAS SHALL BE RESTORED.

5. ALL PLANT MATERIAL SHALL BE NURSERY GRADE STRAIGHT SPECIES, CONFORMING TO SECTION 3 OF THE AMERICAN STANDARDS FOR NURSERY STOCK. CTDOT OEP WILL REVIEW AND APPROVE PROPOSED PLANTINGS.

6. NO PLANTINGS SHALL BE PLACED IN MOW AREA.

7. AREA TO BE TREATED FOR INVASIVES AND PROPERLY PREPARED FOR FINAL PLANTING, SEEDING, AND RESTORATION.



SCHEMATIC PLANTING

LANDSCAPE ITEMS

KEY	BOTANICAL NAME	COMMON NAME	SIZE	QTY.	SPACING	WETLAND INDICATOR
A.a.	Aronia arbutifolia	Red Chokeberry	18" - 24" HT. B.B.	9	5' On Center	FACW
C.r.	Cornus racemosa	Gray Dogwood	2' - 3' HT. B.B.	14	5' On Center	FAC
H.v.	Hamamelis virginiana	Witch Hazel	2' - 3' HT. B.B.	11	5' On Center	FACU
Vi.a.	Viburnum acerifolia	Mapleleaf Viburnum	2' - 3' HT. B.B.	12	5' On Center	UPL
V.d.	Viburnum dentatum	Arrowwood Viburnum	24" - 36" HT. NO. 3 Container	10	5' On Center	FAC

NOTE: FOR INFORMATION ONLY. CONTRACTOR SHALL REFER TO THE CONTRACT PLANS FOR BIDDING PURPOSES.
NOTE: LANDSCAPE ITEMS FOR SLOPE STABILIZATION PLANTINGS TO BE FIELD LOCATED BY DOT LANDSCAPE DESIGN

PERMIT PLANT LIST

BOTANICAL NAME	COMMON NAME AND SIZE	QTY.	SPACING	WETLAND INDICATOR
ACER RUBRUM	RED MAPLE 2"-2½" CAL. BB	8	FIELD LOCATE	FAC
LINDERA BENZOIN	COMMON SPICEBUSH 2'-3' HT BB	50	5'	FACW
CLETHRA ALNIFOLIA	SWEET PEPPERBUSH 3'-4' HT BB	50	5'	FAC
CORNUS RACEMOSA	GRAY DOGWOOD 3'-4' HT BB	50	5'	FAC
ALNUS INCANA	SPECKLED ALDER 4'-5' HT BB	40	5'	FACW
ASCLEPIAS TUBEROSA	BUTTERFLY MILKWEED 1 GALLON CONTAINER	40	1'-6" ON CENTER	NI
CONSERVATION SEEDING				
CONTROL AND REMOVAL OF INVASIVE VEGETATION		27700 SF	SEE HATCHING AND NOTE 7	

ENVIRONMENTAL PERMIT PLANS
PLAN DATE: March 21, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: CHECKED BY:

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: PERMIT PLANTING PLAN

DRAWING NO. PMT-07
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-7_PermitPlantingPlan.dgn
PLOTTED DATE: 3/21/2024

FORM NO. ENG. 11 ED 8-54

PUB. ROAD DIV. NO.	STATE	TOWN	FED. AID PROJ. NO.	PROJ. NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CONN.	NAUGATUCK	F-53(6)	87-76	1969	63	26	210

ROUTE 63
MINIMUM WIDTH OF RIGHT OF WAY = 66'

SCALE IN FEET
80' 40' 0 80'

PLAN	BY	DATE
Surveyed		
Plotted		
Traced		
Designed		
Checked - Noted	W.L. Hawkins	May 1963
Top Field Chks. noted	W.L. Hawkins	Oct. 1969

NOTE BOOK	BY	DATE
Checked		
Traced		
Plotted		
Surveyed		

NO. 87-76

N 232,000 E 525,000 N 524,500 E 525,500 N 231,500 E 525,000 N 231,000

B.M. No. 13-A El. 383.025 Spike in 18" Maple

B.M. No. 14-A El. 328.977 Spike in 12" Oak

ALICE S. SLADE

N/F FREDERICK H. STUMPF

N/F C.B.Jr. & D.S. JOHNSON

HAROLD Mc DONALD ET AL

AUGUSTINE E. BARBIERO ET AL

N/F AUGUSTINE E. BARBIERO

HARRY E. SMITHAUSLER ET AL

N/F W.R. & K.R. DeCARLO

WILLIAM NOBLE Jr.

ROBERT J. RICCI ET AL

MICHAEL L. FITZPATRICK ET AL

WILLIAM NOBLE, JR.

LENNEA WEID

BEACON VALLEY ROAD

BEACON HILL BROOK

STRAITSVILLE BROOK

COTTON HOLLOW RD.

CINDER HILL ROAD

Pond

Gravel Parking Area

Oiled

ROUTE 63

To Naugatuck

To New Haven

Base Line

Taking Line

Highway Line

See R.O.W. Map No. 7030

See R.O.W. Map No. 87-03

Limit Of Construction

Remove Superstructure and Substructure

Remove Existing Pavement

Slope Paved Inlet For Details see Sheet No. 10

Relaid 18" R.C. Pipe

212'-15" R.C. Pipe

40' Outlets for Underdrain with 6" A.C.C.M. Pipe

360' Underdrain with 6" Perf. A.C.C.M. Pipe

Bit. Concrete Lip Curbing

Approx. Slope Limits

Right to Slope Required

Type "C" Catch Basin

Type "C" C.B.

Type "C" C.G.

Type 5" C.B.

Bridge No. 4070-0416 Conc. Slab 18' South of Centerline

8' Channel (V Bottom)

Riprap

Guide Railing ERECTED

Right to excavate Brook Channel & place Riprap Required

Pool Bridge

Conc. Spillway

Bit. Conc. (Surface Course Grading II) on 6" Rolled Gravel Base

Bit. Conc. Lip Curbing

Wire Fe.

Telephone Booth

1 Sty. Cont. Blk. Fruit Stand

1 Sty. Fr. Bldg. (Restaurant)

36'-15" A.C.C.M. Pipe

268'-Udrain w/ 6" Perf. A.C.C.M.P.

Approx. Slope Limits

44'-15" A.C.C.M. Pipe

24" C.I. Water Main

Concrete Sidewalk

Gravel Drive

Paved Ditch "D-6" Endwall

Approx. Slope Limits

Ditch EXCAVATED

26'-18" x 11" A.C.C.M. Pipe Arch Paved Ditch

28'-18" x 11" A.C.C.M. Pipe Arch INSTALLED

40'-18" x 11" A.C.C.M. Pipe Arch

Subject to Easement In Favor of The Connecticut Water Co.

Approx. Slope Limits Endwall

Type "C" C.B.

PT. Sta. 4+23.19

4" Drainage Right of Way Required

LENNEA WEID Rights to Slope Required

LIMIT OF CONSTRUCTION

Bird Bath

Gravel Drive

96'-18" R.C.P. INSTALLED

Beacon Valley Road Curve Data: Δ = 73°-00'-00" D = 38°-11'-30" T = 110.99' L = 191.11' R = 150.00'

20' C.I. Water Main

10" C.I. Water Main

18" C.I. Water Main

Bit. Concrete Lip Curbing

Approx. Slope Limits

Remove

Bit. Concrete Lip Curbing

Paved Ditch

Type "C" Catch Basin

Subject to Easement In Favor of The Connecticut Water Co.

Right to relocate Channel Required.

Right to relocate Channel & place Riprap Required.

Slope Paved Outlet For Details see Sheet No. 10

60'-18" A.C.C.M. Pipe

8' Channel (V Bottom)

Riprap

9'-6" x 6'-5" Corrugated Structural Plate Pipe Arch, 10 Ga. Section Modulus = 0.0732 in.³

Spring Outlet

Cinder Drive

Right to Slope Required

Type "C" C.B.

136'-13" R.C.P. INSTALLED

Bit. Concrete Lip Curbing

104'-Udrain with 15" Perf. A.C.C.M.P. INSTALLED

24'-15" R.C. Pipe

Type "C" Catch Basin

180'-Udrain w/ 6" Perf. A.C.C.M.P. INSTALLED

Approx. Slope Limits

264' Underdrain with 18" Perf. A.C.C.M. Pipe

Right to Slope Required

Grass

Type "C" Catch Basin

Right to Slope Required

Bit. Conc.

Quad 12" Oak

Tw. Oak

Tw. 18" Oak

10" Oak

18" Maple

15" Oak

Clump 6" Birches

Light Post

Guide Rail

Bridge No. 4070-0417 20' c.c. Timber Bridge 8.0 Wide x 28.7 1965

Timber Deck Bridge 3.8' H. x 8.6' 1960

Gravel Drive

Fr. Gar.

1½ Sty. Fr. Ho.

1 Sty. Fr. Ho.

Cont.

Gar.

Shed

Barn

Silo

Wet Mdw.

Wet Mdw. Wire Fe.

Dry Mdw.

Tiled

Mark

BIT. CONCRETE LIP CURBING:
STA. 104+00 TO 124+09 LT. - BASE LINE
STA. 2+50 TO 3+60 LT. - BEACON VALLEY RD.

NOTE: 4 Houses right of Beacon Valley Road not shown on plan.

~~THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE TRUE CONDITIONS OR ACTUAL QUANTITIES TO BE ENCOUNTERED. QUANTITIES OF WORK WHICH WILL BE REQUIRED.~~

"ARCHRIGHT" TRACING CLOTH JOSEPH MERRITT & CO. 1825

87 76

M359 01

PHD 26

FORM NO. ENG. 12 ED 3-56

PUB. ROAD DIV. NO.	STATE	TOWN	FED. AID PROJ. NO.	PROJ. NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CONN.	NAUGATUCK	F-53(6)	87-76	1964	63	27	210

~~THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS, IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE TRUE CONDITIONS OR ACTUAL QUANTITIES OR DISTRIBUTION OF QUANTITIES OF WORK WHICH WILL BE REQUIRED.~~

ROUTE 63

HORIZ. SCALE IN FEET
80' 40' 0 50'
VERT. SCALE IN FEET
8' 4' 0 8'

PROFILE	BY	DATE	CHECKED BY	DATE
Surveyed	Mapmakers	Nov. 1958		
Plotted	P. Ner	Nov. 1958	W. Crown	Nov. 1958
Traced	R.E.B.	Aug. 1959	C.E.	Dec. 1959
Designed	G. Hubbard	Mar. 1962		
New Const. Noted	G. Bonardi	May 1962	J. Sharp	May 1962
Yqs. Field Chk. noted				

NOTE BOOK
NO. 87-76-02 Pg. 11

Profile on Candee Road
Same Point
Ho.
Gar.
P.V.I. 100+50
El. 328.70
P.V.C. 104+00
El. 325.20
L.V.C. = 360'
P.V.T. 107+60
El. 329.16
Fruit Stand
Restaurant
Gravel Dr.
+3.20%
To New Haven
Bit Dr.
Pond Elev. Aug. 29, 1958
20" C.I. Water 19' Lt.
10" C.I. Water 1' Rt.
Concrete Spillway
20" C.I. Water 12' Lt.
10" C.I. Water 4' Rt.
Bit Conc. Dr.
Proposed Grade
-1.00%
Bit Driveway
Conc. Steps
+3.00%
To Naugatuck
P.V.T. 98+20
El. 321.80
P.V.C. 102+80
El. 326.40
Profile on ℄ 2
Trailer Dr.
Profile on ℄ 1
C.B.
18" R.C.P.
18"x18" R.C.P.
Bottom Steel Beam
Profile on ℄ A
Upstream Opening
Downstream Opening
Two 20" C.I. Water Mains
Proposed 8" Sewer 25' Rt.
20" C.I. Water 99' Lt.
10" C.I. Water 19' Lt.
Water Elev. Downstream
Concrete Slab Bridge 12'-5 Span - 5' Clearance
20" C.I. Water 34' Lt.
10" C.I. Water 15' Lt.
P.V.I. 105+80
El. 328.40
P.V.T. 97+00
El. 318.20
L.V.C. = 460'
Beacon Valley Rd.
Proposed Grade Beacon Valley Rd.
Same Point
LIMIT OF CONSTRUCTION
Profile on Straitsville Brook
10" Subbase

"ARCHRIGHT" TRACING CLOTH JOSEPH MERRITT & CO. 65024

87 76

M359 01

27

FORM NO. ENG. 11 ED 9-59

PUB. ROAD DIV. NO.	STATE	TOWN	FED. AID PROJ. NO.	PROJ. NO.	YEAR	ROUTE NO.	SHEET NO.	TOTAL SHEETS
1	CONN.	NAUGATUCK-BETHANY	F 55(6)	87-76	1964	63	10	210

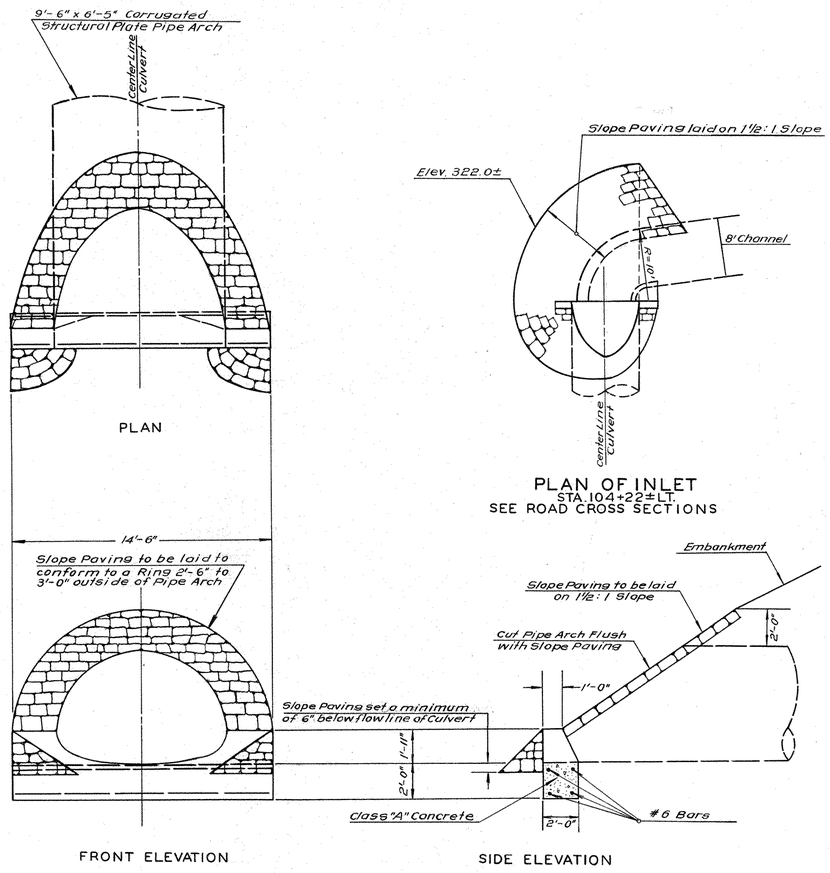
ROUTE 63

SLOPE PAVED INLET AND OUTLET DETAILS & TRANSITION CURBING

NOT TO SCALE

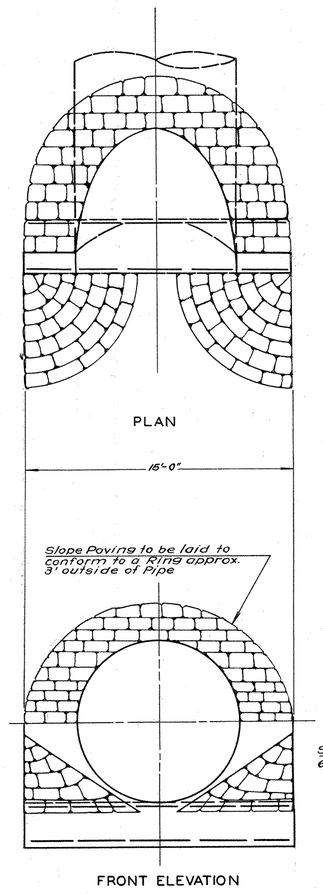
THIS SHEET NOT CORRECTED

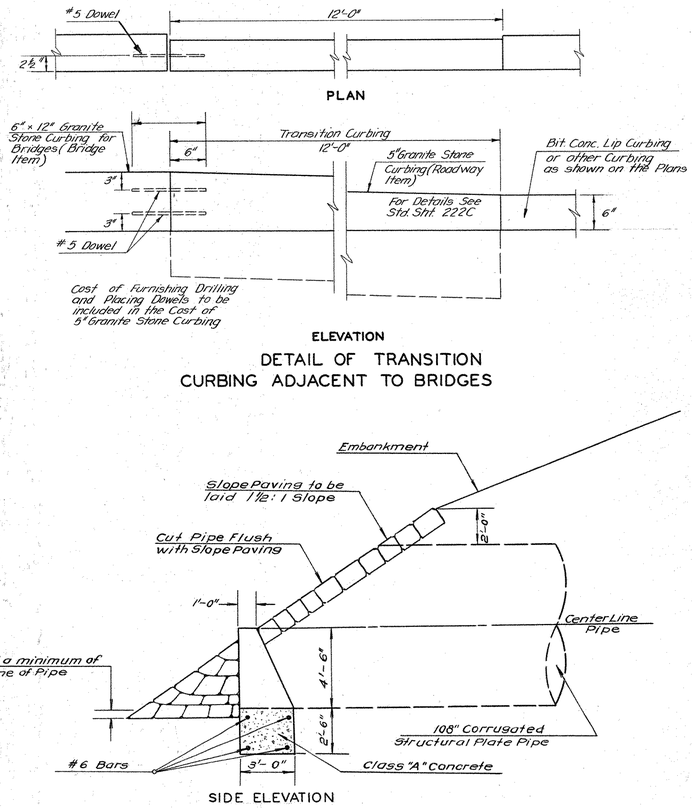
Existing Culvert



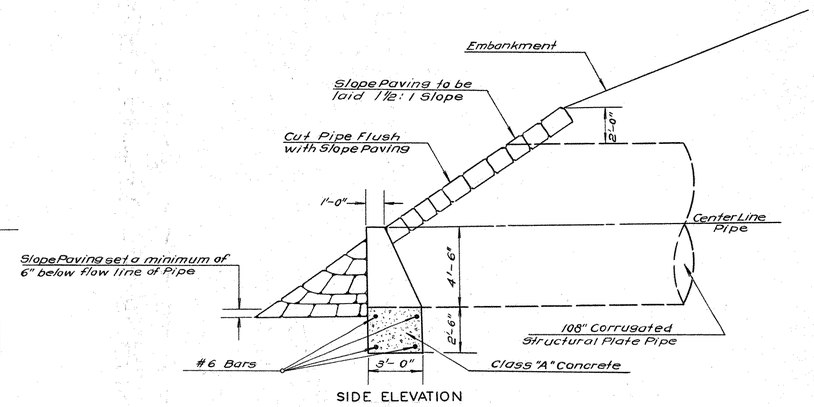
PLAN OF INLET
STA. 104+22± LT.
SEE ROAD CROSS SECTIONS

SLOPE PAVED INLETS AND OUTLETS
STA. 104+22± LEFT AND RIGHT,
STA. 243+03± RIGHT AND
STA. 243+85± LEFT





DETAIL OF TRANSITION CURBING ADJACENT TO BRIDGES



SLOPE PAVED INLET & OUTLET FOR 108" CORRUGATED STRUCTURAL PLATE PIPE AT STA. 205+75

PLAN	BY	DATE	CHECKED BY	DATE
Surveyed				
Plotted				
Traced	V.Lauzius	Nov 1962	J.Sharp	May 1963
Designed				
Notes Compt. Rated				
Top. Field Chk. noted				
NOTE BOOK				
NO.				

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE TRUE CONDITIONS OR ACTUAL QUANTITIES OR DISTRIBUTION OF QUANTITIES OF WORK WHICH WILL BE REQUIRED.

DIETZGEN 131 Arkwright Tracing Cloth 6762

87 76

M359 01

10

Pre-Construction Notification & Inland Wetlands and Watercourses Permit

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
Town of Naugatuck

Attachment 19: Hydraulics Summary

Hydraulics Summary

Hydraulic and Drainage Structures

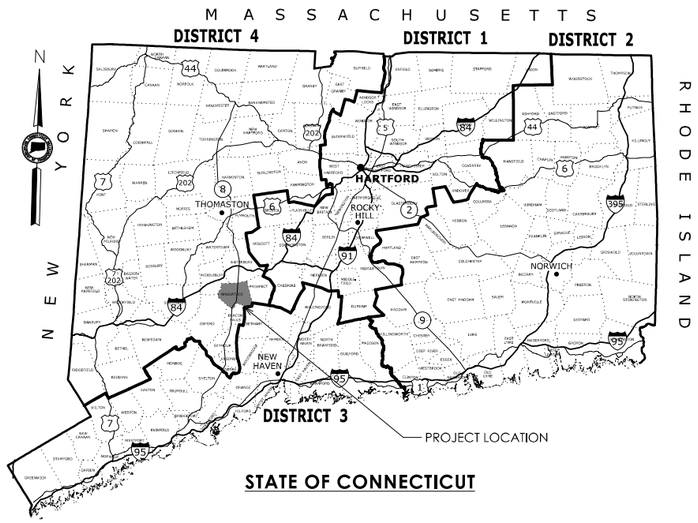
Water Surface Elevation (feet) (Immediately upstream of structure)														
Storm Event Frequency														
2-yr			10-yr			25-yr			50-yr			100-yr		
Existing	Proposed	%Change	Existing	Proposed	%Change	Existing	Proposed	%Change	Existing	Proposed	%Change	Existing	Proposed	%Change
316.7	**317.2**	**0.16**	**318.4**	**319.0**	**0.19**	**319.2**	**319.9**	**.22**	**319.8**	**320.7**	**0.28**	**320.6**	**321.6**	**0.32**
Aerial Extent of Inundation (square feet) (Maximum)														
Storm Event Frequency														
2-yr			10-yr			25-yr			50-yr			100-yr		
Existing	Proposed	%Change	Existing	Proposed	%Change	Existing	Proposed	%Change	Existing	Proposed	%Change	Existing	Proposed	%Change
N/A	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
Duration of Inundation (hours)														
Storm Event Frequency														
2-yr			10-yr			25-yr			50-yr			100-yr		
Existing	Proposed	%Change	Existing	Proposed	%Change	Existing	Proposed	%Change	Existing	Proposed	%Change	Existing	Proposed	%Change
N/A	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
Discharge Velocity (fps)														
Storm Event Frequency														
2-yr			10-yr			25-yr			50-yr			100-yr		
Existing	Proposed	%Change	Existing	Proposed	%Change	Existing	Proposed	%Change	Existing	Proposed	%Change	Existing	Proposed	%Change
5.43	**5.79**	**6.6**	**7.64**	**8.07**	**5.6**	**8.56**	**9.08**	**6.1**	**9.19**	**9.78**	**6.4**	**9.90**	**10.65**	**7.6**
Flow (cfs)														
Storm Event Frequency														
2-yr			10-yr			25-yr			50-yr			100-yr		
Existing	Proposed	%Change	Existing	Proposed	%Change	Existing	Proposed	%Change	Existing	Proposed	%Change	Existing	Proposed	%Change
N/A	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**

Pre-Construction Notification & Inland Wetlands and Watercourses Permit

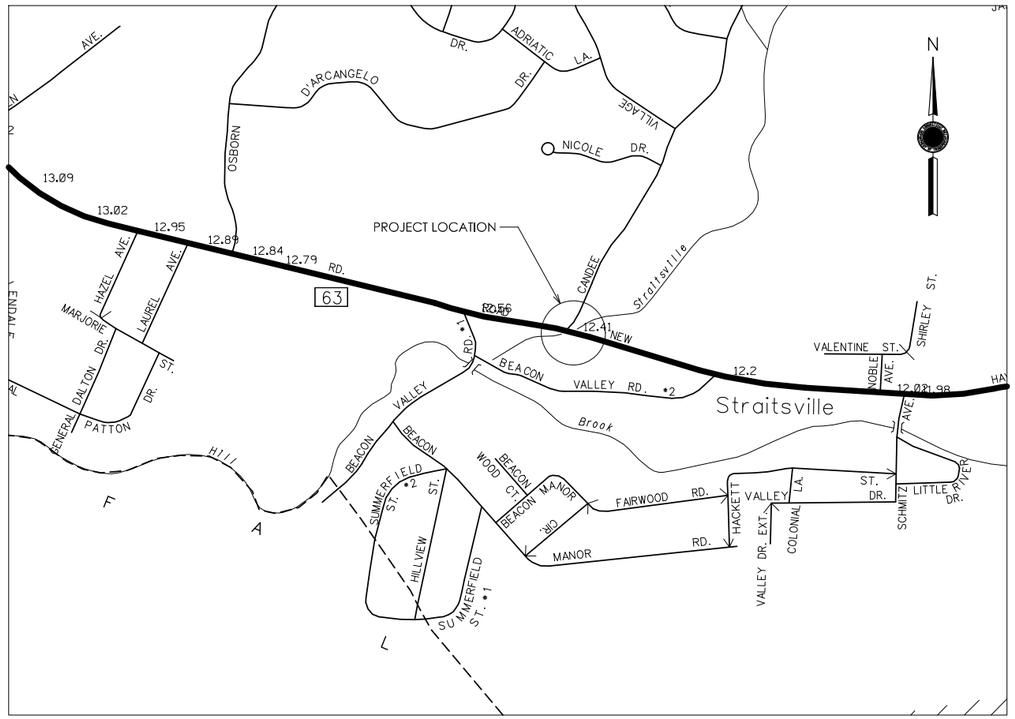
Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
Town of Naugatuck

Attachment 23: CTDEEP Fisheries Sign-Off

ENVIRONMENTAL PERMIT PLANS
STATE PROJECT NO. 0087-0148
REHABILITATION OF BRIDGE NO. 06772
CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
IN THE TOWN OF NAUGATUCK, CT



STATE OF CONNECTICUT



LOCATION PLAN

1" = 500'-0"

GENERAL NOTES

1. THESE PLANS ARE NOT FOR CONSTRUCITON AND ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL EFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS, AND WETLAND SOILS, SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 1927 VERTICAL DATUM BASED ON NGVD OF 1929.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGES, FACILITIES AND INCIDENTAL CONSTRUCTION, FORM 818, SECTION 1.10 AND WILL ALSO FOLLOW REQUIRED BEST MANAGEMENT PRACTICES (BMP's) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION AND SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

Fisheries Division
Connecticut Department of Energy
& Environmental Protection

Digitally signed by Andrew J Miano
Date: 2024.05.14 13:34:17 -04'00'

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	TITLE SHEET
PMT-02	GENERAL SITE PLAN
PMT-03	WETLAND/ WATERCOURSE IMPACT PLAN
PMT-04	ELEVATIONS AND SECTION PLAN
PMT-05	REVETMENT SECTION
PMT-06	STAGING AND WATER HANDLING PLAN
PMT-07	PERMIT PLANTING PLAN

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV. | DATE | REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

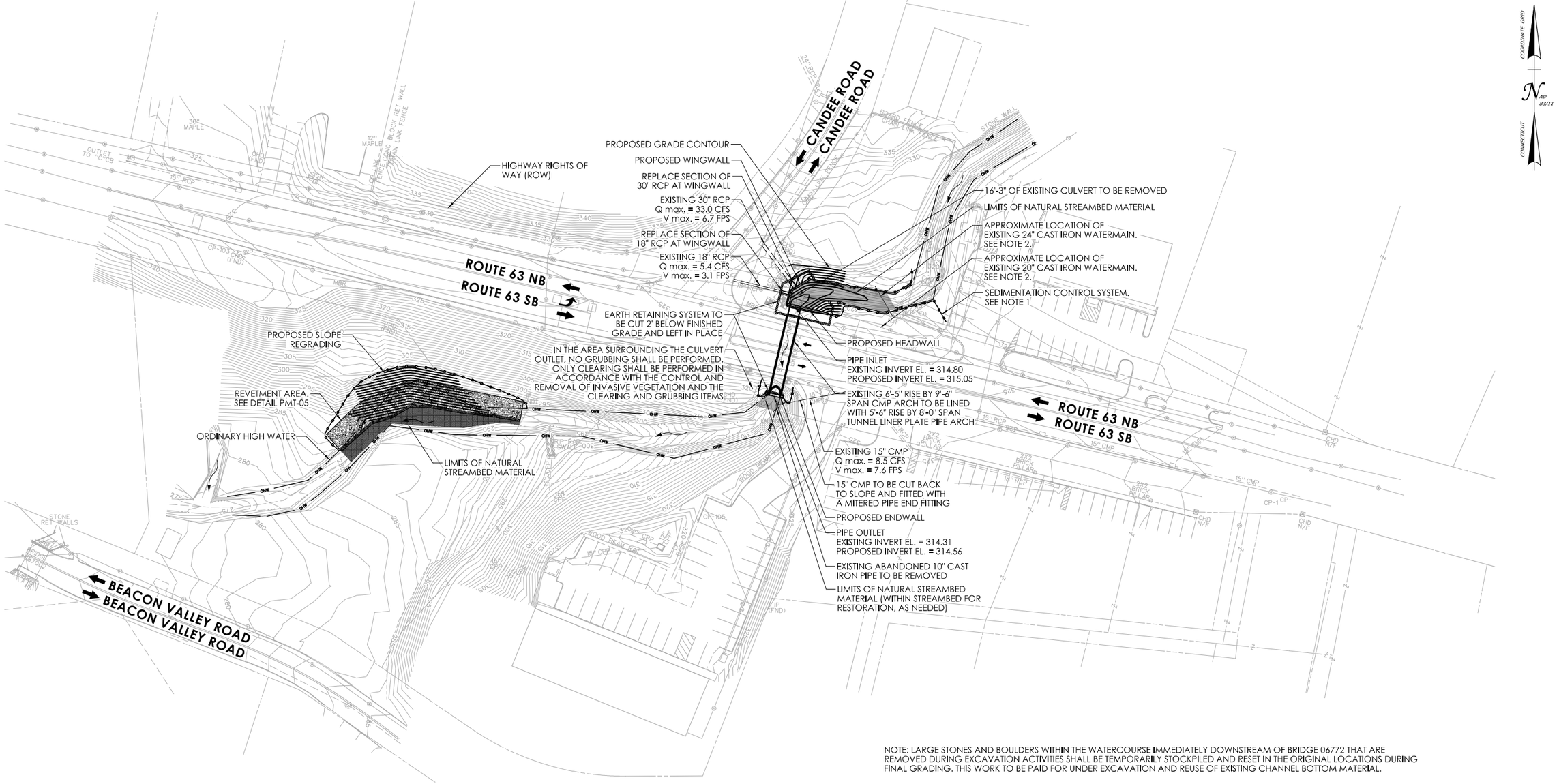
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: TITLE SHEET

DRAWING NO. PMT-01
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\stoltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-1_Title Sheet.dgn
PLOTTED DATE: 5/9/2024



NOTE: LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.

BRIDGE NO. 06772 GENERAL SITE PLAN

SCALE: 1" = 40'

LEGEND

- OHW — ORDINARY HIGH WATER
- SURVEYED EDGE OF WATER
- SEDIMENTATION CONTROL SYSTEM

NOTES:

1. APPROXIMATE LOCATION OF SEDIMENTATION CONTROL SYSTEM SHOWN AT FINAL CONDITION
2. LOCATION OF EXISTING WATERMAINS ARE UNKNOWN. IF ENCOUNTERED DURING CONSTRUCTION THE ABANDONED WATERMAINS WITHIN THE REGULATED AREA WILL BE REMOVED AND THE DISTURBED AREA WILL BE RESTORED WITH NATURAL STREAMBED MATERIAL.
3. SEDIMENTATION CONTROL SYSTEM TO BE PLACED AT CATCH BASIN(S) AS NEEDED OR AS DIRECTED BY THE ENGINEER

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV. | DATE | REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

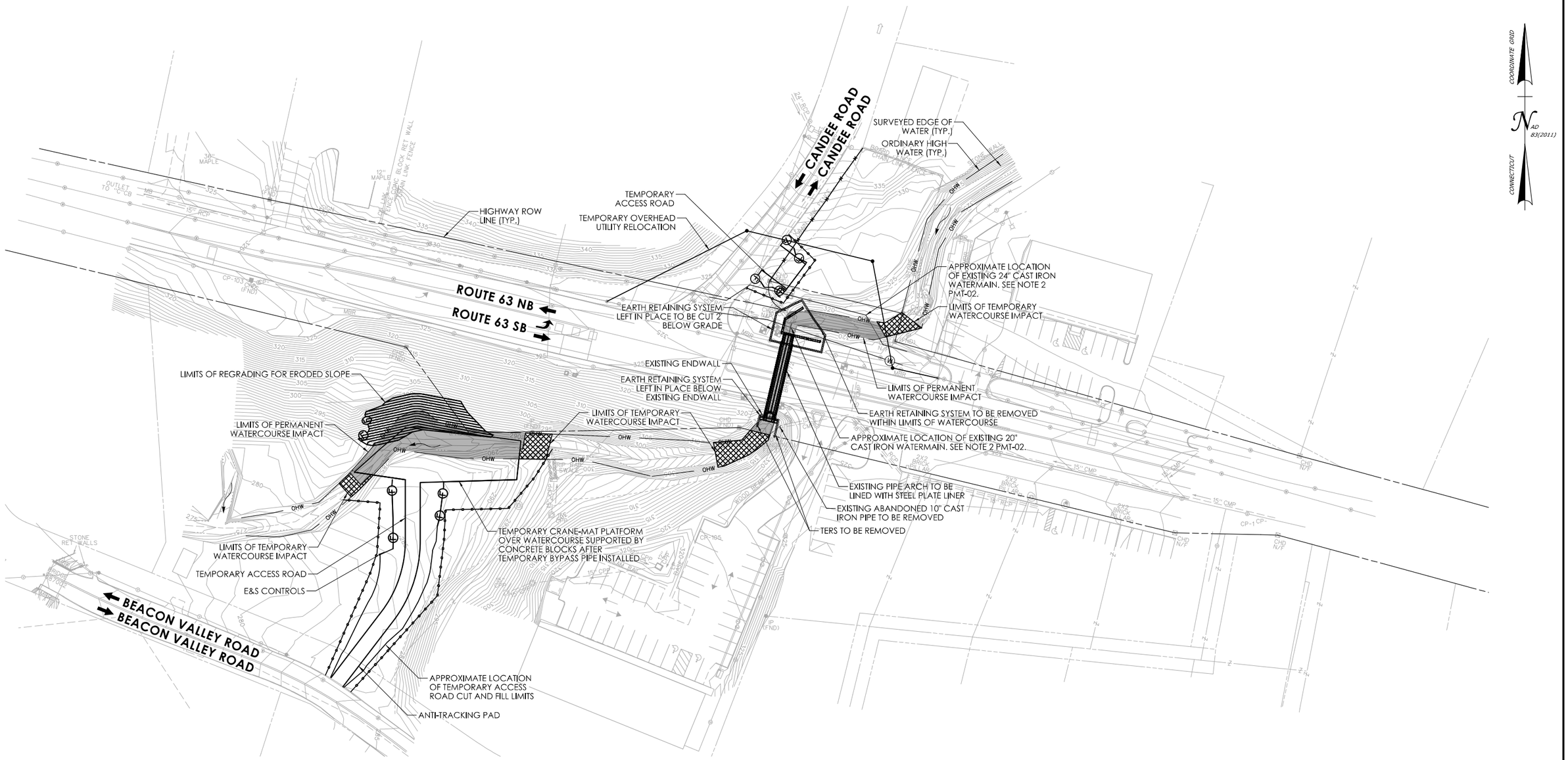
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: GENERAL SITE PLAN

DRAWING NO. PMT-02
SHEET NO.

LASTED SAVED BY: SaltysJ **FILE NAME:** C:\Users\saltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-2_GeneralSitePlan.dgn
PLOTTED DATE: 5/9/2024



LEGEND

TEMPORARY WETLAND/WATERCOURSE IMPACT

PERMANENT WETLAND/WATERCOURSE IMPACT

NOTE:

THE CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WERLANDS AND WATERCOURSE. ALL DISTURBED AREAS SHALL BE RESTORED

BRIDGE NO. 06772 IMPACT PLAN

SCALE: 1" = 40'

WETLAND/WATERCOURSE IMPACT TABLE

	WETLAND IMPACTS	WATERCOURSE IMPACTS	TOTAL
PERMANENT IMPACTS	0 S.F. (0 AC.)	5250 S.F. (0.121 AC)	5250 S.F. (0.121 AC)
TEMPORARY IMPACTS	0 S.F. (0 AC.)	1670 S.F. (0.038 AC)	1670 S.F. (0.038 AC)
TOTAL IMPACTS	0 S.F. (0 AC.)	6920 S.F. (0.159 AC)	6920 S.F. (0.159 AC)

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV. | DATE | REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: WATERCOURSE IMPACT PLAN

DRAWING NO. PMT-03
SHEET NO.

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PLOTTED DATE: 5/9/2024

HYDRAULIC DATA	
DRAINAGE AREA	0.69 SQ. MILE
DESIGN FREQUENCY	50 YEAR
DESIGN DISCHARGE	220 CFS
UPSTREAM AVERAGE DAILY FLOW ELEVATION	315.4 FT
DOWNSTREAM AVERAGE DAILY FLOW ELEVATION	308.9 FT
UPSTREAM DESIGN WATER SURFACE ELEVATION	320.6 FT
DOWNSTREAM DESIGN WATER SURFACE ELEVATION	311.4 FT

NATIVE STREAMBED MATERIAL NOTES:

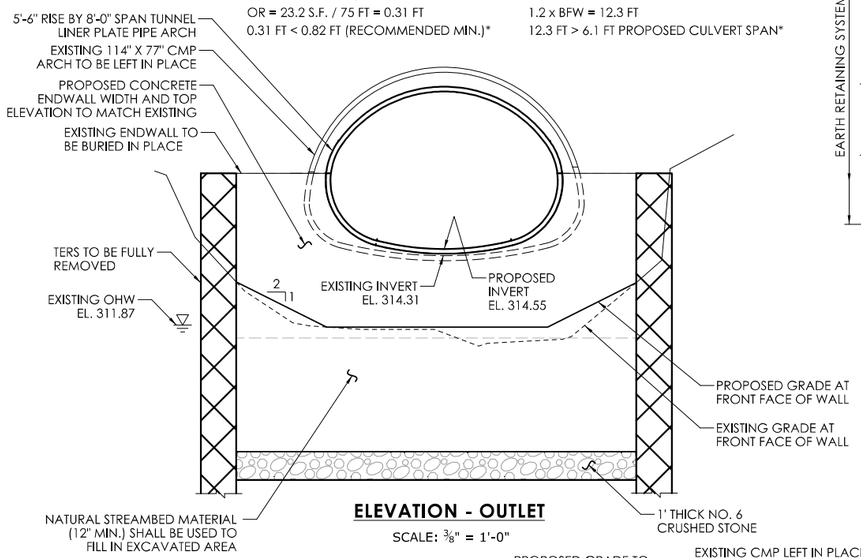
1. NATIVE STREAMBED MATERIAL EXCAVATED DURING THE PIPE RELINING, RIPRAP INSTALLATION AND CHANNEL REGRADING SHALL BE STOCKPILED AND THEN REPLACED OUTSIDE THE LIMITS OF THE RIPRAP AREAS AS NEEDED FOR REGRADING TO THE DEPTH SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH THE SPECIAL PROVISION "EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL."
2. ADDITIONAL STREAMBED MATERIAL, IF REQUIRED, SHALL BE IN ACCORDANCE WITH SPECIAL PROVISION "SUPPLEMENTAL STREAMBED CHANNEL MATERIAL."
3. THE STOCKPILE SHALL BE LOCATED OUTSIDE THE WETLAND LIMITS AND PROTECTED WITH SEDIMENTATION CONTROL SYSTEM.
4. LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.

OPENNESS RATIO (OR):

OR = OPEN AREA / STRUCTURE LENGTH
OR = 23.2 S.F. / 75 FT = 0.31 FT
0.31 FT < 0.82 FT (RECOMMENDED MIN.)*

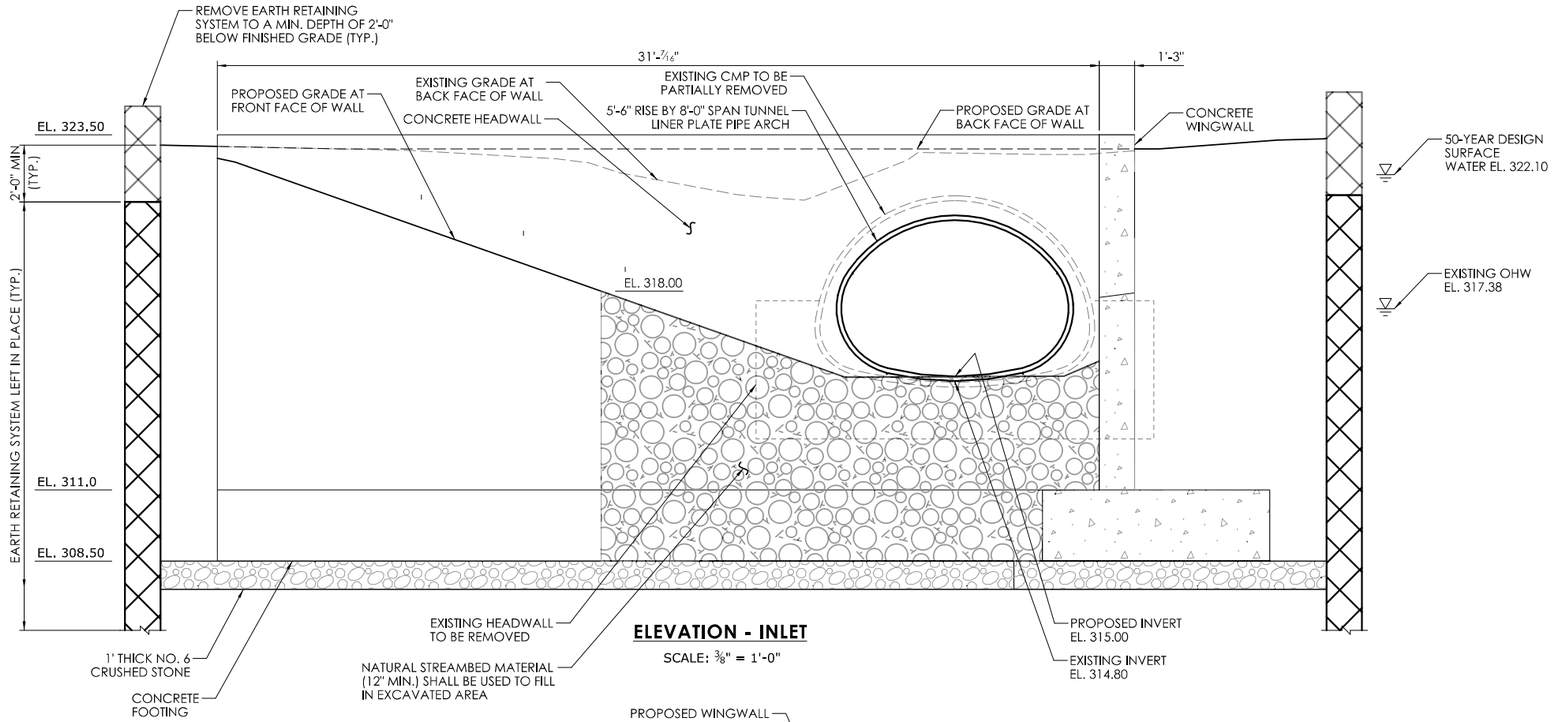
BANKFULL WIDTH (BFW):

BFW = 10.2 FT
1.2 x BFW = 12.3 FT
12.3 FT > 6.1 FT PROPOSED CULVERT SPAN*



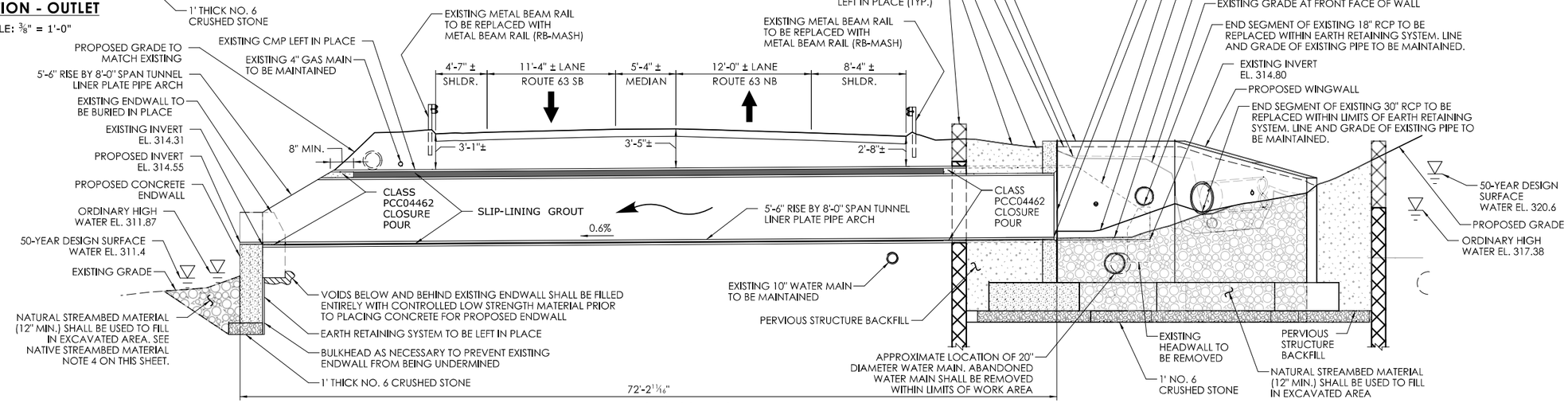
ELEVATION - OUTLET

SCALE: 3/8" = 1'-0"



ELEVATION - INLET

SCALE: 3/8" = 1'-0"



SECTION - INLET

SCALE: 3/16" = 1'-0"

NOTES:
IF LEDGE IS ENCOUNTERED PRIOR TO REACHING DEPTH OF EXCAVATION AS SHOWN ON THIS SHEET, LEDGE NEED NOT BE REMOVED AND PROPOSED ENDWALL SHALL BE CAST DIRECTLY AGAINST LEDGE.

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

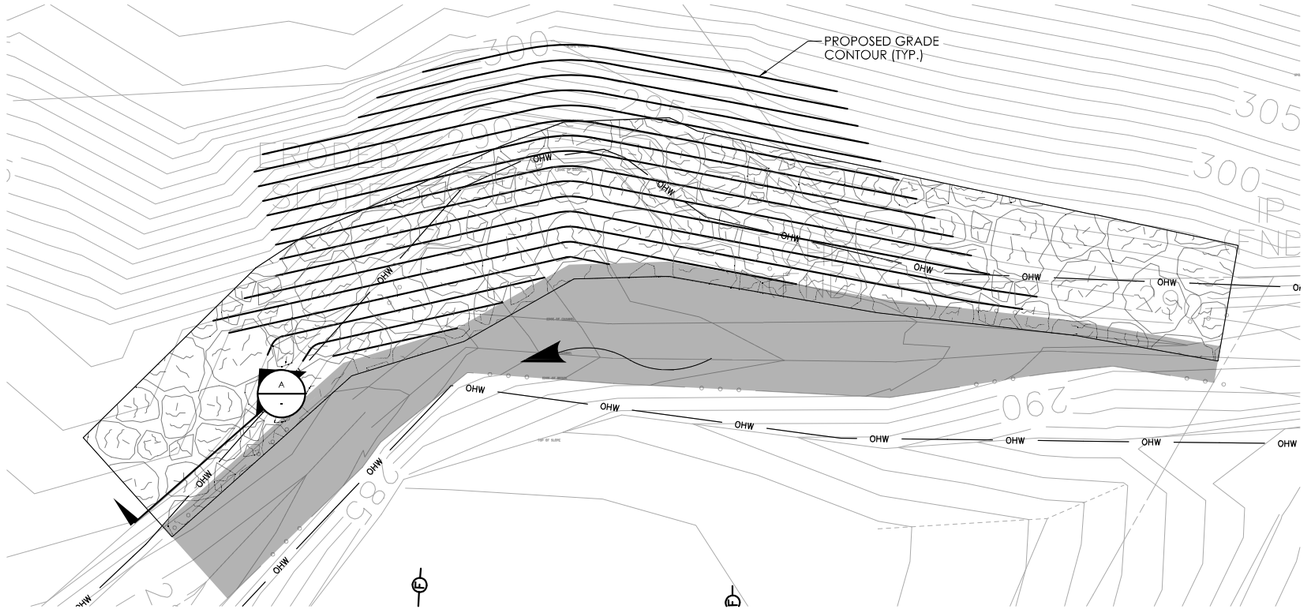
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: ELEVATION AND SECTION PLAN

DRAWING NO. PMT-04
SHEET NO.

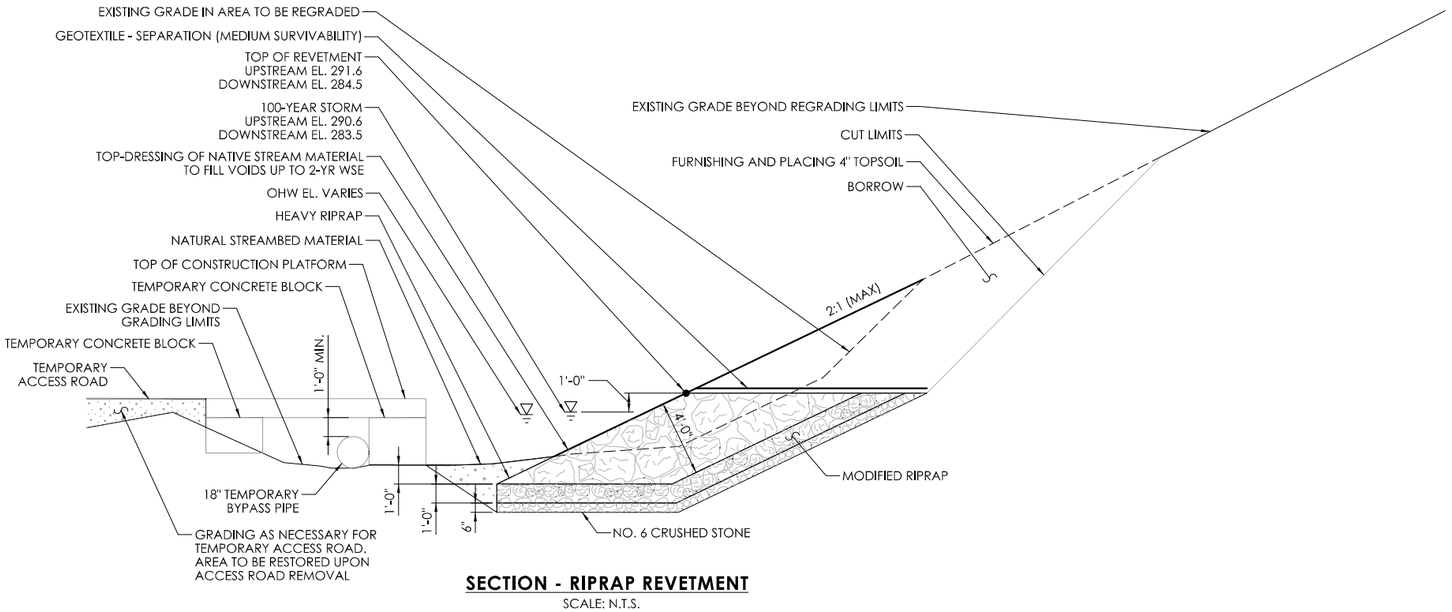
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PLOTTED DATE: 5/9/2024



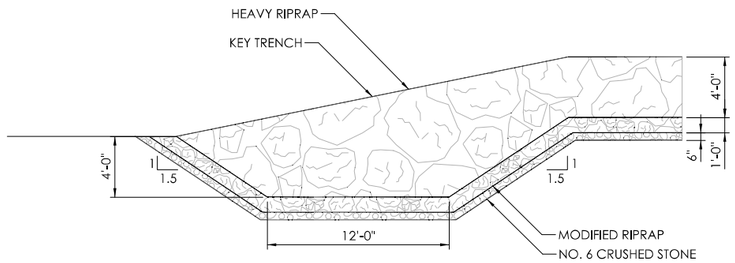
4' HEAVY RIPRAP ON 1' MODIFIED RIPRAP, ON 6" NO. 6 CRUSHED STONE. NATURAL STREAMBED MATERIAL TO BE WASHED INTO RIPRAP UP TO 2-YR WSE.

NATURAL STREAMBED MATERIAL

REVETMENT PLAN
SCALE: 1" = 10'



SECTION - RIPRAP REVETMENT
SCALE: N.T.S.



SECTION - REVETMENT KEY-IN
SCALE: 1" = 5'

A
-

ENVIRONMENTAL PERMIT PLANS
PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: CHECKED BY:

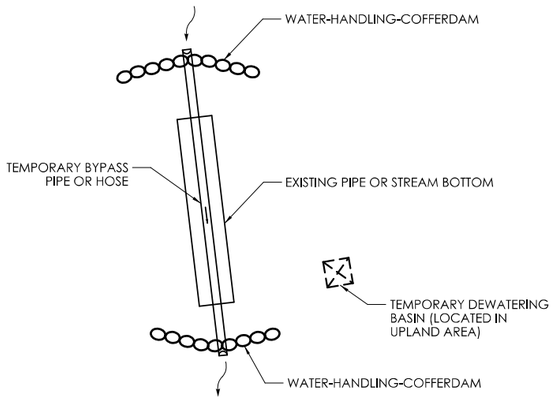
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: REVETMENT SECTION

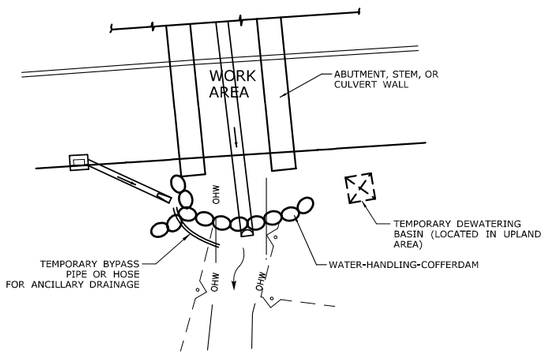
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PLOTTED DATE: 5/9/2024



TEMPORARY PIPE

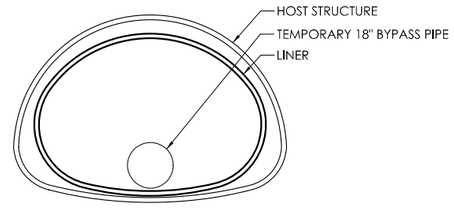
(NOT TO SCALE)



ANCILLARY STORM DRAINAGE NEAR WORK AREA

(NOT TO SCALE)

NOTE: ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING OR PROPOSED STORM DRAINAGE SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREAS. THE CONTRACTOR SHALL SUBMIT THE MEANS AND METHODS OF HANDLING STORM DRAINAGE TO THE ENGINEER FOR APROVAL.

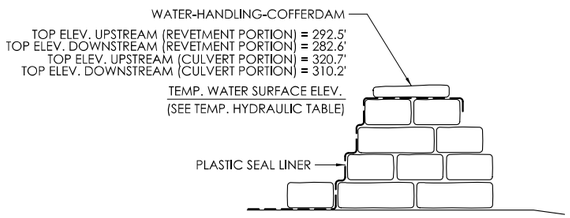


WATER HANDLING

SCALE: N.T.S.

TEMPORARY HYDRAULIC DATA	
AVERAGE DAILY FLOW	1.3 CFS
AVERAGE SPRING FLOW	2.5 CFS
2-YEAR FREQUENCY DISCHARGE	45 CFS
TEMPORARY DESIGN FREQUENCY	3 X A.S.F.
LOW FLOW PUMPING TEMPORARY DESIGN DISCHARGE	7.5 CFS
GRAVITY FLOW BYPASS PIPE TEMPORARY DESIGN DISCHARGE	7.5 CFS
UPSTREAM WATER SURFACE ELEVATION (CULVERT PORTION)	319.7 FT
DOWNSTREAM WATER SURFACE ELEVATION (CULVERT PORTION)	309.2 FT
UPSTREAM WATER SURFACE ELEVATION (REVETMENT PORTION)	291.5 FT
DOWNSTREAM WATER SURFACE ELEVATION (REVETMENT PORTION)	280.5 FT

NOTES:
1. TABLE IS APPLICABLE FOR BOTH CULVERT AND REVETMENT WATER HANDLING
2. VALUES AND ELEVATIONS MAY VARY SLIGHTLY FROM THE CONTRACT PLANS



WATER-HANDLING-COFFERDAM TYPICAL SECTION

SCALE: NOT TO SCALE

SUGGESTED CONSTRUCTION SEQUENCE - SLOPE REVETMENT

1. INSTALL SEDIMENTATION CONTROL SYSTEM.
2. PERFORM CLEARING AND GRUBBING AND CONTROL AND REMOVAL OF INVASIVE VEGETATION.
3. CONSTRUCT TEMPORARY ACCESS ROAD FROM BEACON VALLEY ROAD TO THE WORK AREA.
4. INSTALL TEMPORARY WATER HANDLING SYSTEM INCLUDING WATER-HANDLING-COFFERDAMS AND TEMPORARY BYPASS PIPE.
5. DIVERT WATER THROUGH THE TEMPORARY BYPASS PIPE TO DRY THE WORK AREA.
6. CONSTRUCT ACCESS PLATFORM WITH CRANE MATS AND CONCRETE BLOCKS TO SPAN THE TEMPORARY BYPASS PIPE AS NEEDED FOR ACCESS TO THE DOWNSTREAM REVETMENT WORK AREA.
7. CONSTRUCT SLOPE REVETMENT.
8. REMOVE TEMPORARY ACCESS ROADS, CRANE MATS, AND PERFORM FINAL GRADING.
9. REMOVE TEMPORARY WATER-HANDLING-COFFERDAMS AND BYPASS PIPE.
10. CONSERVATION SEEDING FOR SLOPES. PERMIT PLANTINGS. REMOVE SEDIMENTATION CONTROL SYSTEMS UPON FINAL STABILIZATION.

SUGGESTED CONSTRUCTION SEQUENCE - PIPE RELINING

1. RELOCATE OVERHEAD UTILITIES TEMPORARILY.
2. INSTALL SEDIMENTATION CONTROL SYSTEM.
3. PERFORM CLEARING AND GRUBBING AND CONTROL AND REMOVAL OF INVASIVE VEGETATION.
4. CONSTRUCT TEMPORARY ACCESS ROAD FROM CANDEE ROAD TO CULVERT INLET.
5. INSTALL TEMPORARY WATER HANDLING SYSTEM INCLUDING WATER-HANDLING-COFFERDAMS AND TEMPORARY BYPASS PIPE.
6. DIVERT WATER THROUGH THE TEMPORARY BYPASS PIPE TO DRY THE HOST STRUCTURE.
7. REMOVE SEDIMENT AND REGRADE AREA AT HOST STRUCTURE INLET.
8. CLEAN HOST STRUCTURE BY HAND THROUGH REMOVAL OF DEBRIS. THE CULVERT CLEANING AND THE GROUTING PROCESS SHALL NOT CAUSE TURBIDITY OF THE EXISTING WATER COURSE.
9. GROUT ALL VOIDS AND PERFORATIONS TO ENSURE FULL BEARING OF MATERIAL TO THE EXTRADOS OF THE EXISTING PIPE ARCH.
10. PLACE TEMPORARY EARTH RETAINING SYSTEM. REMOVE END SECTION OF EXISTING STRUCTURE AT THE INLET. REPLACE END SECTIONS OF 30" RCP AND 18" RCP AT INLET WINGWALL.
11. INSTALL TUNNEL LINER PLATE SECTIONS WITHIN THE HOST STRUCTURE. THE CONTRACTOR SHALL TAKE THE NECESSARY MEANS TO ENSURE THAT DEBRIS DOES NOT ENTER THE CULVERT SYSTEM DURING INSTALLATION OF THE CORRUGATED STEEL STRUCTURAL PLATE LINER.
12. INSTALL PCC00462 BULKHEADS AT THE INLET AND OUTLET.
13. PLACE SLIP-LINING GROUT.
14. EXCAVATE AND CONSTRUCT WINGWALLS, HEADWALL, AND ENDWALL ON NO. 6 CRUSHED STONE. REMOVE ABANDONED WATER MAINS IF ENCOUNTERED. CUT LEFT IN PLACE EARTH RETAINING SYSTEM AT 2 FEET BELOW GRADE. BACKFILL AND REMOVE REMAINING TEMPORARY EARTH RETAINING SYSTEM.
15. PLACE NATURAL STREAMBED MATERIAL AND PERFORM FINAL GRADING. LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.
16. REMOVE TEMPORARY WATER-HANDLING-COFFERDAMS AND BYPASS PIPE AT BOTH INLET AND OUTLET. RETURN FLOW TO HOST STRUCTURE.
17. REMOVE TEMPORARY ACCESS ROAD AND RESTORE IMPACTED AREAS.
18. CONSERVATION SEEDING FOR SLOPES, PERMIT PLANTINGS. REMOVE SEDIMENTATION CONTROL SYSTEMS UPON FINAL STABILIZATION.
19. RELOCATE OVERHEAD UTILITIES TO FINAL POSITIONING.

WATER HANDLING NOTES:

1. THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE TEMPORARY GRAVITY FLOW BYPASS PIPE (OR PUMP AND HOSE SYSTEM DESIGNED BY THE CONTRACTOR) AS SHOWN ON THIS SHEET DURING CLEANING AND REPAIR OF THE HOST STRUCTURE. GROUTING OF THE ANNULAR SPACE BETWEEN THE HOST STRUCTURE AND THE LINER AND DURINGESTABLISHMENT OF FINAL GRADES AS REQUIRED BY THE STAGE CONSTRUCTION SEQUENCES.
2. A DEWATERING BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. THE LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.
3. TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF AN APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND SHALL CONFORM TO PERMITS.

   ANY WATER HANDLING SCHEME DEPICTED WITHIN THE DEPARTMENT'S 'HANDLING WATER TYPICAL SCHEMATICS' MAY BE UTILIZED UNLESS SPECIFICALLY PROHIBITED. A MEANS AND METHOD FOR WATER HANDLING SYSTEM SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR APPROVAL.
4. WATER HANDLING MEASURES SHALL NOT EXCEED IMPACT AREAS SHOWN ON THE WETLAND SHEET OF THE PERMIT PLANS.
5. ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING OR PROPOSED STORM DRAINAGE PIPES SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREAS. PUMPS/PIPES SHALL BE SIZED BY THE CONTRACTOR TO HANDLE THE EXPECTED FLOWS AND BE DISCHARGED TO A STABLE LOCATION. THE CONTRACTOR SHALL SUBMIT THE MEANS AND METHODS OF HANDLING STORM DRAINAGE TO THE ENGINEER FOR APPROVAL AND IS INCLUDED AS PART OF WATER HANDLING.
6. IF A SHORT DURATION PUMP SYSTEM IS PROPOSED DURING LOW FLOW CONDITIONS, THE PUMP SYSTEM SHALL BE DESIGNED BY THE CONTRACTOR AND HAVE A MINIMUM CAPACITY AS SHOWN IN THE TEMPORARY HYDRAULIC TABLE. PUMP SYSTEM PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

   BASED UPON FIELD CONDITIONS, WORK DURATION, AND EXPECTED WEATHER CONDITIONS, THE ENGINEER MAY APPROVE A WATER HANDLING PLAN WITH LOWER PUMPING FLOWS, PROVIDED THAT THIS INCLUDES A CONTINGENCY PLAN, WHICH MINIMIZES NEGATIVE IMPACTS AND SAFELY CONVEYS LARGER FLOWS THROUGH THE WORK AREA.

UNCONFINED IN-STREAM WORK BMP NOTE:

ANY UNCONFINED IN-STREAM WORK WITHIN THE WATERCOURSE SHALL BE RESTRICTED TO THE PERIOD FROM JUNE 1 TO SEPTEMBER 30, INCLUSIVE. UNLESS OTHERWISE INCLUDED AS A SPECIAL PROVISION OF THE LICENSE, THE CONDITION SHALL APPLY TO PROJECTS IN NON-COASTAL WATERS.

THE DEPARTMENT WILL REVIEW AND MAY APPROVE THE METHODS OF UNCONFINED IN-WATER WORK WITH CONSIDERATION OF THE FOLLOWING:

- PROPOSED SCHEDULE FOR WORK OPERATIONS
- ALL UNCONFINED IN-WATER WORK SHALL BE MINOR IN NATURE
- DISTURBANCE SHALL BE LIMITED TO AREAS THAT HAVE BEEN APPROVED FOR TEMPORARY AND PERMANENT IMPACT
- BEST MANAGEMENT PRACTICE SHALL BE UTILIZED WHEREVER POSSIBLE TO MINIMIZE TURBIDITY/SEDIMENT TRANSPORT DOWNSTREAM
- DISTURBED AREAS AND THE DURATION OF DISTURBANCE SHALL BE MINIMIZED TO THE EXTENT POSSIBLE
- INSTREAM WORK SHALL BE DONE DURING PERIODS OF LOW FLOW

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

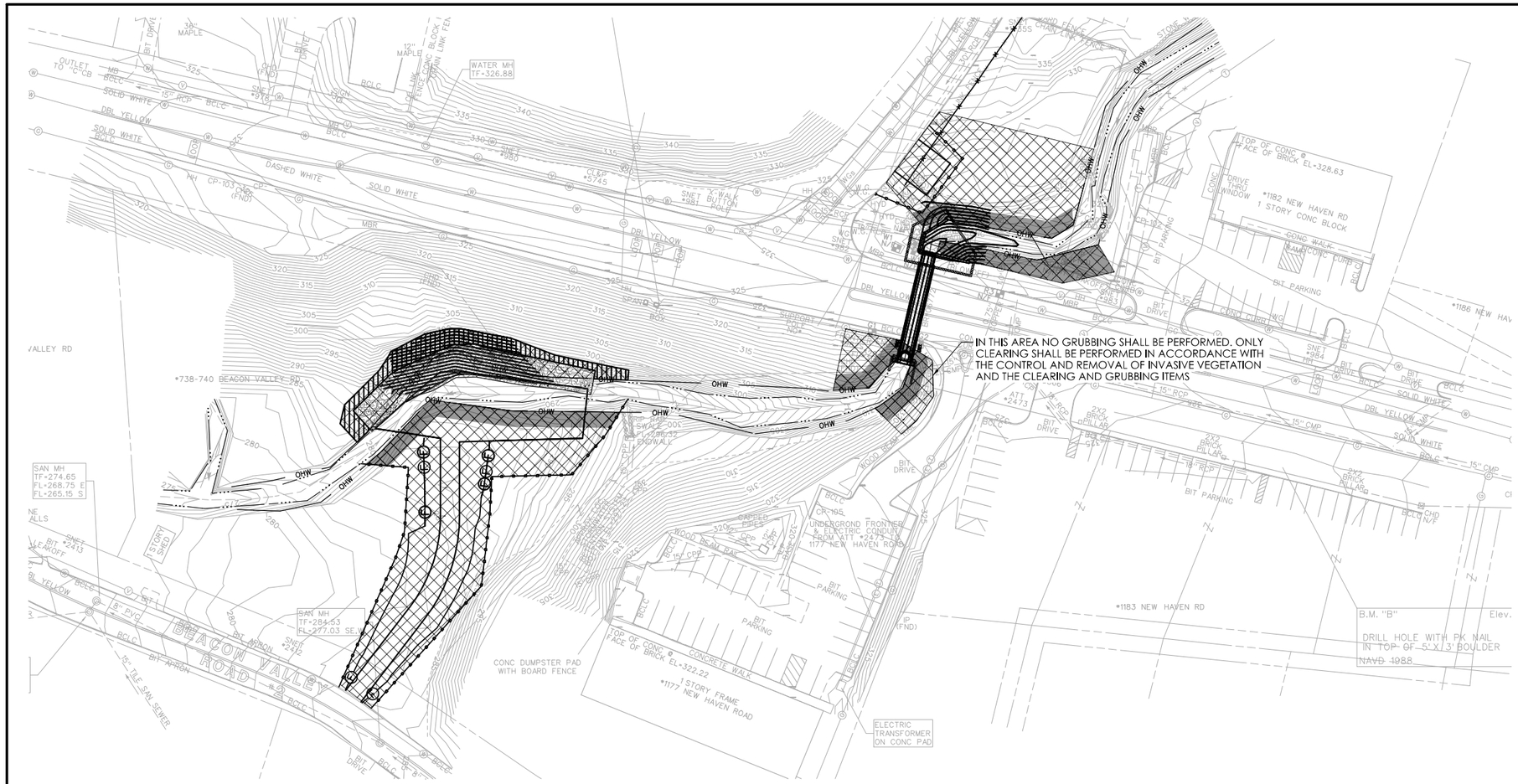
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: STAGING AND WATER HANDLING

DRAWING NO. PMT-06
SHEET NO.

LASTED SAVED BY: SaltysJ **FILE NAME:** C:\Users\saltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-6_StagingWaterHandling.dgn
PLOTTED DATE: 5/9/2024



CONTROL AND REMOVAL OF INVASIVE VEGETATION SEE NOTE 7

SLOPE STABILIZATION PLANTINGS

TOTAL PLANTS = 56
TOTAL PLANTING AREA = 1800 S.F.

AREA TO BE RESTORED WITH PLANTINGS

TOTAL PLANTS = 238
TOTAL PLANTING AREA = 5060 S.F.

PERMIT PLANTING PLAN

SCALE: 1" = 40'

NOTES

1. PLANTINGS ON THIS SHEET ARE FOR ENVIRONMENTAL PERMITTING. ANY SUBSTITUTIONS TO THE PERMIT PLANTINGS SHALL BE COORDINATED WITH THE DEPARTMENT'S OFFICE OF ENVIRONMENTAL PLANNING (OEP).

2. PROPOSED PLANTINGS TO BE FIELD LOCATED BY CTDOT OEP OR THEIR DESIGNATED REPRESENTATIVE.

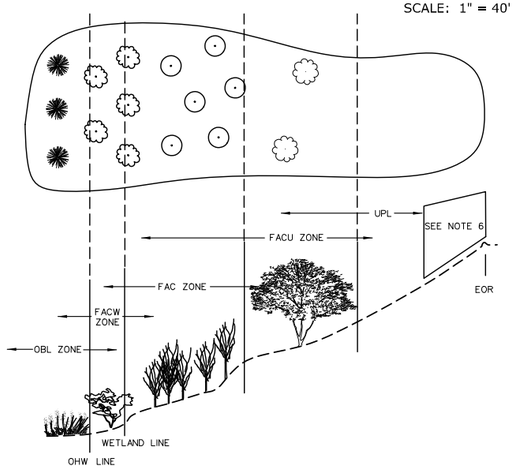
3. WOOD CHIP MULCH SHALL NOT BE PLACED IN THE WETLAND AREA.

4. DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH WETLAND GRASS ESTABLISHMENT. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE SEEDED WITH CONSERVATION SEEDING FOR SLOPES, OR OTHER SEED MIX AS SPECIFIED. ALL AREAS SHALL BE RESTORED.

5. ALL PLANT MATERIAL SHALL BE NURSERY GRADE STRAIGHT SPECIES, CONFORMING TO SECTION 3 OF THE AMERICAN STANDARDS FOR NURSERY STOCK. CTDOT OEP WILL REVIEW AND APPROVE PROPOSED PLANTINGS.

6. NO PLANTINGS SHALL BE PLACED IN MOW AREA.

7. AREA TO BE TREATED FOR INVASIVES AND PROPERLY PREPARED FOR FINAL PLANTING, SEEDING, AND RESTORATION.



SCHEMATIC PLANTING

LANDSCAPE ITEMS

KEY	BOTANICAL NAME	COMMON NAME	SIZE	QTY.	SPACING	WETLAND INDICATOR
A.a.	Aronia arbutifolia	Red Chokeberry	18" - 24" HT. B.B.	9	5' On Center	FACW
C.r.	Cornus racemosa	Gray Dogwood	2' - 3' HT. B.B.	14	5' On Center	FAC
H.v.	Hamamelis virginiana	Witch Hazel	2' - 3' HT. B.B.	11	5' On Center	FACU
Vi.a.	Viburnum acerifolia	Mapleleaf Viburnum	2' - 3' HT. B.B.	12	5' On Center	UPL
V.d.	Viburnum dentatum	Arrowwood Viburnum	24" - 36" HT. NO. 3 Container	10	5' On Center	FAC

NOTE: FOR INFORMATION ONLY. CONTRACTOR SHALL REFER TO THE CONTRACT PLANS FOR BIDDING PURPOSES.
NOTE: LANDSCAPE ITEMS FOR SLOPE STABILIZATION PLANTINGS TO BE FIELD LOCATED BY DOT LANDSCAPE DESIGN

PERMIT PLANT LIST

BOTANICAL NAME	COMMON NAME AND SIZE	QTY.	SPACING	WETLAND INDICATOR
ACER RUBRUM	RED MAPLE 2"-2½" CAL. BB	8	FIELD LOCATE	FAC
ACER RUBRUM	RED MAPLE 3'-4' HT 1 GAL. CONT.	20	FIELD LOCATE	FAC
ACER RUBRUM	RED MAPLE 6'-8' HT 3 GAL. CONT.	20	FIELD LOCATE	FAC
LINDERA BENZOIN	COMMON SPICEBUSH 2'-3' HT BB	50	5'	FACW
CLETHRA ALNIFOLIA	SWEET PEPPERBUSH 3'-4' HT BB	50	5'	FAC
CORNUS RACEMOSA	GRAY DOGWOOD 3'-4' HT BB	50	5'	FAC
ALNUS INCANA	SPECKLED ALDER 4'-5' HT BB	40	5'	FACW
ASCLEPIAS TUBEROSA	BUTTERFLY MILKWEED 1 GALLON CONTAINER	40	1'-6" ON CENTER	NI
CONSERVATION SEEDING				
CONTROL AND REMOVAL OF INVASIVE VEGETATION		25970 SF	SEE HATCHING AND NOTE 7	

NOTE: ACER RUBRUM 3'-4' HT 1 GAL. CONT. AND ACER RUBRUM 6'-8' HT 3 GAL. CONT. TO BE PAID FOR UNDER ITEM #0949875A - WETLAND PLANTINGS

ENVIRONMENTAL PERMIT PLANS
PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: CHECKED BY:

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: PERMIT PLANTING PLAN

DRAWING NO. PMT-07
SHEET NO.

LASTED SAVED BY: SaltysJ **FILE NAME:** C:\Users\saltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-7_PermitPlantingPlan.dgn
PLOTTED DATE: 5/9/2024

Pre-Construction Notification & Inland Wetlands and Watercourses Permit

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
Town of Naugatuck

Attachment 28: Copy of USACE PCN application, ENG FORM 4345

U.S. Army Corps of Engineers (USACE)

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

For use of this form, see 33 CFR 325. The proponent agency is CECW-CO-R.

Form Approved - OMB No. 0710-0003 Expires: 08-31-2023

The public reporting burden for this collection of information, OMB Control Number 0710-0003, is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR APPLICATION TO THE ABOVE EMAIL.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned. System of Record Notice (SORN). The information received is entered into our permit tracking database and a SORN has been completed (SORN #A1145b) and may be accessed at the following website: http://dpcld.defense.gov/Privacy/SORNsIndex/DOD-wide-SORN-Article-View/Article/570115/a1145b-ce.aspx

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - Middle - Last -	First - Middle - Last -
Company - Connecticut Department of Transportation	Company -
E-mail Address - Christine.Xenelis@ct.gov	E-mail Address -
6. APPLICANT'S ADDRESS:	9. AGENT'S ADDRESS:
Address- 2800 Berlin Turnpike, PO Box 317546	Address-
City - Newington State - CT Zip - 06111 Country - USA	City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE	10. AGENTS PHONE NOs. w/AREA CODE
a. Residence b. Business 860-594-2928 c. Fax	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____ SIGNATURE OF APPLICANT _____ DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
CTDOT 0087-0148 Rehabilitation of Bridge No. 06772 on Route 63

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
Straitsville Brook	Address Bridge No. 06772 on Route 63
15. LOCATION OF PROJECT	City - Naugatuck State- CT Zip- 06770
Latitude: ◦N 731630.12 Longitude: ◦W 924390.69	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID Municipality

Section - Township - Range -

17. DIRECTIONS TO THE SITE

The location is approximately 2 miles east of Route 8 Exit 26. Directions from USACE New England are as follows: Take I-95 South in Lexington from Virginia Rd for 3.3 miles. Take I-90 W and I-84 to CT-70 E/State HWY 801 in Cheshire. Take exit 26 from I-84 for 120 miles. Travel on Summit Rd and Straitsville Rd to New Haven Rd in Naugatuck for approximately 8 miles to arrive at the project location.

18. Nature of Activity (Description of project, include all features)

Please see attached sheet.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

The purpose of this project is to rehabilitate Bridge No. 06772, which supports Route 63 over Straitsville Brook in the town of Naugatuck, CT. The existing structure is structurally deficient. The existing structure is a 10' span asphalt-coated corrugated metal pipe arch culvert rated in poor condition due to complete loss of asphalt coating and heavy rust perforations. The proposed project involves relining the culvert with a 5'6" rise by 8' span steel plate pipe-arch, installing cast-in-place concrete headwall and wingwalls at the inlet, and replacement of the outlet endwall, replacement of the existing retaining wall for slope stabilization, and channel regrading. The project also proposes to stabilize the eroded embankment approximately 300' downstream of the culvert with a 140' riprap revetment to stop erosion protect the roadway embankment.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Please see attached sheet.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type	Type	Type
Amount in Cubic Yards	Amount in Cubic Yards	Amount in Cubic Yards

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres Please see attached sheet.

or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

Please see attached sheet.

24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address-

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
CT DEEP	PCN	TBD	Concurrent		
CT DEEP	Indiv. Wetlands	TBD	Concurrent		

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT | DATE | SIGNATURE OF AGENT | DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

USACE Pre-Construction Notification GP-19
Response to Block 18: Nature of Activity

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
On Route 63 over Straitsville Brook
Town of Naugatuck

Project 0087-0148 proposes to rehabilitate Bridge No. 06772 supporting Route 63 over Straitsville Brook and to stabilize the downstream eroded embankment.

Existing Conditions

Bridge No 06772 is a single barrel, asphalt-coated corrugated steel arch culvert that supports Route 63 over Straitsville Brook in Naugatuck, CT. The current ADT is listed at 11,600 vehicles per day. The project area is located approximately two miles southeast of downtown Naugatuck and approximately 2 miles east of Route 8 Exit 26. The land surrounding the project location is mostly used for business and commercial purposes. The area to the north is residential property, the area to the northeast is commercial property, and the area to the southeast is currently a shopping plaza. New Haven Rd or CT-63 over Bridge No. 06772 is used for travel to these areas.

The existing structure has an overall length of 75 feet with a span of 9 feet 6 inches and a rise of 6 feet 5 inches. The existing structure includes a masonry wingwall extending northeast from the inlet. The most recent Routine Bridge Inspection Report (BIR) notes the existing bridge is buried under approximately 2 to 3 feet of fill and lacks formal endwalls. The steel for this culvert is rated in poor condition, the inlet wingwall and cutoff wall are in fair condition, scour is noted at the inlet, and the outlet is perched. The existing condition of the structure consists of many holes along the invert, large quantities of debris within the structure, and complete loss of the asphalt coating with moderate to heavy rust and perforations.

Approximately 300’ downstream of Bridge No. 06772 is an eroded embankment. The erosion has resulted in vegetation loss and the collapse of several large trees across the channel. Additionally, a dam is located approximately 2000 feet north on Candee Rd.

The project is located in sub-regional drainage basin Beacon Hill Brook (6918). Straitsville Brook has a drainage area of approximately 0.69 square miles and is rated Class A for surface water quality.

Overhead utilities run along the north side of Route 63 on the east side of the bridge, and support lines crossing the roadway on the west side of the bridge. There are three water mains within the Project limits owned by CT Water. One 10-inch diameter cast iron raw water main located within the Route 63 roadway, a 24-inch diameter cast iron distribution water main that crosses below Straitsville brook at the inlet side of Bridge 06772, and a 20-inch diameter cast iron distribution main that crosses below Bridge 06772 at the inlet side. The 24-inch and 20-inch lines will be combined into a single 16-inch diameter main by CT water before construction begins under

Project 0087-0148. There is a 0.75-inch gas main that runs below ground perpendicular to the culvert. The gas main passes over the outlet of the structure just outside the edge of road. This gas line will be maintained and protected during construction activities.

Proposed Conditions

The proposed project will rehabilitate Bridge No. 06772 by lining the existing structure with a corrugated steel tunnel plate liner. The proposed structure will have a span of 8 feet and a rise of 5 feet 6 inches. The invert of the liner will be set at 3 inches above the existing invert elevations, and the slope of the liner will match that of the existing structure. The existing inlet structures will be replaced with a cast-in-place concrete headwall and wingwalls. A 16 foot 3 inch portion of the existing structure will be cut back and the steel plate liner will extend 8 feet 3 inches past where the inlet of the existing structure will be partially removed. This will result in daylighting of 8 feet of watercourse at the inlet. The outlet endwall will be cast in front of the existing structure and the proposed liner will extend to the proposed endwall. There is an existing abandoned 10" cast iron pipe adjacent to the outlet that will be removed. There is an existing 15" corrugated metal pipe culvert adjacent to the outlet which will be cut back to the slope and fitted with a mitered pipe end fitting.

The existing 20 inch and 24 inch cast iron watermains below the upstream portion of the watercourse will be abandoned prior to the initiation of this project. If encountered during construction, they will be removed by the contractor within the limits of the watercourse and the area will be restored with natural streambed material.

Earth retaining systems will be required at both the inlet and outlet sides of the structure to support the roadway embankment during reconstruction of the inlet headwall and wingwalls as well as installation of the outlet endwall. The earth retaining systems outside of the watercourse will be cut 2 feet below finished grade and left in place after construction. Earth retaining systems within the watercourse upstream of the culvert will be removed in their entirety. The earth retaining system at the outlet will be left in place to prevent undermining of the existing endwall and is shown on PMT-04 of the Environmental Permit Plans in Attachment 14. All areas of temporary impact will be restored. An access road will be built from Candee Rd. to perform work at the inlet of the structure. The existing roadway and driveway southeast of the structure will be used to access the outlet.

The existing eroded embankment will be regraded starting approximately 300 feet downstream of Bridge No. 06772, and approximately 140 feet of the embankment will be stabilized with a riprap revetment. A temporary access road and temporary crane mat platform will be needed to access the work areas. The access road will constructed from Beacon Valley Road towards the eroded embankment and connect to a temporary crane-mat platform supported by concrete blocks over the watercourse. Construction of the access road will require clearing and grubbing. The access road orientation is designed to minimize the required tree removal directly adjacent to Straitsville Brook. The access road and crate-mat platform will be removed, and the impacted areas will be restored and planted with native species upon construction completion. Plantings

along the proposed revetment have been coordinated with DOT Landscape Design to ensure stability of the embankment. Natural streambed material will be washed into the proposed riprap up to the 2-year water surface elevation. All areas of temporary impact will be restored.

Temporary water-handling during the rehabilitation of Bridge 06772 will consist of temporary water-handling-cofferdams. Flow of the watercourse will be maintained through an 18 inch bypass pipe through the structure or by pumping around the work area. A secondary temporary water-handling system will be installed at the downstream eroded embankment using temporary water-handling-cofferdams. Flow of the watercourse will also be maintained through the work area by an 18 inch bypass pipe under a temporary crane-mat platform or by pumping around the work area.

Construction Sequence

Two sequences are provided to detail work to the slope revetment and the pipe relining. Work may be performed at both sites simultaneously or consecutively.

Bridge Rehabilitation

The rehabilitation of Bridge No. 06772 is anticipated to begin with the relocation of existing utilities and the construction of a temporary access road from Candee Rd to the culvert inlet. The existing roadway and driveway southeast of the culvert will be used to access the outlet. A sedimentation control system will be installed around the work area. The access road will be built entirely in the upland and impacts to wetlands are not anticipated as a result of proposed work. Tree removal and grading will be necessary for access road construction.

Temporary water-handling cofferdams will then be installed. Flow from Straitsville Brook will be conveyed through an 18 inch temporary bypass pipe through the existing structure or by pumping around the work area. Sediment will then be removed, and regrading will be done at the inlet of the structure. The existing structure will be cleaned and grout will be placed to fill voids and perforations within the strutcure. An earth retaining system will then be installed at the inlet and outlet. A 16 foot 3 inch portion of the structure will be removed from the inlet and the end sections of existing drainage pipes will be replaced. The tunnel liner plate sections will then be installed within the existing structure. The liner will extend 8 foot inches past where the inlet of the existing structure will be partially removed. Bulkheads will then be installed at the inlet and outlet and slip-lining grout will be placed between the existing structure and proposed liner. Construction of the inlet headwall and wingwalls will then take place including cutting and leaving the earth retaining system in place outside of the watercourse limits. The earth retaining system at the outlet will be entirely removed with the exception of a portion that will be cut behind the proposed endwall and left in place. Natural streambed material will be used to fill excavated areas at the inlet and outlet. Large stones and boulders immediately downstream of the structure will be removed and stockpiled prior to construction and reset in original locations after construction is complete. The water-handling system will be removed after construction is

complete, and all areas of temporary impact will be restored. Existing overhead utilities will be relocated to final positioning.

Areas where tree removal is required for construction of the access road will be restored and revegetated with native plantings and seeding. Temporarily impacted areas shall be restored to existing conditions following construction.

Slope Revetment

The construction of the downstream slope revetment is anticipated to begin with constructing a temporary access road from Beacon Valley Rd to the existing eroded slope. A sedimentation control system will be installed around the work area. Temporary water-handling cofferdams will then be installed. Flow from Straitsville Brook will be conveyed through an 18 inch temporary bypass pipe within the channel or by pumping around the work area. A construction access platform will then be constructed over the watercourse using crane mats and concrete blocks across the watercourse. The 140 foot slope revetment will then be constructed, and riprap armoring will be placed. The temporary access platform will then be removed and final grading and placement of natural streambed material will be completed. Natural streambed material will be washed into proposed riprap to the 2-year water surface elevation. The temporary water handling and access road will be removed.

Areas where tree removal is required for construction of the access road shall be re-stabilized with clean soil and a ground cover. Appropriate trees and vegetation shall be reestablished through plantings and conservation seed mix. Temporarily impacted areas shall be restored to natural conditions following construction. Areas will be restored and revegetated with native plantings and seeding.

USACE Pre-Construction Notification GP-19
Response to Block 20: Reason for Discharge

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
On Route 63 over Straitsville Brook
Town of Naugatuck

The proposed project will rehabilitate the existing asphalt-coated corrugated metal pipe arch by relining the structure with an 8 foot span by 5 foot 6 inch rise corrugated steel tunnel plate liner. Placement of the liner within the existing culvert and grouting the annular space, is considered fill within the watercourse. This work is required to rehabilitate the existing structure.

Channel regrading is proposed at both the inlet and outlet of the culvert to restore the area disturbed by the construction of headwalls and wingwalls at the inlet and the endwall at the outlet. Channel regrading will consist of a minimum 1’ of natural streambed material over 1’ of crushed stone at the inlet and 1’ of natural streambed material at the outlet to match the existing grade. Large stones and boulders within the watercourse immediately downstream of the structure will be removed and temporarily stockpiled during excavation and reset in the original locations during final grading.

Re-grading the existing downstream eroded embankment and the installation of the 140 foot riprap revetment includes the placement of heavy riprap with crushed stone and modified riprap along the slope for stabilization. Topdressing of native streambed material is proposed up to the 2-year water surface elevation.

Temporary watercourse impacts associated with temporary water-handling are anticipated for this project at both sites. Water-handling during the rehabilitation of Bridge 06772 will consist of temporary water-handling-cofferdams. Flow of the watercourse will be managed by an 18 inch bypass pipe through the structure or by pumping around the work area. A secondary temporary water-handling system will be installed at the downstream eroded embankment using water-handling-cofferdams. Flow of the watercourse will be managed by an 18 inch bypass pipe under a temporary crane-mat platform or by pumping around the work area. Water-handling will be removed, and areas of temporary impact will be restored following construction.

USACE Pre-Construction Notification GP-19
Response to Block 21: Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
On Route 63 over Straitsville Brook
Town of Naugatuck

Material	Volume (Cubic Yards)	Comment
Concrete	27	Closure Pours, wingwalls, headwall, endwall, footing
Grout	10	For filling voids within the existing culvert and between the existing and proposed structure
Riprap	310	Revetment for slope stabiliation
Natural Streambed Material	233	Inlet and outlet of culvert, revetment for slope stabilization
No. 6 Crushed Stone	75	Revetment for slope stabilization
Earth Retaining System Left in Place	4	At existing outlet to prevent undermining

USACE Pre-Construction Notification GP-19
Response to Block 22: Surface Area in Acres of Wetland or Other Waters Filled

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
On Route 63 over Straitsville Brook
Town of Naugatuck

There are no state and federally regulated wetlands within the project area, therefore the project will not result in temporary or permanent fill within state or federally regulated wetlands.

The project includes 5,250 s.f. (0.121 ac) of permanent watercourse impacts associated with pipe lining the existing culvert with a 8 foot span by 5 foot inch rise corrugated steel tunnel plate liner, replacement of headwall and wingwalls at the inlet, replacement of the endwall at the outlet, the earth retaining system to be left in place at culvert outlet, installation of 140 foot long riprap revetment, associated regrading of Straitsville Brook and placement of natural streambed material. In addition, the project includes 1,670 s.f. (0.038 ac) of temporary watercourse impacts associated with temporary water-handling to perform the work in the dry. Total watercourse impacts for this project is 6,920 s.f. (0.159 ac) All areas of temporary impact will be restored upon construction completion.

Wetland/Watercourse Impact Table			
	Wetland Impacts	Watercourse Impacts	Total
Permanent Impacts	0 s.f (0 ac)	5,250 s.f. (0.121 ac)	5,250 s.f. (0.121 ac)
Temporary Impacts	0 s.f (0 ac)	1,670 s.f. (0.038 ac)	1,670 s.f. (0.038 ac)
Total Impacts	0 s.f (0 ac)	6,920 s.f. (0.159 ac)	6,920 s.f. (0.159 ac)

USACE Pre-Construction Notification GP-19
Response to Block 23: Description of Avoidance, Minimization, and Compensation

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
On Route 63 over Straitsville Brook
Town of Naugatuck

The following measures were taken to avoid and/or minimize the impacts to the surrounding wetlands and watercourse:

- The project has been designed to minimize impacts to wetlands and watercourses while providing adequate work area to complete the proposed work.
- Invasive species will be controlled during construction using the Department's Control and Removal of Invasive Vegetation specification within the project limits.
- Water-handling-cofferdams that convey flow to a 18-inch diameter temporary pipe will be used during the construction to prevent sediment and debris from entering the watercourse. This will also allow the watercourse to flow freely during construction.
- The water pumped from behind the water-handling-cofferdams will be directed into dewatering basins to minimize the number of suspended particles entering the watercourse.
- All areas of temporary impact will be restored.
- All construction activities will be conducted in accordance with the Department's Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 818, Section 1.10 and will also follow required best management practices (BMPs).
- Sedimentation and erosion control measures will be used in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control and the 2004 Connecticut Stormwater Quality Manual.
- All areas of temporary disturbance within the project limits will be stabilized and restored with native plantings and/or seeding.

Alternatives that were considered for the culvert included:

- Replacement with a box culvert/three-sided frame. This alternative was eliminated due for various reasons including interference with underground water and raw water mains beneath the inlet that are unable to be cutoff, interference with an underground gas main above the structure, staged construction, increased environmental ROW impacts and high costs associated with the work. Additionally, a three-sided structure would require total stream reconstruction that would increase stream velocities.
- Replacement using pipe jacking. This alternative was eliminated due for various reasons including interference with underground water and raw water mains beneath the inlet that are unable to be cutoff, interference with an underground gas main above the structure, difficulties with jacking in rocky substrate, increased environmental ROW impacts and high costs associated with the work. Additionally, pipe-jacking a

culvert of this size raised significant concern for damaging through direct conflict or vibration.

- Replacement culvert with skew to match natural channel alignment. This alternative was eliminated due to interference with overhead and underground utilities. Additionally, a replacement structure would require total stream reconstruction that would increase stream velocities.
- Alternatives for providing fish passage through the structure were investigated.
    - Installation of step pools: Due to the steepness of the watercourse and the drop at the culvert outlet providing passage through the culvert would have required a step pool system extending 300 feet downstream of the culvert outlet with a 6 inch depth of riprap throughout the entire channel. CT DEEP Fisheries determined that the amount of disturbance downstream would not be beneficial due to existing natural upstream barriers to fish passage and limited habitat availability upstream of the culvert.
    - Installation of an engineered concrete fishway: Providing a max 15% slope would require 150 foot engineered fishway extending downstream from the culvert outlet. CT DEEP Fisheries determined that the amount of disturbance downstream would not be beneficial due to existing natural upstream barriers to fish passage and limited habitat availability upstream of the culvert.

The proposed project alternative using pipe-ling maintains hydraulic adequacy, reduces construction duration, reduces traffic impacts, reduces environmental and ROW impacts, reduces impacts to overhead and underground utilities, and it has a reduced cost compared to the other alternatives.

Alternatives that were considered for access roads included:

- Installing an access road from Route 63 to access the eroded embankment and culvert outlet. Due to the steep slopes there were constructability concerns about placement of shoring to support the access road. Additionally, this would have required extensive clearing on the slope adjacent to Straitsville Brook and access to install the proposed revetment would be difficult.
- Installation of an access road from Beacon Valley Road to the culvert outlet. This alternative would have had an access road leading from the currently proposed access road along Straitsville Brook to the outlet of the culvert. This alternative would have resulted in significant clearing along Straitsville Brook. There were additional constructability concerns due to an existing underground stormwater detention system located adjacent to the slope for the existing commercial property.

The proposed temporary access road orientations are proposed to minimize the required tree removal directly adjacent to Straitsville Brook. The access roads will be removed after construction is completed, and impacted areas will be restored. An antitracking pad will be installed at the entrance of access roads.

Pre-Construction Notification & Inland Wetlands and Watercourses Permit

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
Town of Naugatuck

Attachment 30: Copy of Interagency Coordination Meeting notes:

- December 16th, 2021
- January 20th, 2022
- March 21st, 2024

Interagency Coordination Meeting Notes

December 16, 2021

MS Teams Meeting

November 18, 2021 Interagency Meeting Notes:

DEEP and USACE requested that the language in the notes for Project 95-257's Action Items that described the outcome of the follow-up meeting held on 12/6/21 be revised to indicate that the regulators agreed that the project is eligible for the FM MOU, USACE SV GP-19, DEEP IWGP (rather than stating that the SV criteria had been met) and that the eligibility is contingent on completion of DEEP NDDB coordination. There were no other comments on November Interagency meeting notes. With the revision to be made with respect to 95-257, the notes are considered accepted.

Project 32-150 Replacement of Bridge No.04446 Hop River Road over Hop River in Coventry and Columbia

Project 32-150 was presented at the November 18, 2021 ICM. At Army Corps' request, the previous permit determinations were revisited.

Bridge No. 04446 supports Hop River Road over Hop River in Coventry and Columbia and is immediately upstream of the Hop River Dam. The existing structure is a two-span structure comprised of steel beams and concrete deck supported by stone masonry abutments and central pier. Twin 60-inch Corrugated Metal Pipes (CMPs) are located immediately south of the existing bridge and carry Hop River Road over the tailrace associated with the Hop River Dam. The preferred replacement structure type is a wider, two-span superstructure on pile supported cast-in-place abutments and modified central pier. The existing pier will have minor masonry repairs and the concrete cap will be replaced with a new cap to accommodate the wider superstructure. The existing tailrace CMPs will be replaced with a new 8-foot wide by 6-foot tall precast concrete box culvert and reinforced concrete headwalls.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	75	3,775	940
Temporary	110	830	3,850
Total	185	4,605	4,790

Floodplain Impacts	
Cut (CY)	Fill (CY)
1,645	1,645

Agency Comments: The agencies acknowledged that the bank full width (BFW) language included USACE General Permit's Stream Crossing Best Management Practices (BMPs) has a footnote that indicates "The use of bridge piers or similar supports, where necessary, does not prevent a structure from being considered as a span." As such, the proposed bridge meets the 1.2xBFW BMP and the regulatory agencies agreed the project was eligible for SV GP-19 with an exemption from GP-19's freeboard SV-eligibility criterion.

Project 32-150 (continued)

The freeboard exemption is granted based on the following:

1. The exemption is based on this specific site's conditions.
2. The structure has 1.7' of freeboard, which nearly meets the 2.0' criterion.
3. The Hop River Dam immediately downstream of the bridge serves as a controlling feature.

The permitting determination is contingent on completion of DEEP NDDB coordination.

USACE #: NAE-2021-2986

Permitting Requirements: DOT FM MOU, USACE GP-19, Local inland wetlands

Action Items: Prepare permit plans and permit applications for submission to the respective regulatory agencies.

Project 87-148 Rehabilitation of Bridge No.06772 Route 63 over Straitsville Brook in the Town of Naugatuck

Bridge No. 06772 is a 10-foot span asphalt-coated corrugated metal pipe arch culvert supporting Route 63 (New Haven Road) over Straitsville Brook in the town of Naugatuck. Average Daily Traffic (ADT) is 11,100. The overall structure length is 75 feet. The structure is in poor condition (rating 4) due to complete loss of asphalt coating with heavy rust and perforations in the invert. The project is not located within a FEMA floodplain (i.e., no floodplain impacts). The drainage area is 0.69 sq.mi.

The proposed rehabilitation is to reline the existing pipe with a 5-foot diameter pipe of similar length and grout the annular space. The outlet has a 2-foot drop off to the existing streambed and Fisheries has advised this is a barrier to fish passage. Several underground utilities including potable water, a raw water transmission main, and gas service beneath the project area present practicality challenges to constructing a new replacement culvert at the depth and pitch that would be needed to overcome the perched nature of the existing culvert.

Downstream step pools were investigated as a means of remedying the lack of fish passage at the culvert outlet. Due to the amount of drop off at the culvert outlet and the steepness of the downstream channel, a step pool system would extend and disturb 300' of watercourse downstream and require up to 6' depth of fill/riprap which was considered as unfeasible.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	810	810
Temporary	0	1,940	1,940
Total	0	2,750	2,750

Project 87-148 (continued)

Agency Comments:

- DEEP Fisheries stated that water quality has significantly improved in this watercourse, Brook and Brown Trout are present in the watercourse up to the culvert and they would like to find a way to get passage through the culvert. Providing passage would immediately restore ½ mile of habitat. DEEP Fisheries also stated that the upstream dam may be passable which would open significantly more habitat further upstream. DEEP Fisheries agreed step pools would not be feasible at the project location and asked if other options, such as installation of an engineered fishway, were investigated.
    - DOT H&D & EPC confirmed a fishway was investigated and using a max 15% slope, a 150-foot long fishway would be required at the site.
    - USACE also identified concerns about the fish/aquatic life passage at the project site with respect to General Conditions 20 and 21 of the General Permit.
    - DEEP Fisheries stated that a field meeting is needed to discuss fish passage at the site. OEP will schedule a meeting. DEEP LWRD, EPA and USACE requested to be invited to the meeting as well.
- DEEP LWRD asked if the proposed slip lining will result in velocity increases downstream. DOT H&D stated there will be approximately 10% increase in downstream velocity, that with the boney channel bottom there is no concern of scour downstream, and that the downstream embankments will be protected with the proposed wingwalls.
- DEEP LWRD asked if there will be loss of flow downstream while water handling is switched from stage 1 (installation of the liner pipe) to stage 2 (grouting the annular space, including the initial bypass pipe). DOT designers responded by indicating that downstream flow would be maintained by installing a second temporary bypass pipe within the lined pipe before the grouting stage begins.
- DEEP LWRD asked about using Beacon Valley Road as a detour to complete work during a complete roadway shutdown. DOT designers stated that the turn radius from Rt 63 to Beacon Valley Road is too small for large trucks, as well is a heavy residential area, has roadway incline, and trees overhead.
- DEEP LWRD asked how the proposed size of the pipe liner was chosen and if the lined culvert would be hydraulically adequate. DOT Bridge stated that the pipe size and shape were chosen to account for irregularities inside the existing culvert and that culvert is hydraulically adequate in the existing and proposed condition.
- DEEP LWRD asked if the proposed water handling bypass pipe would be extended all the way to the upstream cofferdam since it was unclear from the presentation's depiction. DOT Bridge designers confirmed that would be the case.
- USACE asked if other replacement alternatives such as boring and jacking have been investigated to adjust the skew of the culvert to provide a more natural alignment to the watercourse. USACE also asked if correcting the perched condition by evaluating matching into the slope of the watercourse upstream and downstream.
    - DOT H&D indicated that the original highway construction had adjusted the watercourse from its original location. H&D confirmed that matching the slope had been looked at but would require a structure replacement. In addition, H&D noted that a total stream reconstruction in the area would still yield a stream slope of 10-15%.

Project 87-148 (continued)

- DOT designers indicated that the presence of the underground utilities for the length of roadway on either side of the culvert presented practicality challenges to any replacement options. DOT EPC elaborated on the various utility concerns at the site. The raw water transmission main does not have any shutoff valves (i.e., the water utility would have to cut off the flow of water from its source while a bypass was constructed). Additionally, jacking a large culvert between utilities would raise significant concern for damaging (especially the raw water line) through direct conflict or vibration.
- DOT Construction stated that due to the utility conflicts and rocky substrate, jacking at this site is also not feasible.
- DOT EPC also noted that the cost estimate provided for a standard replacement option included utility reconstruction but the estimate was too low because it did not include right-of-way costs which would be required for the project.
- The watercourse skew, the perched condition, the slope of the channel downstream and upstream of the culvert, and the underground utilities, to the extent possible, will be examined during the field visit.

- USACE stated that a thorough alternatives analysis will be needed for the project and that USACE plans to provide formal written comments on the project at a later date.
- DEEP LWRD stated that the existing downstream stormwater outlet is possibly making scour condition worse. DOT designers indicated that stormwater outlet will be reviewed more closely as design progresses and will be relocated as needed if corrected measures are warranted.
- DEEP asked if the area of the structure was included in the impact area calculations. The designer confirmed that was the case.

Permitting Requirements: The agencies agreed the project would not be SV-eligible. A final permit determination was not made. The agencies will further consider the permitting requirements following the site visit.

Action Items: CT DOT OEP will setup a field meeting with USACE, EPA, DEEP LWRD & Fisheries. USACE to provide written comments to DOT OEP on the proposed project.

Subsequent to the meeting USACE emailed the following comments:

- Questions remain on how the proposed project comports with the CT GP's General Conditions 20 & 21 with respect fish passage and the management of expected high flows.
- USACE would like to see an evaluation of the practicability of alternatives relating to boring or culvert jacking with respect to the CT GP's avoidance and minimization requirements.
- If there is an alternative to the concrete fish ladder structure DEEP fisheries suggests, that would also provide fish passage, USACE encourages that over an in-channel concrete structure.

Subsequent to the meeting, a site visit was held on January 10, 2022. DOT Bridge Design, DOT OOC, DOT EPC, DOT OEP, DOT H&D, DEEP LWRD, and DEEP Fisheries were in attendance. A full Report of Meeting will be made available.

- DEEP Fisheries staff informed that natural barriers to fish passage are approximately 1100 feet upstream of the culvert and expressed that the amount of channel disturbance that would have to occur downstream to make the culvert passable would not be beneficial considering the small amount of upstream reach that would be gained.
- DEEP LWRD indicated a follow-up discussion with EPA and USACE to determine permit requirements is warranted.

Project 35-198 Rehabilitation of Bridge No.06821 - Interstate 95 & Exit 10 Ramps over Drainage Conveyance in the Town of Darien

Bridge No. 06821 supports Interstate-95 (I-95) and the Exit 10 ramps over a drainage culvert in Darien, Connecticut. The existing culvert consists of a 276' - 72" x 44" asphalt coated multi plate corrugated pipe arch. The existing culvert is in fair condition (Rating = 5), which is primarily due to vertical joint misalignment, section loss of the culvert floor, deformation of the pipe, and moderate to severe corrosion at the joints. ADT of I-95 is approximately 138,700; ADT of the Exit 10 SB and NB ramps are approximately 3,700 and 3,000, respectively.

The outlet of the structure is located immediately south of the I-95 NB Exit 10-off ramp. Reinforced concrete headwalls and wingwalls are present at the outlet of the structure. A concrete surface extends from the pipe outlet to the limits of the wingwall. The area downstream of the concrete surface has been identified as wetlands.

The project consists of relining the existing structure with a glass reinforced plastic (GRP) lining. Due to the increased drainage discharge velocities, a preformed scour hole consisting of standard riprap will be constructed at the outlet. The design team presented information from various mapping (USGS, FEMA, historical plans, and surrounding site plans) showing that the areas upstream of the existing pipe outlet did not appear to be a watercourse.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	1,000	1,000
Temporary	0	0	0
Total	0	1,000	1,000

Agency Comments:

- DEEP LWRD asked about existing conditions of pipe outlet scour hole and riprap. The designer responded there is a 6-inch concrete pad that extends to limits of wingwall, riprap is not present.
- The agencies discussed regulatory jurisdiction upstream and downstream of the culvert outlet. USACE indicated that in order for there to be federal jurisdiction, Waters of the United States need to be present, and an indication of Ordinary High Water (OHW) would need to be present. An OHW mark can be seen downstream of pipe outlet. As such the channel downstream of the outlet is federally-regulated. Upstream of outlet consists of a piped network stormwater drainage.
- The regulated activities and impacts downstream of the culvert qualify for permitting under SV/IWGP. No state or federal permitting is required for the proposed activities upstream of outlet.
- Based on the discussion, slip lining activities for this project would not be within the USACE jurisdiction.

Permitting Requirements: USACE SV (GP-19), DEEP IWGP

Action Items: Prepare permit plans and permit applications for submission to the respective regulatory agencies.

Project 148-213 Rehabilitation of Bridge 0793A – Route 15 Northbound Over Quinnipiac River in the Town of Wallingford

The project consists of a proposed superstructure replacement, a substructure rehabilitation, and scour countermeasures in the channel beneath Br. 0793A and its sister bridge, 0793B Route 15 Southbound over the Quinnipiac River.

Bridge No. 0793A is comprised of two simply supported spans with a reinforced concrete deck supported by rolled steel beams resting on reinforced concrete abutments and a reinforced concrete pier wall. The existing substructure is founded on timber piles. The average daily traffic (ADT) is approximately 29,600. The existing structure has a maximum span of 51 feet. The deck is in poor condition, rated a 4. Br. 0793A's and Br. 0793B's scour critical is in serious condition, rated as a 3.The project proposes to replace Br. 0793A's superstructure with a pre-fabricated bridge unit (PBU). Br. 0793A's existing concrete substructure will be patched and ground anchors will be installed through abutments to alleviate pile loading. The drainage area is 106 square miles. The site is located within a FEMA Floodway. The structure is scour critical for the 100- and 500-year storm event

To address the scour critical serious rating, riprap overtopped with natural streambed material will replace the existing channel substrate beneath the structure and the structure's sister bridge, Br. #0793B. Upstream and downstream of the bridge, material has deposited over time to create isolated sediment bars in the watercourse. The project proposes to remove these sediment bars to restore the channel to as it was when the bridge was constructed. The elevation of the sediment bars' surfaces does not exceed the respective Ordinary High Water elevation.

Initial DEEP Fisheries comments received July 2019. Comments received during December 2021 follow-up discussion with DEEP Fisheries will be incorporated into project design.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	20,942	20,942
Temporary	0	3,636	3,636
Total	0	24,578	24,578

Floodplain Impacts	
Cut (CY)	**Fill (CY)**
TBD (net cut)	TBD (net cut)

Agency Comments:

- DOT Construction asked about use of concrete "A-Jacks" instead of riprap. DOT Hydraulics & Drainage responded that A-Jacks were considered but did not reduce the area requiring scour protection.
- DOT Construction asked about lighting restrictions during night work. The designer responded that night work will be required during the four weekends required to place the PBUs. DEEP Fisheries indicated light should not go onto the water and lighting baffles or screens could be used to minimize light disturbance during migratory time of year. In addition, DEEP Fisheries noted there will also be a 90db noise restriction (measured at the water).

Project 148-213 (continued)

- USACE asked about the extent of riprap and why smaller areas in the immediate vicinity of the structures were not proposed. H&D responded that spot treatments were investigated, but there is an overlap in the extent of riprap required around abutments and center pier, meaning the entire channel would be riprapped regardless. Analyzing riprap across the entire channel system, instead of analyzing the abutments and pier separately, allows the depth of riprap to be decreased. The designer presented a depiction of the extent of riprap that would have been needed for protection at each abutment and the pier. The designer agreed to share the depiction as an additional slide to be included in the final ICM presentation and the drawing of the overlapped riprap will be included with the permit application.
- DEEP LWRD and USACE asked about excavation of the sediment bars.
    - H&D responded that removal of sediment bars is required to reduce stream velocity and scour concerns, and also indicated that the upstream sediment bar is likely comprised of riprap that washed out from an upstream tributary. The sediment bars also cause the unwanted effect of directing flow more towards only one barrel.
    - USACE requested that removal of habitat associated with sediment bars be avoided, if possible. If removal of sediment bars is required due to hydraulic/scour concerns, USACE would like hydraulic information to be included with the permit application to support compliance with GP General Condition 3, minimization of adverse effects.
    - DEEP LWRD asked if sediment bars were being removed to balance cut/fill in floodplain. Designer noted that it is anticipated to still have a net cut in the floodplain even if the sediment bars were not removed. H&D responded that both upstream and downstream sediment bars have an impact on contraction scour in the north barrel of the structure. The project is attempting to reduce river velocity. DEEP LWRD asked if it's possible to preserve one of the sediment bars (possibly downstream). DOT agreed to minimize impact to sediment bars and/or document justification for removal.
- USACE asked if native streambed material will be stockpiled and used in the top dressing for the proposed riprap. The designer responded that native stream material will be reused in top dressing as long as the material is suitable. Given the depth of excavation, the project expects to have sufficient material to stockpile and reuse. Suitable supplemental streambed material would be brought from other locations if needed. If it is confirmed that the sediment bars are comprised of riprap, then that material would not be used for top dressing.
- DEEP Fisheries indicated there is a diadromous fish run present at this location. This bridge is between two fishways that are monitored by DEEP Fisheries. NOAA ESA consultation is not required, as sturgeon cannot pass the downstream fishway. NOAA EFH Consultation will be required, and the permitting agencies will be advised of the consultation's outcome.
- DEEP LWRD asked about NDDB coordination and critical habitat. OEP responded that DOT is aware of the species present (Blueback Herring) and coordination with DEEP Fisheries is ongoing. An application to DEEP NDDB Program will be submitted. DOT Bridge noted that there is no proposed tree clearing in the floodplain forest.
- DEEP LWRD asked about floodplain cut/fill volumes. The designer responded that final cut/fill volumes are not currently available and that a net cut is anticipated. Floodplain cut/fill volumes will be included with the permit applications.

Project 148-213 (continued)

Permitting Requirements: The following permit determination is contingent on the agencies receiving and concurring with follow-up hydraulic information demonstrating the need to remove of the upstream and downstream gravel bars: USACE PCN, DEEP PCN Concurrence of Eligibility, DEEP Individual FMC, DEEP IWGP

Action Items:

- OEP will prepare and submit a NDDB application to DEEP NDDB Program and an EFH programmatic consultation to NOAA NMFS under the (EFH Verification Form). OEP will coordinate lighting and noise restrictions with DEEP Fisheries.
- Design and H&D will investigate hydraulic/scour impact of keeping the sediment bars in place. If removal of sediment bars is required due to hydraulic/scour concerns, the hydraulic information will be included with permit applications.

Interagency Coordination Meeting Notes

January 20, 2022

MS Teams Meeting

December 16, 2021 Interagency Meeting Notes:

DEEP requested the following edits to the December 2021 meeting notes.

- For Project 32-150, the notes should indicate that the Hop River Dam is upstream of the project site, not downstream.
- For Project 148-213, the notes should indicate the drainage area (106 sq. mi.), that site is located within a FEMA Floodway, and that the structure is scour critical for the 100- and 500-year storm events. DEEP also noted that a final confirmation that the project was PCN eligible was not determined. The notes will indicate that the project's PCN determination is contingent on the agencies receiving and concurring with follow-up hydraulic information regarding the removal of the upstream and downstream gravel bars.

With the revision to be made as requested by DEEP, the notes are considered accepted.

Project 87-148 - Rehabilitation of Bridge No. 06772, Route 63 over Straitsville Brook in Naugatuck

Project 87-148 was presented at the December 16, 2021 ICM without a final permit determination. Subsequent to the December 2021 meeting, USACE provided follow-up written comments regarding: the practicality of alternates relating to boring or pipe jacking; alternatives for fish passage other than an in-channel concrete fish ladder; and General Conditions 20 and 21 of the CT General Permit . A site visit with DEEP LWRD, DEEP Fisheries and DOT was conducted on January 10, 2022.

No formal presentation was provided. Written responses to USACE's comments were provided in advance of the ICM meeting. USACE's follow-up comments and the site visit were discussed.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	810	810
Temporary	0	1,940	1,940
Total	0	2,750	2,750

The project is not located within a FEMA floodplain (i.e., no floodplain impacts).

Agency Comments:

- USACE indicated that the written responses to the follow-up questions were satisfactory. DEEP LWRD and USACE concurred with the DEEP Fisheries conclusion that natural obstructions decrease the potential value of getting fish passage at this site and is not feasible at this location at this time.

Project 87-148 (continued)

- DEEP LWRD noted that during the site visit there was an observed washout of a portion of the embankment between Route 63 and Straitsville Brook approximately 300 feet downstream of the subject culvert. DEEP LWRD stated their concerns over additional sediment loss in this area that could be caused by streamflow velocity increases from the sliplining project. EPA and USACE agreed with DEEP's concern regarding the washout and indicated that the culvert project may need to include slope stabilization to prevent the secondary impacts. Jute matting and live stakes were suggested.
- DOT designers, OOC, OEP, EPC will investigate means to stabilize the slope in coordination with DOT Highway Operations and Rights-of-Way. The area of the failed slope is beyond the CT DOT right of way., DOT would typically address this type of condition only if it caused the supporting roadway slope to exceed 2:1, which is not the case at this location.
- DOT H&D indicated that the proposed velocity increase associated with the sliplining is limited to the immediate area of the culvert outlet. The velocity increase is expected to dissipate due to the large boulders present within the watercourse and there will be no velocity increases downstream in this area.
- DEEP LWRD indicated that H&D's statements regarding the limited extent of the velocity increases addressed their concern whether Project 87-148 would be any cause of additional erosion. DEEP LWRD maintained their request that the area be reviewed by DOT to determine if anything can be done.

USACE #: NAE-2022-196
Permitting Requirements: USACE PCN (GP19), DEEP PCN Concurrence of Eligibility, DEEP Individual Inland Wetlands and Watercourses Permit
Action Items: Prepare permit plans and permit applications for submission to the respective regulatory agencies. DOT designers, OOC, OEP, EPC will meet with Highway Operations and Rights of Way to investigate stabilization of the existing washout.

Project 46-127 - Replacement of Bridge No.01524, Route 191 over Scantic River in East Windsor

Bridge No. 01524 supports State Route 191 over the Scantic River in East Windsor. The existing structure is a single span with span length of 76 feet and an out-to-out width of 32.4 feet. ADT is 1500 vehicles. The structure was rated to be in serious condition (3) due to steel deterioration; it is posted for 11 tons/emergency vehicles. The existing structure is hydraulically inadequate and is within a FEMA 100-year floodplain. The drainage area is 97.6 sq. miles.

The preferred replacement structure type is a single span steel plate girder superstructure on reinforced concrete abutments with a clear span of 120 feet and an out-to-out width of 33 feet. The proposed structure will meet the 1.2xBFW criterion and will be hydraulically adequate.

An existing sewer main located below the Scantic River conflicts with the proposed structure and will be relocated to a permanent subaqueous location farther south of its existing location. Alternative bridge locations to avoid the sewer conflict resulted in either poor roadway geometry or would require acquisition and change of use to public water supply company lands. Directional drilling the new sewer line was impractical due to the $7.5M cost. A permanent sewer line attached the bridge structure would require a new pump station, which was rejected by the local sewer authority.

Project 46-127 (continued)

The project area is habitat for state-listed mussels (5 species – NDDB approved relocation) Impact minimization also included DEEP Fisheries recommendations in consideration of diadromous fish runs for turbidity, light and sound, time of year, doing one-half the sewer installation at a time, and abandonment of the existing sewer line after the new main is in service.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	1,068	1,068
Temporary	260	3,009	3,269
Total	260	3,817	4,337

Floodplain Impacts	
Cut (CY)	Fill (CY)
250	80

Agency Comments:

- DEEP Fisheries clarified the time-of-year (TOY) restriction restricts any unconfined instream work within the Scantic River to the period from July 1 to September 30, inclusive. Construction noise limits of 90 dB should be measured at the water surface.
- DEEP LWRD asked for clarification regarding under-clearance of the proposed bridge. The designer confirmed the project meets the Hydraulic Manual's freeboard requirement for a drainage area greater than 10 square miles. There is more than 2-feet of freeboard between the 100-yr WSEL and the overlying road.
- USACE stated that the existing sewer should be removed from waterway after it is abandoned in accordance with Corps policy and General Condition 36 of the CT GP. DOT indicated that the impacts associated with removing are expected to result in total wetland/watercourse impact greater than 5,000 sf. USACE indicated that GP-19 of the new General Permit for CT includes an exception that allows regulators to permit projects under Self-Verification (SV) that do not meet numeric limits but have compelling reasons to qualify for SV.
- USACE asked about the DOT's methodology for determining scour depths, and whether there was potential for the sewer pipes to be exposed over time. DOT H&D responded that scour depth was analyzed using HEC-RAS and HEC-18 methodology and considered the size of the bedload in its modeling. The existing sewer pipe is approximately two feet below the riverbed, and this depth can be compared to available scour depth of the bridge abutments. The proposed sewer pipe depth was determined based on the elevation of the gravity main on either side of the river.
- USACE indicated the scour and sewer depth information will be required and requested a follow-up meeting to further discuss the issue.

USACE #: NAE-2022-197

Permitting Requirements: A final permit determination was not made. The agencies will further consider the permitting requirements during a follow-up meeting.

Action Items: DOT to schedule a follow-up meeting with regulators to discuss the existing sewer pipe, scour depths and project permitting.

Project No. 13-89 - Rehabilitation of Bridge No. 06847, Route 2 over Polly Brook in Bozrah

Bridge No. 06847 carries Route 2 over Polly Brook in Bozrah. The existing structure is a single, round asphalt-coated corrugated metal pipe (ACCMP) culvert that is 290-foot long with a diameter of 7 feet. ADT is 26,200 vehicles. The structure was rated in serious (3) condition due to heavy laminar rust, section loss, perforations, active leakage and backfill material spilling through the pipe at several locations. The existing structure is hydraulically adequate. The drainage area is 0.33 sq. miles. The project site is not mapped within an NDDB area.

The proposed rehabilitation work mainly consists of slip-lining the existing pipe with a 72" Hydraulically Smooth Interior Aluminum pipe with the installation of new cutoff walls and permanent access roads.

The permanent/temporary impacts presented will be reduced. The presentation accounted for permanent impacts associated with riprap outlet protection, which is no longer required. This will also reduce temporary impacts since the water handling cofferdams will be moved closer to the structure.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	3,000	3,000
Temporary	700	1,300	2,000
Total	700	4,300	5,000

The project is not located within a FEMA floodplain (i.e., no floodplain impacts).Agency Comments:

- DEEP LWRD asked what the composition of the supplemental natural streambed material will be. DOT EPU and EPC responded that DOT's specification for supplemental streambed material calls for matching existing streambed material through a process that requires field coordination with DEEP Fisheries. DEEP Fisheries confirmed the process of approval of natural streambed material.
- LWRD asked about the selection of the pipe liner material. The consultant and DOT H&D explained that the Ultraflow pipe lowered upstream inundation compared to the alternatives considered. H&D also stated that the expected velocity increases are not a concern at the outlet or downstream.
- LWRD asked why the scour hole at the outlet is being removed from the project. The consultant stated that coordination with DOT Soils and Foundations and H&D determined that there was no concern for undermining at the structure outlet. Therefore, cutoff walls are not needed, and the scour hole would only be required if cutoff walls were to be installed.
- DOT District Construction asked that the proposed access roads be reviewed for slope and erosion considerations. The designer stated that water bars and a riprap swale have been included and the access roads will be sloped towards the embankment to address these concerns.

USACE #: NAE-2022-199

Permitting Requirements: USACE PCN GP-19, DEEP PCN Concurrence of Eligibility, CT DEEP Individual Inland Wetlands and Watercourses Permit

Action Items: Prepare permit plans and permit applications for submission to the respective regulatory agencies.

Project No. 57-122 - Replacement of Bridge No. 07036 Route 138 over Unnamed Intermittent Brook in Griswold

Bridge No. 07036 carries Route 138 (Voluntown Road) over an unnamed, intermittent brook in Griswold, Connecticut. The existing structure is an asphalt-coated corrugated metal pipe (ACCMP) culvert that is 72 feet long with a diameter of 6 feet. ADT is 7,500 vehicles. The structure was rated in poor (4) condition due to heavy laminar rust, areas of missing asphalt coating, undermining at the inlet, scour hole at the outlet, and voids/ perforations within the pipe. The existing structure is hydraulically inadequate and is not located within a FEMA 100-year floodplain. The drainage area is 0.6 sq. miles. The project site is not mapped within an NDDB area.

The proposed replacement work consists of realigning the brook approximately 35 feet west of the existing ACCMP culvert. The proposed structure will consist of a 76-foot long precast concrete box culvert with a height of 8 feet and a width of 9 feet, with 1 foot of natural streambed material throughout, wingwalls, and cutoff walls at the inlet and outlet. Permanent access roads will be installed from Route 138 to the inlet and outlet.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	1,765	2,460	4,225
Temporary	545	55	600
Total	2,310	2,515	4,825

Agency Comments:

- USACE indicated concern about the proposed channel realignment and that the realignment could result in impacts without a corresponding benefit. The designer indicated that the wetlands in the project area are expected to be unaffected by the realignment since the proposed culvert invert is intended to tie into the elevation of watercourse.
- USACE asked if this stream has consistent flow or if a ponded situation was typically present. The designer presented additional photographs of the upstream and downstream areas, which depicted either dry conditions or still or slow-moving water during wet conditions.
- USACE asked about the need to off-set the culvert from its existing location. The designer explained that the proposal to off-set the culvert from its current location was to accelerate construction and limit the duration of the detour by being able to use the existing pipe for water handling. The off-set distance was due to the workspace needed to set the wingwalls in the roadway slopes.
- USACE asked for confirmation that there were no fish present. DEEP Fisheries had provided their assessment that this watercourse does not have any significant fisheries resources.
- DEEP LWRD requested additional information regarding how the realigned channel will be shaped to determine impact of realignment. The designer indicated the existing conditions are hummocky and the proposed channel will tie into the existing channel at the same invert elevation.
- USACE asked if work could be done during a time of year that would eliminate need for water handling. The designer indicated that dry weather is preferred but the design must be prepared to handle water during wet weather conditions.
- USEPA indicated there was not a great concern about overall adverse and long-term impacts to this low gradient stream and an SV permit determination would be acceptable.

Project No. 57-122 (continued)

- DEEP LWRD indicated permitting under SV may be acceptable but requested a site visit for confirmation. DOT agreed to schedule a site visit within next two weeks with DEEP LWRD.

USACE #: NAE-2022-200

Permitting Requirements: DEEP LWRD and USEPA agreed the project may be SV-eligible pending a site visit to determine impact of the proposed channel realignment. Based on regulatory feedback provided after the site visit (see below), the permitting requirements would be USACE PCN, DEEP PCN Concurrence of Eligibility, and DEEP IWGP.

Action Items: DEEP LWRD and DOT will conduct a site visit to determine SV-eligibility.

Subsequent to the meeting a site visit was held on January 26, 2022 with DEEP LWRD and DOT OEP. DEEP LWRD requested that the designer provide a map depicting the proposed and existing upstream inundation associated with a 2-yr storm event. On February 3, 2022, DEEP sent a follow-up email summarizing the 1-26-22 field visit. The email concluded that the project would be creating a streambed in a location that was distinctly separate from the existing channel and therefore would be a stream relocation not eligible under an SV and should be processed under a PCN application. Additionally, DEEP LWRD requested outlet cross-sections and details be included in the permit application.

Project 121-136 - Rehabilitation of Bridge No.05200 Salmon Kill Road over Salmon Creek in Salisbury

Bridge No. 05200 supports Salmon Kill Road over Salmon Creek in Salisbury. The existing structure is a precast concrete deck superstructure supported on reinforced concrete abutments and wingwalls with a span length of 51 feet and an out-to-out width of 29 feet 2 inches. ADT is 538 vehicles per day. The structure was rated in Serious condition (3) due to early deterioration of the eastern abutment. The existing structure is hydraulically adequate and is within a FEMA 100-year floodplain.

The proposed structure rehabilitation work consists of replacing the existing superstructure with new precast prestressed concrete deck units. The existing eastern substructure will be replaced in-kind and supported by micropiles. The western abutment will have concrete repairs made to support the new superstructure. The total structure length will remain at 51 feet and will provide approximately a 44.5-foot clear span.

NDDB species have been mapped in the project area. Surveys will be conducted by qualified scientists and a final determination request will be provided to DEEP NDDB with appropriate best management practices and project specifications.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	0	0
Temporary	0	350	350
Total	0	350	350

Floodplain Impacts	
Cut (CY)	Fill (CY)
60	60

Project 121-136 (continued)

Agency Comments: The agencies agreed that the replacement-in-kind met the requirements for SV under GP2.
USACE #: NAE-2022-201
Permitting Requirements: DOT H&D FM MOU, USACE SV (GP-2), local inland wetlands
Action Items: Prepare permit plans and permit applications for submission to the respective regulatory agencies.

INTERAGENCY COORDINATION MEETING AGENDA

DOT/DEEP/ACOE/EPA

March 21, 2024

MS Teams meeting

Discussion of February 2024 meeting notes

- Project No. 0300-0196 (Darien):
  - Agency Comments, Bullet 9, change from USACE to DEEP LWRD comment.
  - Permitting Requirements: Change IWGP to IW Permit determination pending mitigation discussion.
- Project No. 0300-0196 (Wilton): Add the minimum hydraulic opening to be maintained in the project description.
- Project No.00 83-0270:
  - Wetland/Watercourse Impact Table needs to remove "(Shown as coincident for both state and federal)" since there are state only wetland impacts.
  - Add in the project description that the project is within an NDDB area and an NDDB Determination Letter has been received.
  - Add to the project description that the construction duration is anticipated to be one season.
- Project No. 0040-0148:
  - Wetland/Watercourse Impact Table needs to remove "(Shown as coincident for both state and federal)" since there are state only wetland impacts.
  - Agency comments, Bullet 3, add species present (Eastern Box Turtle and Wood Turtle).

1. Project 0092-0687 Rehabilitation of Bridge No.00037 U.S. Route 1 (Forbes Ave.) over Quinnipiac River in New Haven, Connecticut

Bridge No. 00337 supports U.S. Route 1 (Forbes Avenue) and the P&W Railroad over the Quinnipiac River in New Haven, Connecticut. The existing structure is a steel moveable - lift bridge (270 feet), with total length of 936 feet and an out-to-out width of 89 feet. Average Daily Traffic (ADT) is 12,400 vehicles (2018) with approximately 3 trains per day. The structure currently has a structural evaluation of 6 (satisfactory condition). The main deficiencies to be addressed are steel repairs to railroad girders, new membrane waterproofing and bituminous overlay, clean scuppers and extend weep pipes (not to extend below the low chord over navigational channel), clean and spot paint steel, replacement of bridge joints, repair bridge bearings on approach and lift spans, replace mechanical components of the lift span, generator installation southwest of the bridge, installation of new aerial communication cables within the existing horizontal limits of the bridge and abandonment of existing submarine communication cables in place. The project will utilize barges for delivery of materials. The existing structure is hydraulically adequate and is within a FEMA 100-year floodplain (Zones VE & AE) and located over a federal navigation channel. The lift span operates approximately 3000-4000 times a year to accommodate passage of commercial and recreational marine traffic. The project is located within an NDDB area and requires coordination with USFWS for NLEB, Red Knot and Roseate Tern as well as coordination with NMFS ESA and EFH.

Project Impacts:

No wetland/watercourse impacts are anticipated within the project area.

Floodplain Impacts:

Negligible fill (<1 CY) within FEMA Flood Zone due to structural repairs.

Agency Comments:

- CTDEEP LWRD asked if CTDEEP Boating had been coordinated with. The consultant noted this coordination is needed and will be initiated in the future.
- USACE 408 asked when the permit application is anticipated to be submitted and whop the lead federal agency is for the project. The consultant stated the preliminary permit plans are anticipated to be done July 2024 and that FHWA is the lead federal agency.
- USCG noted that there are no concerns at this time with the proposed work and deviations required as long as there are no impacts to channel clearances and the proposed cables are within the existing footprint of the bridge. Deviation requests will need to be submitted at least 90 days prior to scheduled deviations and requests will need to include coordination with mariners and the harbor master. CTDOT OEP asked what was needed in regard to mariner coordination. USCG clarified that email notifications and social media posts on proposed deviations would be sufficient and USCG staff can be copied on correspondence.
- USCG asked if the proposed aerial communication cable placement will impact the vertical clearance of the bridge. The consultant confirmed the cables will not impact the vertical clearance.
- CTDEEP LWRD stated there are no concerns with the aerial cable placement so long as it remains within the existing footprint of the structure.
- CTDOT District 3 Construction asked to be provided with the timelines for procurement for long lead items such as the cables and mechanical components to avoid construction delays.
- CTDEEP LWRD asked the consultant to elaborate on the existing upstream water dependent usage. The consultant stated there are recreational mariners upstream with most industrial usage located downstream of the bridge and that several of the proposed closures will be with the bridge in the open position allowing for marine traffic to pass through the project area.
- CTDEEP LWRD asked if there are any aquaculture or fisheries businesses upstream. CTDEEP Fisheries stated there are a significant number of commercial shell fishing operations upstream which will need to be coordinated with.
- The consultant asked USACE 408 if there was any information on proposed dredging operations within the project area, specifically if there is a schedule for the proposed operation. USACE 408 will follow up after internal coordination on schedule of proposed dredging.
- The consultant asked is USACE Regulatory or USCG will be taking lead jurisdiction of the proposed work. Discussion concluded USCG will take jurisdiction under Section 9 (Construction & Deviation Letters) and no Section 10 permit is required from USACE Regulatory.
- USACE 408 noted they will need to prepare a public notice for the project which will be coordinated with USCG and will need an agreement with FHWA on the project.
- CT DEEP LWRD asked if the barge launch location has been determined. The consultant stated this is still being finalized.
- CTDEEP Fisheries asked for confirmation that there is no proposed in-water work and if fisheries coordination had been initiated. The consultant confirmed there is no anticipated in-water work and CTDEEP fisheries coordination had not been initiated yet due to barge work being recently added to the project. CTDEEP Fisheries coordination will be initiated soon.
- CTDEEP Fisheries noted that there will be time-of-year restrictions for any proposed night work.
- CTDOT OEP asked how many barges were anticipated to be utilized at any given time on the project. The consultant anticipated three barges will be used.
- CTDEEP LWRD asked if the existing pier east of the lift span is a public access fishing pier. CTDEEP Fisheries confirmed this is a public access fishing pier and any closure of the pier, closures, if needed, would be acceptable and will need to be coordinated with CTDEEP Fisheries in order to provide notice to the public. Most activity at the pier is during the summer months. The consultant stated that there is currently no plan to close the pier during construction, but any impacts to use will be coordinated with CTDEEP Fisheries.
- CTDEEP LWRD asked if the proposed staging areas below the bridge are owned by CTDOT. The consultant confirmed this is CTDOT property.

- CTDEEP LWRD noted that the COP application will need to include documentation on coordination with mariners, harbor master meeting notes, CTDEEP Boating coordination and identify navigational impacts.
- The consultant asked if CTDEEP Boating should be notified when the project will be discussed at the Harbor Management Commission meeting. This can be coordinated through CTDOT OEP.
- CTDEEP Fisheries noted that the Bureau of Aquaculture (BOA) needs to be coordinated with regarding proposed changes in bridge operation during construction.

USACE #: NAE-2022-xxxx
Permitting Requirements: USACE Section 408 Authorization (404 not required as no fill is anticipated), CTDOT Flood Management General Certification, USCG Coordination (Construction Letter and anticipated 2 Deviation Letters), CTDEEP Certificate of Permission, CTDEEP Boating Regulatory Marker Permit
Action Items:

- Consultant to prepare and submit packages to OEP for coordination with DEEP Fisheries, DEEP Boating, Harbor Commission, BOA, NDDB.
- USACE 408 to provide CT DOT with information on the proposed dredging project within the project area.

2. Project 0053-0199 Rehabilitation of Bridge No.00417 Putnam Bridge, State Route 3 over the Connecticut River in the Towns of Wethersfield and Glastonbury

Bridge No. 00417 supports State Route 3 over the Connecticut River and Great Meadow Road in the Towns of Wethersfield and Glastonbury. The existing structure is a fourteen-span structure, 2393 feet in total length, with a federal navigation channel below Span 7. The structural system consists of a main girder-floorbeam-stringer system with two main girders supporting the entire cross section. Average Daily Traffic (ADT) is 55,100 for both NB and SB. The structure was rated in fair condition due to numerous spalls throughout the deck, active leakage, exposed rebar, heavy rust and laminated rust at multiple locations, section losses of the steel superstructure, among others. The existing structure is hydraulically adequate and is within a FEMA 100-year floodplain. The proposed structure rehabilitation work consists of installing girder bracing and cover plate extensions to the main girders to improve load ratings, bridge painting, repairs to the existing deck slab with strip, patch, membrane, and overlay (SPMO). Expansion joint replacement as well as other miscellaneous repairs to the steel stringers, existing abutments and piers. Anticipated access is from temporary haul roads beneath the bridge on both side as well as barge access from the waterway. SHPO and THPO coordination are being resubmitted.

The initial NDDB Review found the following State listed species may be within the project area: Yellow lampmussel, Davis' sedge, blueback herring, Northern leopard frog, mudpuppy, Eastern pondmussel, Tidewater mucket, Wiegan's wild rye, and cattail sedge. The NDDB Review found the following federally listed species may be within the project area: Atlantic Sturgeon and Shortnose sturgeon

Project Impacts:
Wetland/Watercourse Impacts:

	State- Only Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	0	0
Temporary	12, 542	0	12, 542
Total	12, 542	0	12, 542

Floodplain Impacts:

Cut (CY)	721

Fill (CY)	721
Net (CY)	0

Agency Comments:

- USACE stated that permit determination for this project will be dependent on if the wetland delineation of the project area determines the wetland impacts to be to be State-Only or State and Federal Wetlands. USACE added that the project would be authorized under USACE Section 408 and Section 9 if impacts are only anticipated for State-Only wetlands, but a Self-Verification (SV) cannot be authorized if there are impacts to State and Federal wetlands.
- CTDEEP LWRD asked why a Certificate of Permission (COP) or a Coastal Maintenance General Permit was not included in the list of anticipated permits. OEP responded that these permits were overlooked and should be included.
- DEEP LWRD asked if the proposed bracing is permanent. The Designer confirmed. CTDEEP LWRD asked if low chord would be impacted. The Designer responded that the low chord is not impacted.
- OEP asked which permit is anticipated between a COP and a Coastal Maintenance General Permit. CTDEEP LWRD responded that this determination is dependent on further design choices including if barges are proposed in navigation channel. CT DEEP LWRD added that COP is most anticipated.
- CTDEEP LWRD asked if construction of the access roads will result in impacts to NDDB plant species within the project area. The Designer responded that the vegetation is assumed to be near the rivers edge and impacts to the plant species are unknown at this time. CTDEEP LWRD asked that the Designer reinitiate NDDB coordination to ensure the access roads do not interfere.
- CTDEEP LWRD asked if work on the superstructure will require artificial lighting. The Designer stated that construction is anticipated to be done during daylight hours and painting will be done in an enclosed area where artificial lighting wouldn't be a concern for impacting the project area.
- CTDEEP LWRD asked what duration that access roads will be in place. The Designer stated that it is possible to do it in one season. OEP added an explanation that this is an assumption that may change as the design progresses.
- CTDEEP LWRD stated the importance of confirming if the wetlands within the project area are State-Only when making permit and mitigation determinations. CTDOT OEP stated that this is a very disturbed area with invasive species including Mugwort.
- CTDEEP LWRD asked the Designer if construction is anticipated to affect the existing public-use trail. The Designer responded that the trail will need to be crossed over and they are still investigating how this will be achieved. CTDOT OEP stated that an example project can be provided to the Designer that had similar concerns. CTDEEP LWRD recommended that impacts to the trail be avoided when possible.
- CTDOT OEP asked what coordination should be expected if barges are used in the navigation channel. USACE 408 responded that there are few concerns, but an anticipated schedule of work would need to be provided.
- CTDOT OEP asked what needs to be submitted for Section 408 coordination. USACE 408 responded that an informal meeting with OEP can take place to decide on what submissions are needed.
- CTDEEP LWRD and USACE accepted the anticipated permits provided that a COP is added and with the understanding that an SV cannot be used if wetlands are determined to be State and Federally owned.
- USACE added that a corps permit was issued at this location for previous freshwater wetlands impact for a temporary access road at the same location

USACE #: NAE-2012-00484
Permitting Requirements: USACE Section 408 authorization, USACE Pre-Construction Notification (SV) (under GP-19), CTDEEP Certificate of Permission (COP), CTDEEP General Water Resource Construction Activities, CTDEEP Individual Inland Wetland and Watercourses Permit, USCG Construction Letter
Action Items: N/A

3. Project 0068-0217, Replacement of Bridge No. 02599, Route 101 (Hartford Pike) over Chestnut Hill Reservoir in the Town of Killingly

Bridge No. 02599 supports Route 101 (Hartford Pike) as a causeway over Alvia Chase Reservoir (Chestnut Hill Reservoir) in the Town of Killingly. The existing structure is a 12-foot wide, single-span concrete slab deck supported by reinforced concrete abutments and wingwalls. Average Daily Traffic (ADT) is 5,300. The structure was rated in poor condition (Rating = 4) due to the condition of the concrete deck and superstructure. The slab underside exhibits efflorescence, rust, leakage stains, and cracking and spalling with exposed rebar with up to 95% section loss. The bituminous concrete overlay exhibits signs of wear and raveling with spalls in pavement seams extending into the approaches. The existing substructure is in satisfactory condition (Rating = 6). Embankment erosion exists on the northern channel embankment with aggradation at the northern (downstream) abutments with a significant accumulation of debris and vegetation. The existing structure is hydraulically inadequate as it is under pressure flow and is within the FEMA 100-year floodplain (Zone A).

The preferred replacement structure type is a 12-ft wide X 9-ft high concrete box culvert with a clear span of 12 feet and out-to-out width of 37 feet. The proposed structure will be hydraulically adequate and will pass the 50-year storm continuously. Natural streambed material (2.5 ft depth) will cover the bottom of the concrete box culvert. New in-line reinforced concrete wingwalls supported by concrete footings will be constructed and the structure will be topped with waterproofing membrane and a bituminous concrete wearing surface. NDDB Coordination was completed on June 14, 2022 and identified state-listed species of concern including pine barrens bluet, Scarlet bluet, Little bluet, and Attenuated bluet. The Designer will develop an Odonate Management Plan, and species sensitive areas will be delineated and protected from disturbance. DEEP Fisheries requested that the future design provides unrestricted fish passage and unconfined in-water is restricted to June 1 to September 30, inclusive.

Project Impacts:
Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	1250	1250
Temporary	0	840	840
Total	0	2,090	2,090

Floodplain Impacts	
Cut (CY)	**Fill (CY)**
12	6

Agency Comments:

- CTDEEP LWRD asked about coordinating with Rhode Island for the road closure detour. The Designer confirmed that the detour uses Rhode Island state roads and will last 2-4 weeks.
- USACE asked about temporary floodplain impacts from the utility pole relocation. The Designer confirmed that they will be temporarily moving the utility pole into the OHW. OEP added that a cofferdam will be used.
- CTDEEP LWRD asked if state-listed damselfly species are linked to habitat or substrate. OEP added that damselfly protected areas are identified as habitat for both the adult and aquatic stages. OEP confirmed that the Designer will field locate NDDB species. The Designer added that the damselfly habitat is west of the bridge. CTDEEP LWRD noted to include habitat areas within application materials and to avoid relocating the utility pole within damselfly protected areas.
- CTDEEP LWRD asked if supplemental streambed material will be needed. The Designer anticipates using supplemental streambed material to meet the 2.5 feet of natural streambed material proposed in the culvert. OEP added that the standard specification calls for matching existing material size.
- CTDEEP LWRD added that the Designer must develop an odonate management plan and demonstrate that they are following it to be eligible for an SV or PCN, noting that any adverse impacts to protected species will not be considered under the general permit. USACE added that this also applies to adverse impacts found in SHPO/THPO coordination.
- CTDEEP LWRD commented that for this site specifically, meeting the bankfull width requirement is not required, and concurs with a self-verification determination.
- USACE also concurs with the SV determination. USACE added that a self-verification is not allowed to condition a permit, so all odonate notes must be on permit plans. LWRD added that having an expert on site or other specifications of the odonate management plan will be required in permit plans.
- CTDEEP Fisheries has no comments in addition to their original comments.
- District 2 added that dewatering at this site will be a challenge, noting that a fully enclosed cofferdam is needed. The Designer noted that the limited construction duration may not require pumping but will have the option for pumping in place if needed. The Designer noted that an eastern relief pipe will carry flow if water levels reach a certain height.

Permitting Requirements:

- USACE Self-Verification – GP 19
- CT DEEP Inland Wetland General Permit
- CT DEEP Flood Management Certification

USACE #: NAE-2022-xxxx

4. Project 0138-0252, Rehabilitation of Bridge No. 02150, Route 15 (Merritt Parkway) over Freeman Brook in the Town of Stratford

Bridge No. 02150 supports Route 15 (Merritt Parkway) over Freeman Brook in the Town of Stratford. The existing structure is a 200-foot long, 10-foot wide by 8-foot-tall concrete box culvert with reinforced concrete headwalls and

wingwalls. The structure is under approximately 25 feet of fill with sloped embankments. The Average Daily Traffic (ADT) is 85,600. The structure is in overall Poor Condition (Rating = 4) due to the condition of the concrete box culvert. The walls exhibit numerous spalls with exposed rebar, scale, and active leakage with sediment. The top slab shows longitudinal cracking with efflorescence. The invert exhibits areas of heavy to moderate scale. The outlet cutoff wall is exposed for the full length and undermined 4 feet by 10 inches high by 10 inches deep. The inlet cutoff wall is exposed 4 feet by 3 inches deep. Exposed portions of the cutoff walls have moderate scaling. The eastern outlet wingwall footing is also exposed for its full length and undermined up to 6 feet long by 2 feet high with 16 inches of penetration. The channel is also in poor condition, which is primarily due to the channel scour and embankment erosion at the outlet. The existing structure is hydraulically adequate and is within a FEMA 100-year floodplain (Zone A). The watershed area 0.4 square miles. A sewer main, encased in concrete, is located along the floor of the culvert through the crossing and continues beyond the outlet.

The proposed rehabilitation consists of repairing the existing culvert, headwalls and wingwalls at areas of noted deterioration with variable depth patching. The existing culvert will have approximately 5% of the walls repaired using variable depth patches. Repairs to areas of overhead spalling consist of removing all loose concrete, cleaning exposed rebar, and coating the exposed area with a zinc primer. Deteriorated areas at the weep holes will be repaired by removing loose concrete and applying a zinc primer to the weep pipe and concrete below to prevent further deterioration. The existing headwalls, cutoff walls and wingwalls at areas of noted deterioration will be repaired with variable depth patching. The undermining of the outlet wingwalls will be filled prior to the installation of a preformed scour hole and rock weir which will be used to prevent scour and improve the channel condition.

Variable depth concrete patching will be used to repair the concrete encasing of the sewer main within the limits of the culvert. Approximately 60 feet of the existing sewer main and concrete encasement that extends beyond the outlet of the culvert will be replaced as part of construction.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	**Watercourse (SF)**	**Total (SF)**
Permanent	3,000	1,630	4, 630
Temporary	0	2,170	2,170
Total	3,000	3,800	6,800

Floodplain Impacts:

Cut (CY)	840
Fill (CY)	1,210
Net (CY)	370

Additional notes:

- Access is proposed via Tanglewood Road due to residential developments and cultural resources in surrounding landscape. The proposed permanent access road is requested by the town and being reviewed by the state.
- The project area is located fully within the 100 year floodplain.
- There is approximately 25 feet of fill over the bridge and rehabilitation is the preferred alternative
- The outlet is in poor condition while the inlet does not require work
- Scour hole in channel during construction for water handling. Riprap removed after construction and channel restored

- Western drainage and a seep contribute hydrologically to the wetland. The design would reestablish the watercourse through the wetland and be conveyed under the access road via 24" CMP. Will reassess the volume of access road fill if designed as permanent. If possible, will pull access road out of wetland and leave road in upland only.
- The proposed scour hole is in compliance with DOT drainage manual (bigger than originally designed). 55' long x45' wide, 3:1 side slopes
- Existing and proposed conditions are hydraulically adequate
- DEEP requested roughness within the bridge. The Designer expressed concern the roughness would add turbulence and erosive nature of flow

Agency Comments:

- CTDEEP Fisheries asked the proposed depth of the scour hole. The Designer responded 4' from edge between elevations 86 to 82.
- CTDEEP LWRD asked if the scour hole was bermed over the OHW elevation. The Designer replied that the berm is set to match existing grades of the channel.
- USACE asked if a wetland report had been prepared. The Designer responded a wetland report was not available at this time but will be included in the permit application.
- CTDEEP LWRD asked if the impacted wetland could be described. The Designer's wetland scientist described the wetland as receiving ground water via a seep, the presence of skunk cabbage, and located in a low -ying area.
- CTDEEP LWRD asked for clarification why access via the exit ramp was not selected, why the town is proposing permanent access, and the need for the state review of the permanent access road. The Designer replied that the access road off of Tanglewood was selected due to the discovery of cultural resources at the exit ramp that were best not to be disturbed. The Town would like to be able to access the sewer main beyond the existing easement as the sewer main installed in '70s and nearing end of life. The State is reviewing the permanent access road due to the extent of natural resource impacts.
- CTDEEP LWRD asked if a proposed channel would be created for outflow at the 24" CMP under the access road, and to clarify hydrologic input from the existing pipe under the Merritt and resulting channel flow. The Designer responded that the channel flow, classified as a watercourse, is fed through an end wall from the Merritt's storm drainage system. The flow appears to be continuous. Additionally, records show a "spring" and a 6" pipe under the Merritt. DOT asked to clarify if it's similar to an underdrain, which the Designer replied yes. The flows converge at the wetland boundary causing erosion. The design needs to converge the spring flow with the watercourse and will investigate further how best to stabilize the area.
- CTDEEP LWRD asked if a drainage swale was present on the inlet side of the proposed 24" CMP. If the watercourse enters the wetland and disperses into the broad low-lying area, will the concentrating flow have a secondary impact. The Designer replied that there will be no secondary impacts to the wetland. Once the watercourse enters the wetland, the water converges with Freeman Brook and the change of flow would not the impact wetland. CTDEEP LWRD asked to clarify that the proposed pathway would follow existing drainage. The Designer replied that the existing drainage would be followed. DOT commented that during the initial project review a defined pathway to get the water to final destination was suggested. CTDEEP LWRD stated concern the outlet side will likely have secondary impact due to concentrated flow as it would no longer be diffuse.

- District 3 commented that maintaining a permanent access road would be helpful with inspection and culvert maintenance. In addition, potential future erosion and vegetation maintenance could be addressed.
- District 3 asked to clarify the need for access at the inlet. The Designer responded access for construction was not required at the inlet. Sandbag and water handling would be conducted manually through the bridge.
- CTDEEP LWRD asked if scour protection alternatives, such as the size of scour hole, were considered. The Designer replied nothing beyond riprap protection was considered. The design proposes stabilizing the outlet wall by driving it deeper and filling in voids. Downstream no artificial methods or products to provide grade control were reviewed. The design alternatives focused on stone and stone size in response to various design standards (I.e., HECs) as there was a concern about large stone stability due to void space. The design is in accordance with the standard drainage manual design area.
- CTDEEP LWRD asked if standing water would be present in the scour hole under normal flow conditions. The Designer replied there will be a continuous flow except for dry months when water does not meet the top of rock weir. If the drainage from the west is redirected to the scour hole, continuous flow would most likely be achieved.
- CTDEEP LWRD asked to have wetland boundaries extended if the 24” CMP is to be installed permanently.
- CTDEEP LWRD asked which storm event would be conveyed via the 36” bridge. The Designer responded the 2 yr storm.
- CTDEEP LWRD stated that the project presented several different design scenarios and asked if the project would return to ICM. DOT responded that continued coordination with the Town depends on the outcome of the ICM. LWRD was concerned about reviewing impacts and permit determination at this time. CTDOT responded the project could return to ICM pending design.
- CTDEEP LWRD stated a field visit may be needed to clarify wetland hydrology. The Designer displayed photographs of the site taken approximately a week earlier. USACE asked to clarify the presence of a defined channel within the wetland. The Designer replied it was more drainage than a defined channel. DOT noted drainage within the wetland isn’t shown on topographic maps.
- CTDEEP LWRD requested SCS, cross sections of access road, and CMP designs be included in permit plans.
- CTDEEP LWRD asked to clarify that an access road to the inlet is not required due to the adequate state of the inlet and sewer. The Designer replied that the inlet and sewer did not require work as they are in good condition.
- CTDEEP LWRD asked how sandbags would be installed and transported to the inlet. The Designer replied by hand through the bridge.
- USACE inquired who were adjacent property owners and if access for a site visit was possible. DOT will coordinate a field visit or have the project return to ICM to present the watercourse.
- CTDEEP LWRD commented permitting needs will not be determined at this time due to potential impact changes and GP expiration (April 2024) and updates. Permitting will be confirmed at next ICM meeting. In addition, if the project is to be eligible for a PCN, the minimization of riprap to the greatest extent possible would need to be discussed in the application.
- USACE commented bankfull width would need to be included in the permit application.
-

USACE #: NAE-2024-0097
Permitting Requirements: To Be Determined
FMC not required due to less than 1 sm drainage basin

Action Items:

- T. Beckman to provide CTDOT with photos of existing conditions within culvert
- BL to provide photographs of the existing wetland. CTDOT will add the photographs to the ICM presentation and redistribute.
- CTDOT to coordinate a field visit with regulators

5. Project 0087-0148 Replacement/Rehabilitation of Bridge No. 06772 Route 63 over Straitsville Brook in the Town of Naugatuck

Bridge No. 06772 supports Route 63 over Straitsville Brook in the Town of Naugatuck. The existing structure is a 6'-5" rise by 9'-6" span corrugated steel pipe arch with a barrel length of 75-feet. Average Daily Traffic (ADT) of Route 63 is 11,600. The structure was rated in poor condition due to a large dent along the top, a deteriorated invert, loss of asphalt coating, and debris buildup. The existing structure is hydraulically adequate and is not within a FEMA 100-year floodplain or floodway. The project scope will not result in wetland impacts.

The proposed rehabilitation method is to line the existing structure with a 5'-6" rise by 8'-0" span tunnel liner plate pipe arch. There are two existing water mains which will be abandoned by the utility company prior to project construction. These water mains cross below the watercourse upstream of the culvert. If encountered during construction, the abandoned water mains will be removed within the limits of the watercourse and the watercourse will be restored with natural streambed material. As a result of the discussion during the 01/20/2022 Interagency Meeting, the project scope has been revised to address an eroded embankment downstream by installing a 140-foot long riprap revetment and slope regrading and replanting. Natural streambed material will be washed into the proposed riprap up to the 2-year water surface elevation. A temporary access road from Beacon Valley Road will be required to obtain the necessary construction access to the downstream embankment for installation of the proposed revetment. Access and water handling will be comprised of sandbag cofferdams with a bypass pipe or pump & hose through the project area. Concrete blocks will be placed within the watercourse and crane mats will be placed on top to provide a work platform for constructing the proposed revetment while allowing water handling to be placed below the platform.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	5, 025	5, 025
Temporary	0	1, 890	1, 890
Total	0	6, 915	6, 915

Agency Comments:

- USACE requested that discussion of how impacts were minimized be included in the application narratives.
- CTDEEP LWRD asked what species and if trees/shrubs would be planted in the disturbed areas. CTDOT OEP confirmed a native planting plan is being finalized with trees and shrubs and coordinated with CTDOT Landscape Design for species around the proposed revetment for stabilization. CTDOT OEP notes that due to access, trees may not be planted above the revetment.
- CTDEEP LWRD asked what storm frequency has been utilized for the proposed water handling. The Designer stated 3x average spring flow (ASF) is being used for the water handling at both the revetment and the culvert sliplining locations.

- CTDEEP asked what the proposed construction duration is for in-water work. The Designer stated it is anticipated to take several weeks to a month to complete the proposed in-water work. It will be up to the contractor on whether the culvert work and revetment are completed simultaneously or separately. CTDOT Hydraulics & Drainage (CTDOT H&D) stated they assumed one construction season for purposes of designing the proposed water handling.
- CTDEEP LWRD asked if there was additional risk associated with having two water handling systems in place at once. CTDOT H&D stated there was no additional risk.
- CTDEEP LWRD asked for an explanation of the proposed impacts, water handling and water main removal upstream of the proposed culvert sliplining. The Designer stated the water handling limits and permanent impacts are based on the assumption the contractor will encounter the abandoned water mains during construction and need to remove them and restore the watercourse.
- CTDEEP LWRD asked if the water main locations will be known prior to project construction. The Designer stated the exact locations will likely be unknown prior to construction.
- CTDEEP LWRD asked for confirmation that there will be no increase in velocity at the downstream revetment as a result of the proposed sliplining, as indicated in the January 20, 2022 Meeting Notes. CTDOT H&D confirmed that sliplining will not result in velocity increases at the location of the proposed revetment. The revetment installation will result in minor localized increases due to restoration of the eroded slope.
- CTDEEP LWRD noted the preference for tree species to be planted along the riparian areas.
- USACE provided the DA # of NAE-2022-00196 for CTDOT Records and asked this number be included on the USACE application.

USACE #: NAE-2022-00196
Permitting Requirements: CTDEEP PCN, General Permits for CT – GP 19, USACE Pre-Construction Notification, DEEP Individual Inland Wetlands and Watercourses Permit

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT OFFICE
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

November 27, 2024

Regulatory Division
Transportation & Utility Section
File Number: NAE-2022-00196

Kimberly Lesay
Connecticut Department of Transportation
2800 Berlin Turnpike
Newington, Connecticut 06131
Via Email: Kimberly.Lesay@ct.gov

Dear Ms. Lesay:

This letter is in response to the application you submitted to the U.S. Army Corps of Engineers (USACE), New England District, on July 9, 2024, for a Department of the Army general permit verification for the rehabilitation of Bridge No. 06772 on Route 63 over Straitsville Brook. This project has been assigned the file number NAE-2022-00196. This file number should be referenced in all correspondence with this office.

The project will line an existing culvert structure with an 8-foot span by 5-foot 6-inch corrugated steel tunnel plate liner, remove and replace the headwall and wingwalls at the inlet and the end wall at the outlet, and regrade 60 linear feet upstream and 10 linear feet downstream of the culvert. The existing eroded embankment will be regraded starting approximately 300 feet downstream of Bridge No. 06772, and approximately 140 feet of the embankment will be stabilized with a riprap revetment. Within waters of the U.S. below the ordinary high water mark (OHWM) of Straitsville Brook, there will be permanent fill impacts due to placement of streambed material, culvert lining work, and riprap revetment downstream of culvert outlet in 0.12 acres and temporary fill impacts due to access, water handling, and workspace in 0.04 acres. The project is located in Straitsville Brook, east of the intersection of Route 63 and Candee Road (Latitude 41.4685ºN and Longitude -73.0246ºW) in Naugatuck, Connecticut. The work is shown on the enclosed plans titled “Environmental Permit Plans” on three sheets, dated May 9, 2024.

Based on the information you have provided, we verify that the activity is authorized under General Permit 19 of the December 15, 2021, Federal Permit known as the Connecticut General Permits (GPs). If the extent of the project area and/or nature of the authorized impacts to waters are modified, a revised application must be submitted to this office for written approval before work is initiated. A copy of these permits can be found at: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/.

Any deviation from the terms and conditions of the permit, or your submitted plans, may subject the permittee to the enforcement provisions of our regulations. Therefore, in the event changes to this project are contemplated, it is recommended you coordinate with this office prior to proceeding with the work. This office must approve any changes before you undertake them. You must perform this work in compliance with the terms and conditions of the GPs listed above and the following special conditions:

Project Specific Special Conditions:

1. The permittee shall complete and return the enclosed Completion Certification Form to this office at least one month following the completion of the authorized work.

2. Appropriate Best Management Practices, including soil erosion, sedimentation, and turbidity controls shall be used and maintained in effective operating condition during in-water construction. Activities capable of producing greater than minimal turbidity or sedimentation shall be done during periods of low-flow or no-flow or when controls are used to obtain dry work conditions. All temporarily disturbed areas within the project limits shall be stabilized and restored following construction.

3. All construction shall be completed in accordance with the limits of construction and construction sequences detailed on the enclosed plan drawings, titled "Environmental Permit Plans," on a total of seven sheets dated May 9, 2024. If you change the plans or construction methods for work within or adjacent to the Straitsville Brook, please contact us immediately to discuss modification of this authorization. The USACE must approve any changes before you undertake them.

4. If tree removal for the authorized work is not complete before the tricolored bat (*Perimyotis subflavus*) is listed under the Endangered Species Act (ESA), you are required to re-initiate Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS).

This verification is valid until December 15, 2026. You must commence or be under contract to commence the work authorized herein by December 15, 2026 and complete the work by December 15, 2027. If not, you must contact this office to determine the need for further authorization before beginning or continuing the activity. It is recommended that you contact this office before this authorization expires to discuss if permit reissuance is a possibility.

This general permit verification and any associated authorizations does not preclude the necessity to obtain any other Federal, State, or local permits, licenses, and/or

certifications, which may be required. The permittee shall comply with the Connecticut Department of Energy & Environmental Protection (DEEP) Section 401 Water Quality Certification for this project for the activities in the associated USACE Section 404 authorization.

If you have any questions related to this verification or have issues accessing documents referenced in this letter, please contact Kathleen Tucker, Senior Project Manager, at 602-230-6956 or by email at kathleen.a.tucker@usace.army.mil. This agency continually strives to improve our customer service. In order to better serve you, please complete the Customer Service Survey located at: https://regulatory.ops.usace.army.mil/customer-service-survey/.

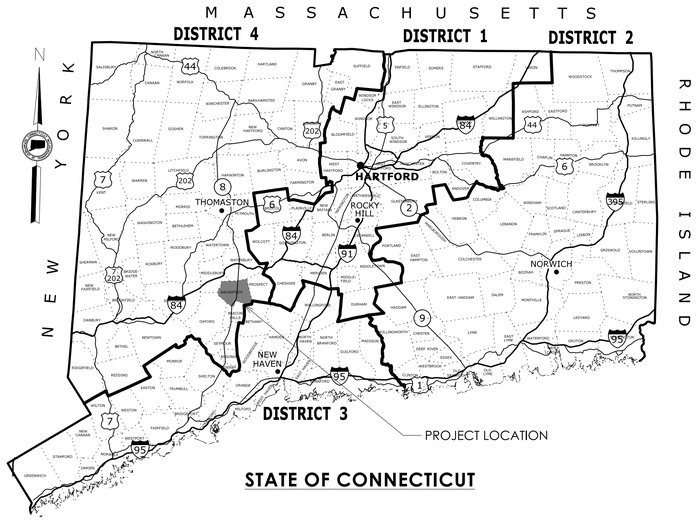
Sincerely,

Grace Moses

Grace Moses
Chief, Technical Support Branch
Regulatory Division

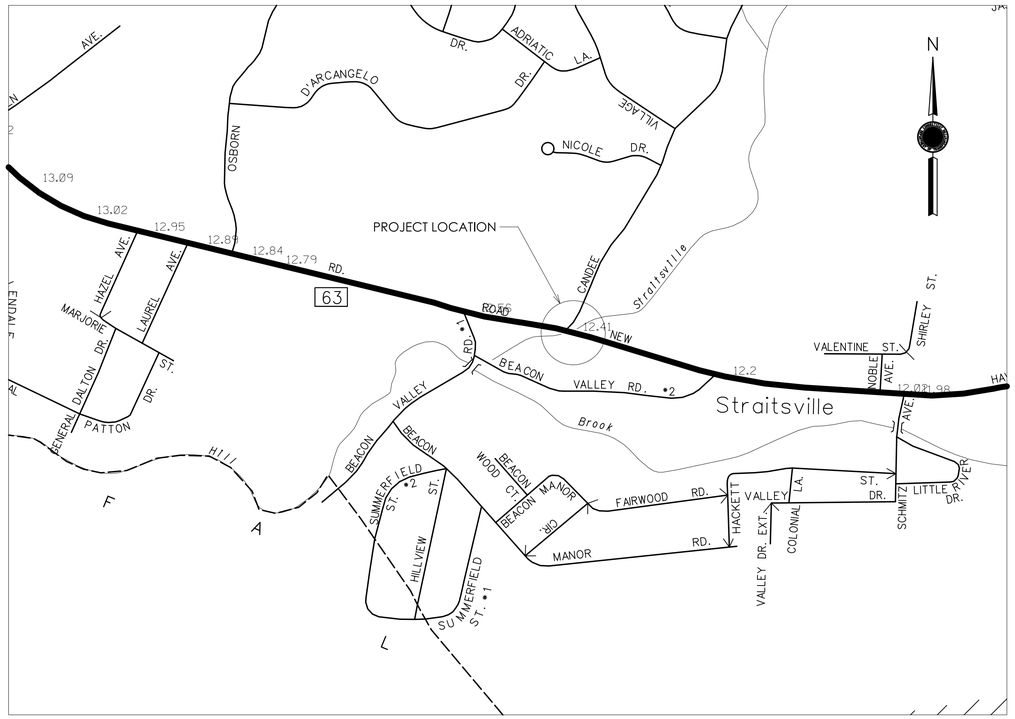
Enclosures

cc (w/enclosures):
Amanda Saul, CTDOT; Amanda.Saul@ct.gov
Kevin Carifa, CTDOT; kevin.carifa@ct.gov
William Sigmund, CT DEEP; William.Sigmund@ct.gov
Nathan Margason, US EPA; margason.nathan@epa.gov



STATE OF CONNECTICUT

ENVIRONMENTAL PERMIT PLANS
STATE PROJECT NO. 0087-0148
REHABILITATION OF BRIDGE NO. 06772
CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
IN THE TOWN OF NAUGATUCK, CT



LOCATION PLAN

1" = 500'-0"

GENERAL NOTES

1. THESE PLANS ARE NOT FOR CONSTRUCITON AND ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL EFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS, AND WETLAND SOILS, SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 1927 VERTICAL DATUM BASED ON NGVD OF 1929.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGES, FACILITIES AND INCIDENTAL CONSTRUCTION, FORM 818, SECTION 1.10 AND WILL ALSO FOLLOW REQUIRED BEST MANAGEMENT PRACTICES (BMP's) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION AND SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	TITLE SHEET
PMT-02	GENERAL SITE PLAN
PMT-03	WETLAND/ WATERCOURSE IMPACT PLAN
PMT-04	ELEVATIONS AND SECTION PLAN
PMT-05	REVETMENT SECTION
PMT-06	STAGING AND WATER HANDLING PLAN
PMT-07	PERMIT PLANTING PLAN

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

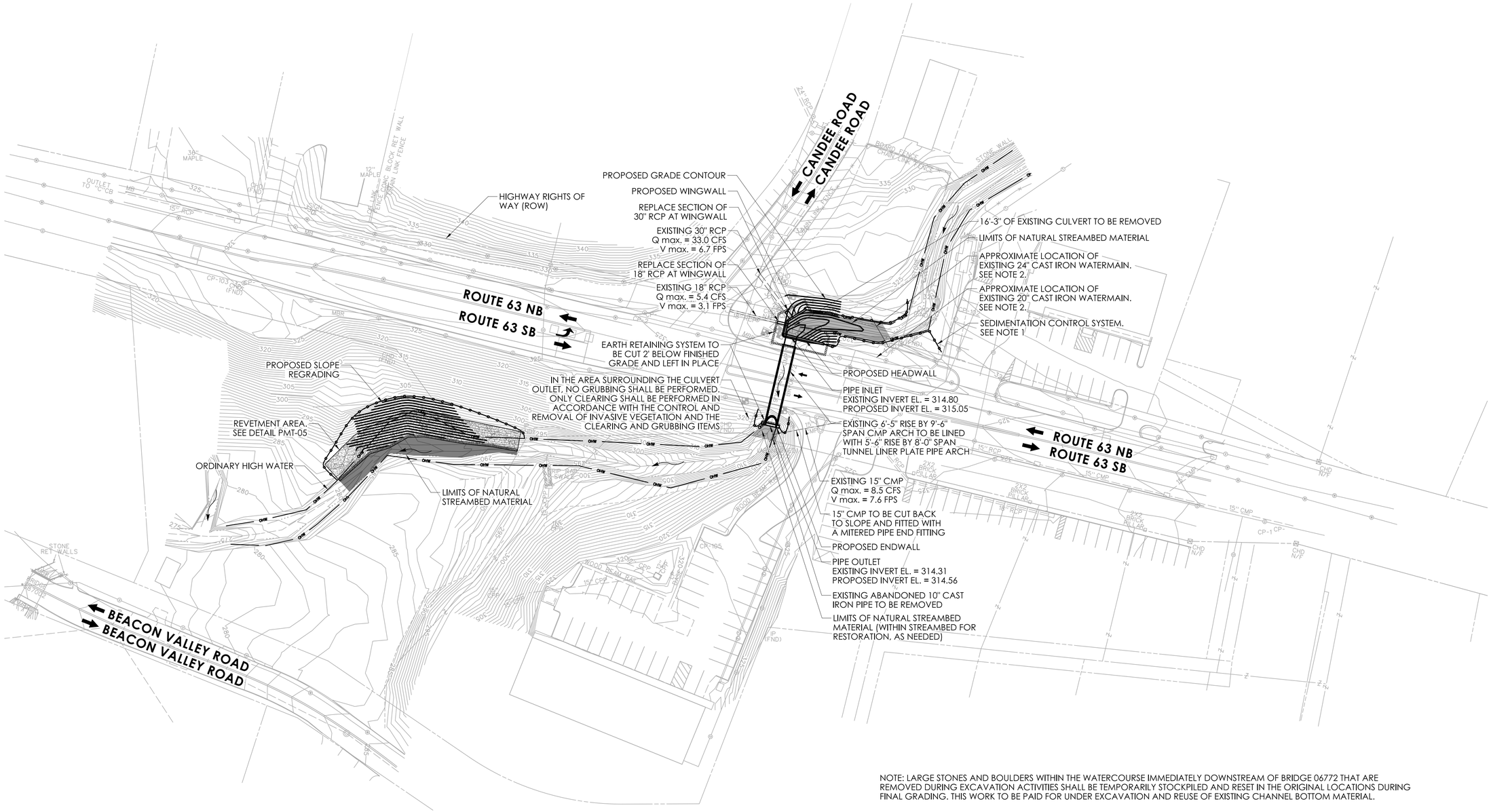
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: TITLE SHEET

DRAWING NO. PMT-01
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-1_Title Sheet.dgn
PLOTTED DATE: 5/9/2024



NOTE: LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.

BRIDGE NO. 06772 GENERAL SITE PLAN

SCALE: 1" = 40'

LEGEND

- OHW — ORDINARY HIGH WATER
- SURVEYED EDGE OF WATER
- SEDIMENTATION CONTROL SYSTEM

NOTES:

1. APPROXIMATE LOCATION OF SEDIMENTATION CONTROL SYSTEM SHOWN AT FINAL CONDITION
2. LOCATION OF EXISTING WATERMAINS ARE UNKNOWN. IF ENCOUNTERED DURING CONSTRUCTION THE ABANDONED WATERMAINS WITHIN THE REGULATED AREA WILL BE REMOVED AND THE DISTURBED AREA WILL BE RESTORED WITH NATURAL STREAMBED MATERIAL.
3. SEDIMENTATION CONTROL SYSTEM TO BE PLACED AT CATCH BASIN(S) AS NEEDED OR AS DIRECTED BY THE ENGINEER

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

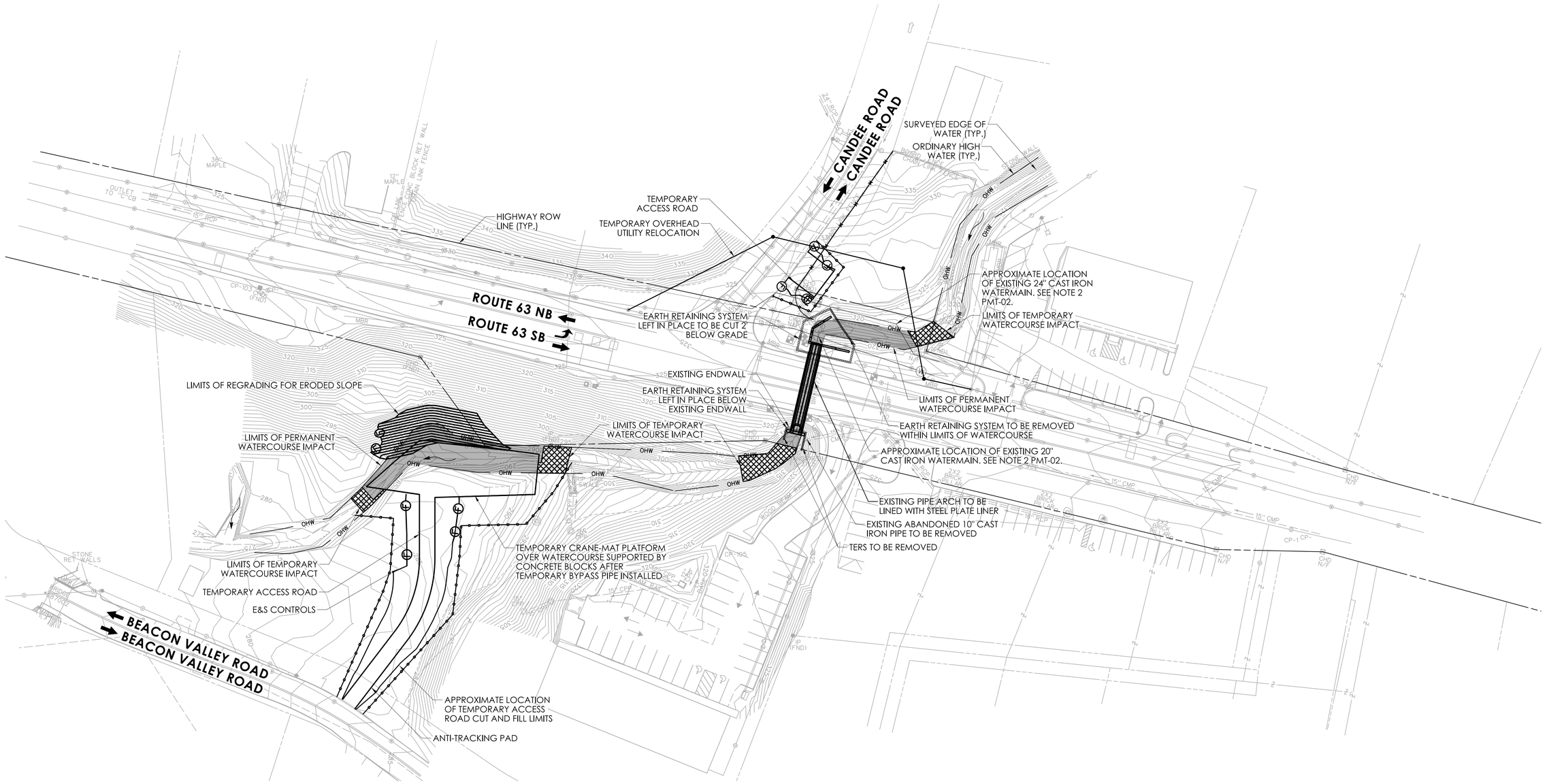
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: GENERAL SITE PLAN

DRAWING NO. PMT-02
SHEET NO.

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PLOTTED DATE: 5/9/2024



LEGEND

TEMPORARY WETLAND/WATERCOURSE IMPACT

PERMANENT WETLAND/WATERCOURSE IMPACT

NOTE:

THE CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WERLANDS AND WATERCOURSE. ALL DISTURBED AREAS SHALL BE RESTORED

BRIDGE NO. 06772 IMPACT PLAN

SCALE: 1" = 40'

WETLAND/WATERCOURSE IMPACT TABLE			
	WETLAND IMPACTS	**WATERCOURSE IMPACTS**	**TOTAL**
PERMANENT IMPACTS	0 S.F. (0 AC.)	5250 S.F. (0.121 AC)	5250 S.F. (0.121 AC)
TEMPORARY IMPACTS	0 S.F. (0 AC.)	1670 S.F. (0.038 AC)	1670 S.F. (0.038 AC)
TOTAL IMPACTS	0 S.F. (0 AC.)	6920 S.F. (0.159 AC)	6920 S.F. (0.159 AC)

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REVISION DESCRIPTION | DATE | REV.

DESIGNER/DRAFTER: JJS CHECKED BY:

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: WATERCOURSE IMPACT PLAN

DRAWING NO. PMT-03
SHEET NO.

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PLOTTED DATE: 5/9/2024

HYDRAULIC DATA	
DRAINAGE AREA	0.69 SQ. MILE
DESIGN FREQUENCY	50 YEAR
DESIGN DISCHARGE	220 CFS
UPSTREAM AVERAGE DAILY FLOW ELEVATION	315.4 FT
DOWNSTREAM AVERAGE DAILY FLOW ELEVATION	308.9 FT
UPSTREAM DESIGN WATER SURFACE ELEVATION	320.6 FT
DOWNSTREAM DESIGN WATER SURFACE ELEVATION	311.4 FT

NATIVE STREAMBED MATERIAL NOTES:

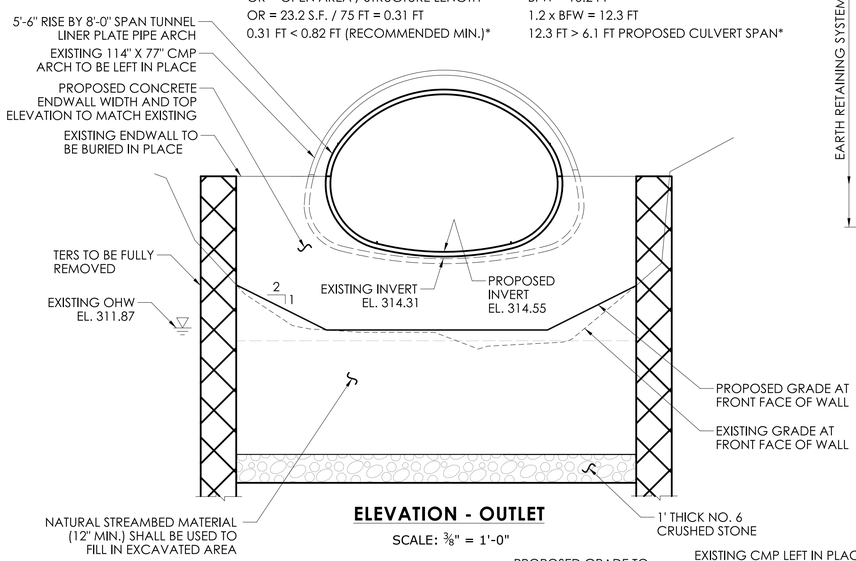
1. NATIVE STREAMBED MATERIAL EXCAVATED DURING THE PIPE RELINING, RIPRAP INSTALLATION AND CHANNEL REGRADING SHALL BE STOCKPILED AND THEN REPLACED OUTSIDE THE LIMITS OF THE RIPRAP AREAS AS NEEDED FOR REGRADING TO THE DEPTH SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH THE SPECIAL PROVISION "EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL."
2. ADDITIONAL STREAMBED MATERIAL, IF REQUIRED, SHALL BE IN ACCORDANCE WITH SPECIAL PROVISION "SUPPLEMENTAL STREAMBED CHANNEL MATERIAL."
3. THE STOCKPILE SHALL BE LOCATED OUTSIDE THE WETLAND LIMITS AND PROTECTED WITH SEDIMENTATION CONTROL SYSTEM.
4. LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.

OPENNESS RATIO (OR):

OR = OPEN AREA / STRUCTURE LENGTH
OR = 23.2 S.F. / 75 FT = 0.31 FT
0.31 FT < 0.82 FT (RECOMMENDED MIN.)*

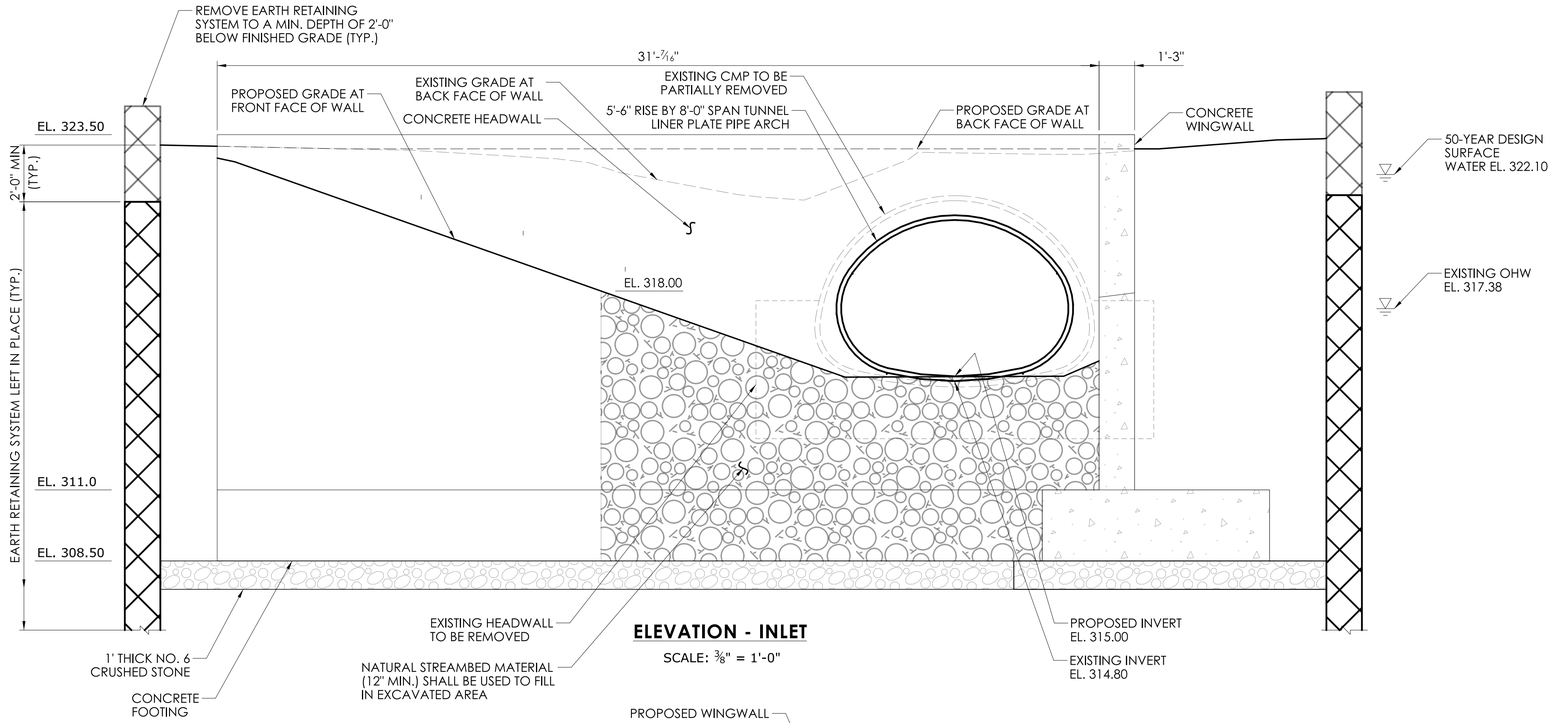
BANKFULL WIDTH (BFW):

BFW = 10.2 FT
1.2 x BFW = 12.3 FT
12.3 FT > 6.1 FT PROPOSED CULVERT SPAN*



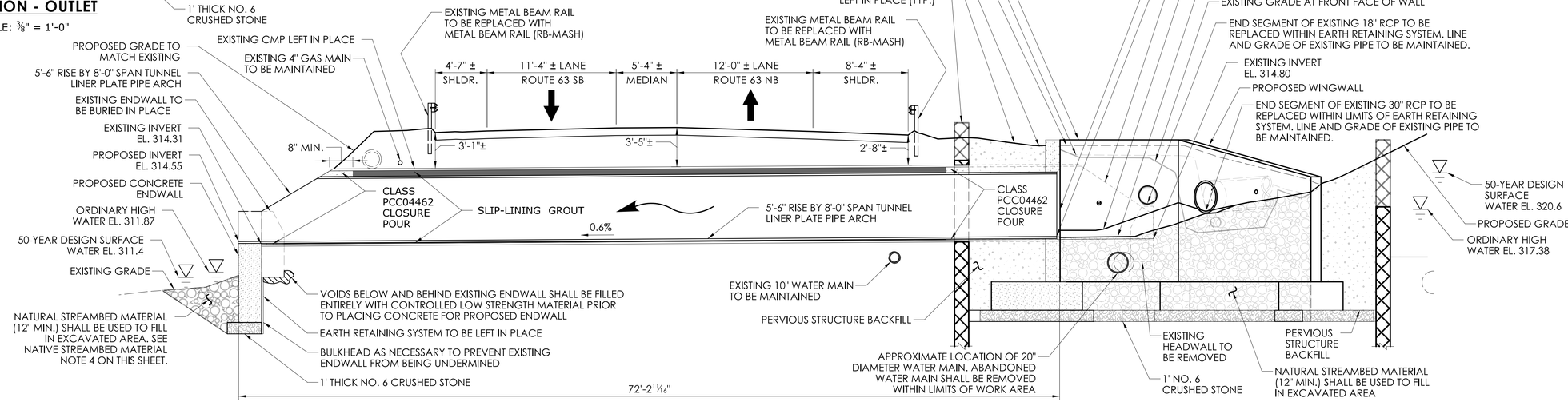
ELEVATION - OUTLET

SCALE: 3/8" = 1'-0"



ELEVATION - INLET

SCALE: 3/8" = 1'-0"



SECTION - INLET

SCALE: 3/16" = 1'-0"

NOTES:
IF LEDGE IS ENCOUNTERED PRIOR TO REACHING DEPTH OF EXCAVATION AS SHOWN ON THIS SHEET, LEDGE NEED NOT BE REMOVED AND PROPOSED ENDWALL SHALL BE CAST DIRECTLY AGAINST LEDGE.

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

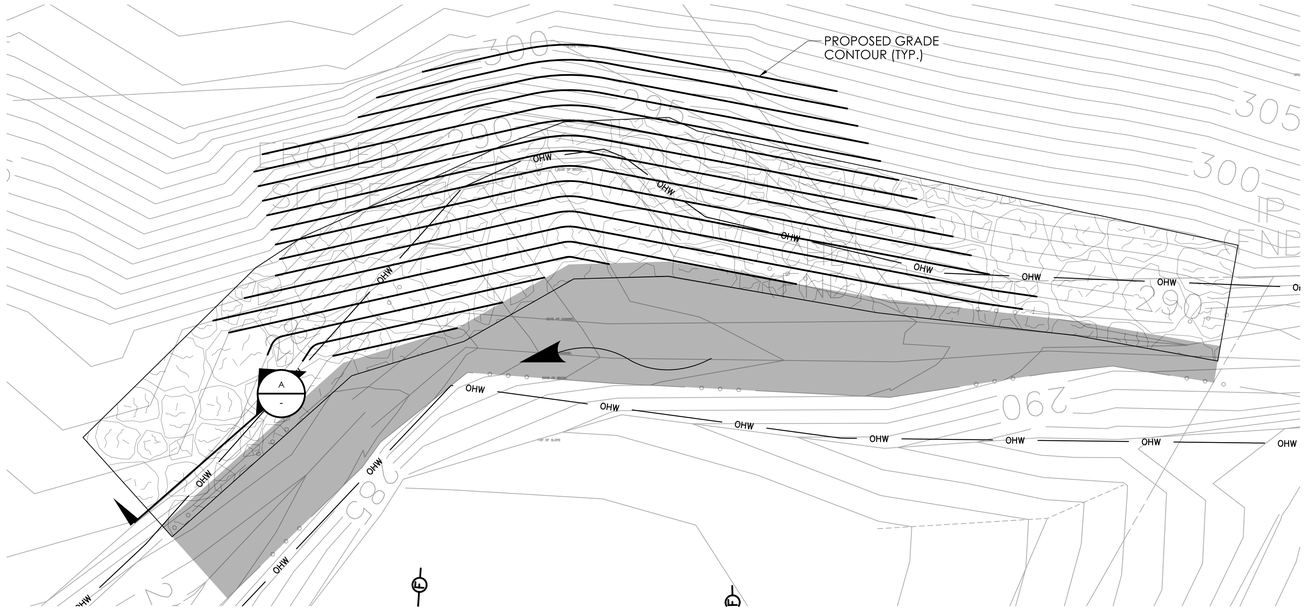
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: ELEVATION AND SECTION PLAN

DRAWING NO. PMT-04
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-4_ElevationSectionPlan.dgn
PLOTTED DATE: 5/9/2024



COORDINATE GRID

NAD 83(2011)

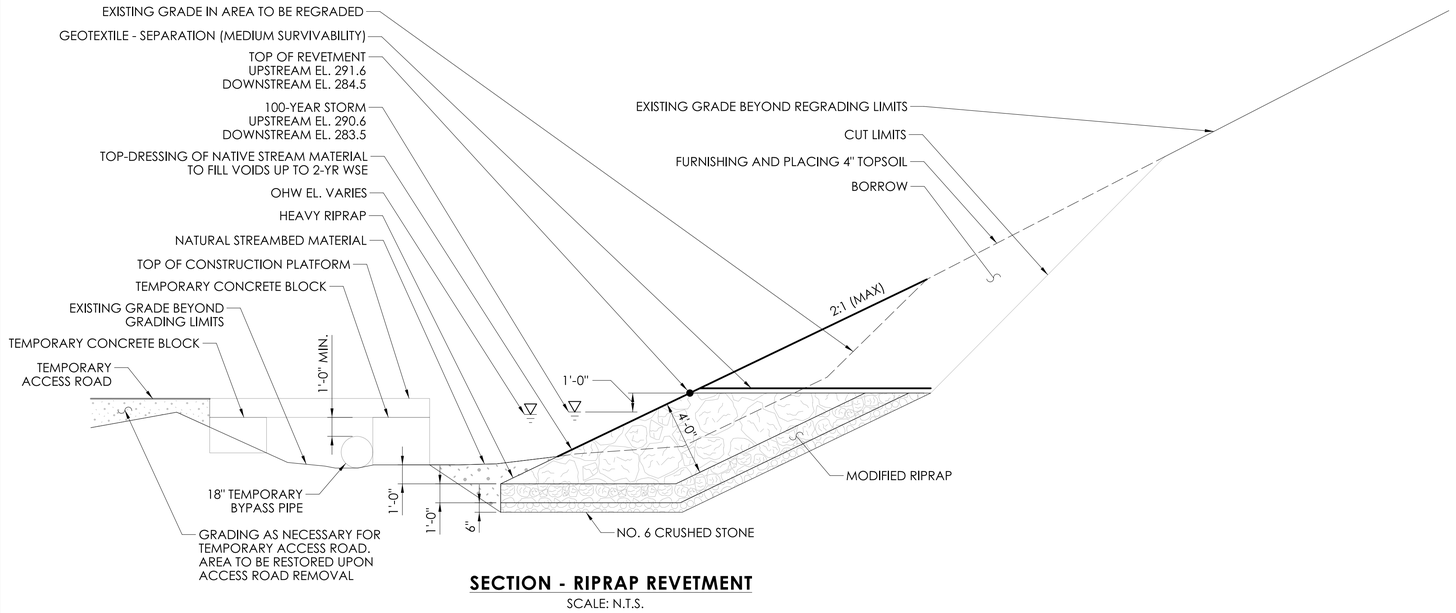
CONNECTICUT

4' HEAVY RIPRAP ON 1' MODIFIED RIPRAP, ON 6" NO. 6 CRUSHED STONE. NATURAL STREAMBED MATERIAL TO BE WASHED INTO RIPRAP UP TO 2-YR WSE.

NATURAL STREAMBED MATERIAL

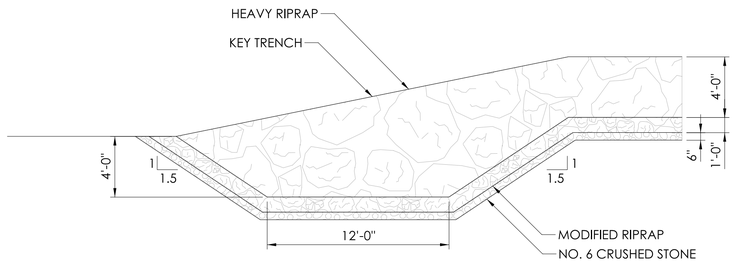
REVETMENT PLAN

SCALE: 1" = 10'



SECTION - RIPRAP REVETMENT

SCALE: N.T.S.



SECTION - REVETMENT KEY-IN

A
-

SCALE: 1" = 5'

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: CHECKED BY:

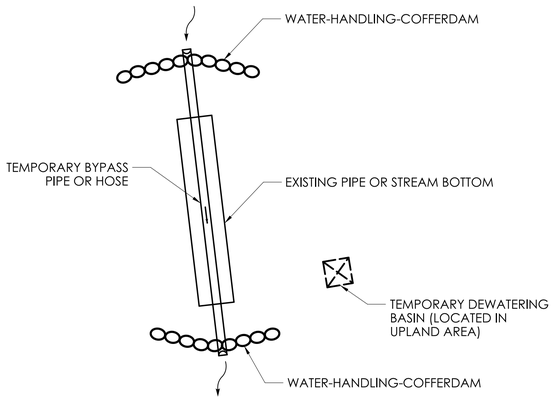
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: REVETMENT SECTION

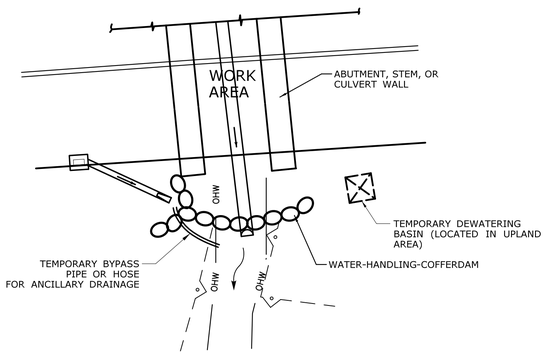
DRAWING NO. PMT-05
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-5_RevetmentSection.dgn
PLOTTED DATE: 5/9/2024



TEMPORARY PIPE

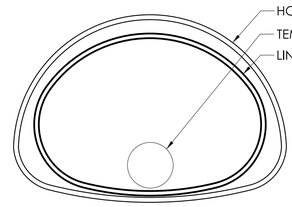
(NOT TO SCALE)



ANCILLARY STORM DRAINAGE NEAR WORK AREA

(NOT TO SCALE)

NOTE: ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING OR PROPOSED STORM DRAINAGE SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREAS. THE CONTRACTOR SHALL SUBMIT THE MEANS AND METHODS OF HANDLING STORM DRAINAGE TO THE ENGINEER FOR APROVAL.

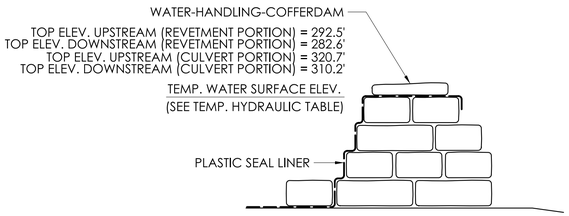


WATER HANDLING

SCALE: N.T.S.

TEMPORARY HYDRAULIC DATA	
AVERAGE DAILY FLOW	1.3 CFS
AVERAGE SPRING FLOW	2.5 CFS
2-YEAR FREQUENCY DISCHARGE	45 CFS
TEMPORARY DESIGN FREQUENCY	3 X A.S.F.
LOW FLOW PUMPING TEMPORARY DESIGN DISCHARGE	7.5 CFS
GRAVITY FLOW BYPASS PIPE TEMPORARY DESIGN DISCHARGE	7.5 CFS
UPSTREAM WATER SURFACE ELEVATION (CULVERT PORTION)	319.7 FT
DOWNSTREAM WATER SURFACE ELEVATION (CULVERT PORTION)	309.2 FT
UPSTREAM WATER SURFACE ELEVATION (REVETMENT PORTION)	291.5 FT
DOWNSTREAM WATER SURFACE ELEVATION (REVETMENT PORTION)	280.5 FT

NOTES:
1. TABLE IS APPLICABLE FOR BOTH CULVERT AND REVETMENT WATER HANDLING
2. VALUES AND ELEVATIONS MAY VARY SLIGHTLY FROM THE CONTRACT PLANS



WATER-HANDLING-COFFERDAM TYPICAL SECTION

SCALE: NOT TO SCALE

SUGGESTED CONSTRUCTION SEQUENCE - SLOPE REVETMENT

1. INSTALL SEDIMENTATION CONTROL SYSTEM.
2. PERFORM CLEARING AND GRUBBING AND CONTROL AND REMOVAL OF INVASIVE VEGETATION.
3. CONSTRUCT TEMPORARY ACCESS ROAD FROM BEACON VALLEY ROAD TO THE WORK AREA.
4. INSTALL TEMPORARY WATER HANDLING SYSTEM INCLUDING WATER-HANDLING-COFFERDAMS AND TEMPORARY BYPASS PIPE.
5. DIVERT WATER THROUGH THE TEMPORARY BYPASS PIPE TO DRY THE WORK AREA.
6. CONSTRUCT ACCESS PLATFORM WITH CRANE MATS AND CONCRETE BLOCKS TO SPAN THE TEMPORARY BYPASS PIPE AS NEEDED FOR ACCESS TO THE DOWNSTREAM REVETMENT WORK AREA.
7. CONSTRUCT SLOPE REVETMENT.
8. REMOVE TEMPORARY ACCESS ROADS, CRANE MATS, AND PERFORM FINAL GRADING.
9. REMOVE TEMPORARY WATER-HANDLING-COFFERDAMS AND BYPASS PIPE.
10. CONSERVATION SEEDING FOR SLOPES, PERMIT PLANTINGS. REMOVE SEDIMENTATION CONTROL SYSTEMS UPON FINAL STABILIZATION.

SUGGESTED CONSTRUCTION SEQUENCE - PIPE RELINING

1. RELOCATE OVERHEAD UTILITIES TEMPORARILY.
2. INSTALL SEDIMENTATION CONTROL SYSTEM.
3. PERFORM CLEARING AND GRUBBING AND CONTROL AND REMOVAL OF INVASIVE VEGETATION.
4. CONSTRUCT TEMPORARY ACCESS ROAD FROM CANDEE ROAD TO CULVERT INLET.
5. INSTALL TEMPORARY WATER HANDLING SYSTEM INCLUDING WATER-HANDLING-COFFERDAMS AND TEMPORARY BYPASS PIPE.
6. DIVERT WATER THROUGH THE TEMPORARY BYPASS PIPE TO DRY THE HOST STRUCTURE.
7. REMOVE SEDIMENT AND REGRADE AREA AT HOST STRUCTURE INLET.
8. CLEAN HOST STRUCTURE BY HAND THROUGH REMOVAL OF DEBRIS. THE CULVERT CLEANING AND THE GROUTING PROCESS SHALL NOT CAUSE TURBIDITY OF THE EXISTING WATER COURSE.
9. GROUT ALL VOIDS AND PERFORATIONS TO ENSURE FULL BEARING OF MATERIAL TO THE EXTRADOS OF THE EXISTING PIPE ARCH.
10. PLACE TEMPORARY EARTH RETAINING SYSTEM. REMOVE END SECTION OF EXISTING STRUCTURE AT THE INLET. REPLACE END SECTIONS OF 30" RCP AND 18" RCP AT INLET WINGWALL.
11. INSTALL TUNNEL LINER PLATE SECTIONS WITHIN THE HOST STRUCTURE. THE CONTRACTOR SHALL TAKE THE NECESSARY MEANS TO ENSURE THAT DEBRIS DOES NOT ENTER THE CULVERT SYSTEM DURING INSTALLATION OF THE CORRUGATED STEEL STRUCTURAL PLATE LINER.
12. INSTALL PCC00462 BULKHEADS AT THE INLET AND OUTLET.
13. PLACE SLIP-LINING GROUT.
14. EXCAVATE AND CONSTRUCT WINGWALLS, HEADWALL, AND ENDWALL ON NO. 6 CRUSHED STONE. REMOVE ABANDONED WATER MAINS IF ENCOUNTERED. CUT LEFT IN PLACE EARTH RETAINING SYSTEM AT 2 FEET BELOW GRADE. BACKFILL AND REMOVE REMAINING TEMPORARY EARTH RETAINING SYSTEM.
15. PLACE NATURAL STREAMBED MATERIAL AND PERFORM FINAL GRADING. LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.
16. REMOVE TEMPORARY WATER-HANDLING-COFFERDAMS AND BYPASS PIPE AT BOTH INLET AND OUTLET. RETURN FLOW TO HOST STRUCTURE.
17. REMOVE TEMPORARY ACCESS ROAD AND RESTORE IMPACTED AREAS.
18. CONSERVATION SEEDING FOR SLOPES, PERMIT PLANTINGS. REMOVE SEDIMENTATION CONTROL SYSTEMS UPON FINAL STABILIZATION.
19. RELOCATE OVERHEAD UTILITIES TO FINAL POSITIONING.

WATER HANDLING NOTES:

1. THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE TEMPORARY GRAVITY FLOW BYPASS PIPE (OR PUMP AND HOSE SYSTEM DESIGNED BY THE CONTRACTOR) AS SHOWN ON THIS SHEET DURING CLEANING AND REPAIR OF THE HOST STRUCTURE, GROUTING OF THE ANNULAR SPACE BETWEEN THE HOST STRUCTURE AND THE LINER AND DURINGESTABLISHMENT OF FINAL GRADES AS REQUIRED BY THE STAGE CONSTRUCTION SEQUENCES.
2. A DEWATERING BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. THE LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.
3. TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF AN APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND SHALL CONFORM TO PERMITS.

   ANY WATER HANDLING SCHEME DEPICTED WITHIN THE DEPARTMENT'S 'HANDLING WATER TYPICAL SCHEMATICS' MAY BE UTILIZED UNLESS SPECIFICALLY PROHIBITED. A MEANS AND METHOD FOR WATER HANDLING SYSTEM SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR APPROVAL.
4. WATER HANDLING MEASURES SHALL NOT EXCEED IMPACT AREAS SHOWN ON THE WETLAND SHEET OF THE PERMIT PLANS.
5. ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING OR PROPOSED STORM DRAINAGE PIPES SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREAS. PUMPS/PIPES SHALL BE SIZED BY THE CONTRACTOR TO HANDLE THE EXPECTED FLOWS AND BE DISCHARGED TO A STABLE LOCATION. THE CONTRACTOR SHALL SUBMIT THE MEANS AND METHODS OF HANDLING STORM DRAINAGE TO THE ENGINEER FOR APPROVAL AND IS INCLUDED AS PART OF WATER HANDLING.
6. IF A SHORT DURATION PUMP SYSTEM IS PROPOSED DURING LOW FLOW CONDITIONS, THE PUMP SYSTEM SHALL BE DESIGNED BY THE CONTRACTOR AND HAVE A MINIMUM CAPACITY AS SHOWN IN THE TEMPORARY HYDRAULIC TABLE. PUMP SYSTEM PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

   BASED UPON FIELD CONDITIONS, WORK DURATION, AND EXPECTED WEATHER CONDITIONS, THE ENGINEER MAY APPROVE A WATER HANDLING PLAN WITH LOWER PUMPING FLOWS, PROVIDED THAT THIS INCLUDES A CONTINGENCY PLAN, WHICH MINIMIZES NEGATIVE IMPACTS AND SAFELY CONVEYS LARGER FLOWS THROUGH THE WORK AREA.

UNCONFINED IN-STREAM WORK BMP NOTE:

ANY UNCONFINED IN-STREAM WORK WITHIN THE WATERCOURSE SHALL BE RESTRICTED TO THE PERIOD FROM JUNE 1 TO SEPTEMBER 30, INCLUSIVE. UNLESS OTHERWISE INCLUDED AS A SPECIAL PROVISION OF THE LICENSE, THE CONDITION SHALL APPLY TO PROJECTS IN NON-COASTAL WATERS.

THE DEPARTMENT WILL REVIEW AND MAY APPROVE THE METHODS OF UNCONFINED IN-WATER WORK WITH CONSIDERATION OF THE FOLLOWING:

- PROPOSED SCHEDULE FOR WORK OPERATIONS
- ALL UNCONFINED IN-WATER WORK SHALL BE MINOR IN NATURE
- DISTURBANCE SHALL BE LIMITED TO AREAS THAT HAVE BEEN APPROVED FOR TEMPORARY AND PERMANENT IMPACT
- BEST MANAGEMENT PRACTICE SHALL BE UTILIZED WHEREVER POSSIBLE TO MINIMIZE TURBIDITY/SEDIMENT TRANSPORT DOWNSTREAM
- DISTURBED AREAS AND THE DURATION OF DISTURBANCE SHALL BE MINIMIZED TO THE EXTENT POSSIBLE
- INSTREAM WORK SHALL BE DONE DURING PERIODS OF LOW FLOW

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

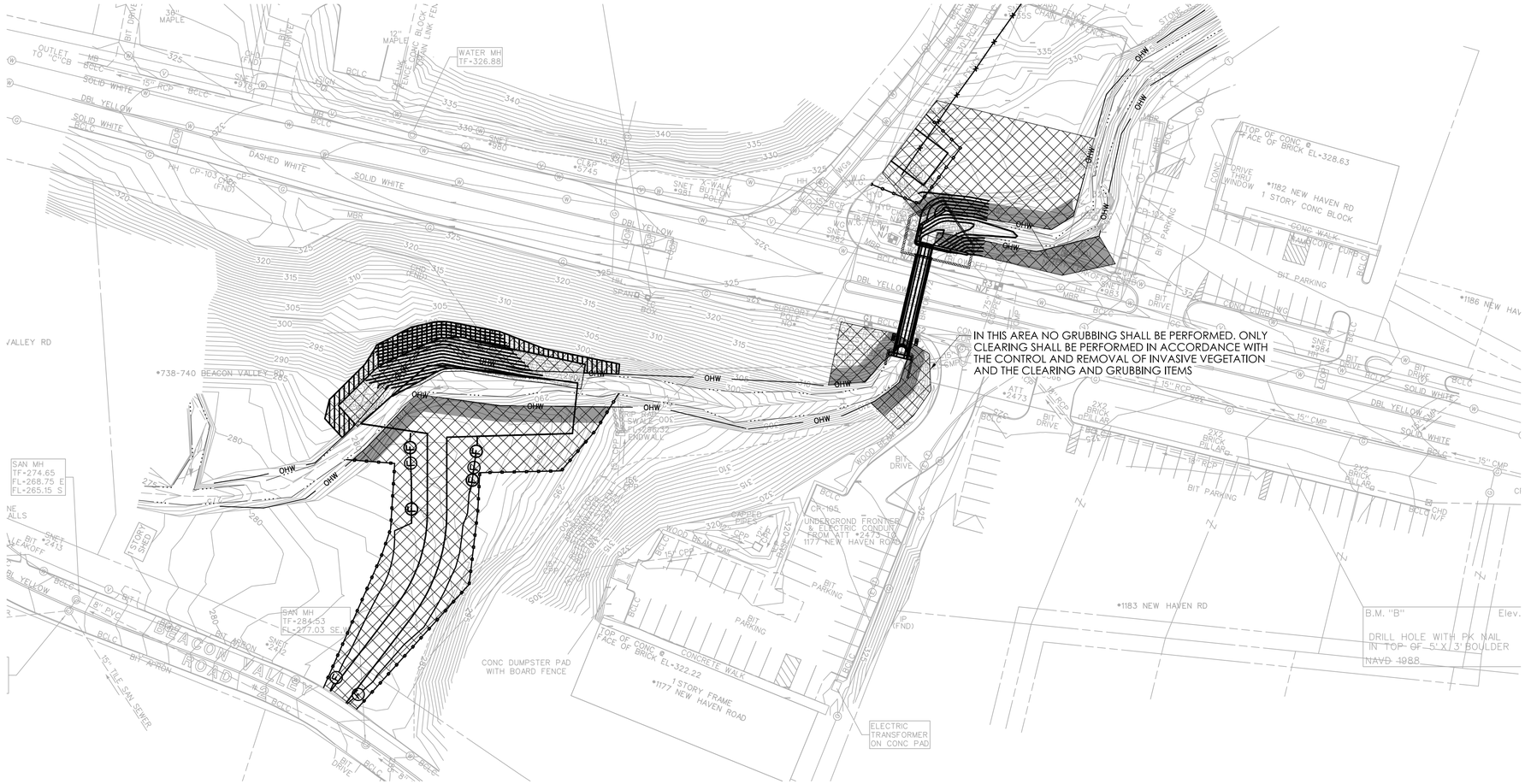
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: STAGING AND WATER HANDLING

DRAWING NO. PMT-06
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-6_StagingWaterHandling.dgn
PLOTTED DATE: 5/9/2024



CONTROL AND REMOVAL OF INVASIVE VEGETATION
SEE NOTE 7

SLOPE STABILIZATION PLANTINGS

TOTAL PLANTS = 56
TOTAL PLANTING AREA = 1800 S.F.

AREA TO BE RESTORED WITH PLANTINGS

TOTAL PLANTS = 238
TOTAL PLANTING AREA = 5060 S.F.

PERMIT PLANTING PLAN

SCALE: 1" = 40'

NOTES

1. PLANTINGS ON THIS SHEET ARE FOR ENVIRONMENTAL PERMITTING. ANY SUBSTITUTIONS TO THE PERMIT PLANTINGS SHALL BE COORDINATED WITH THE DEPARTMENT'S OFFICE OF ENVIRONMENTAL PLANNING (OEP).

2. PROPOSED PLANTINGS TO BE FIELD LOCATED BY CTDOT OEP OR THEIR DESIGNATED REPRESENTATIVE.

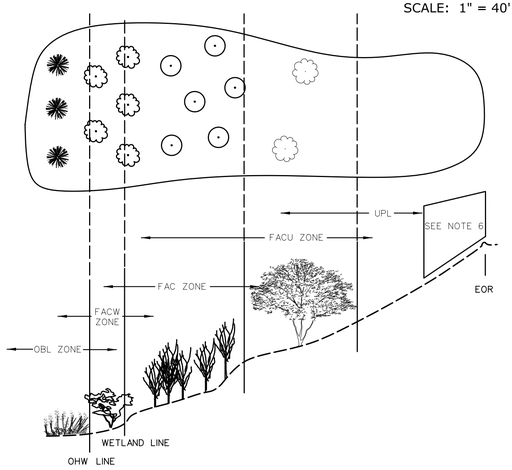
3. WOOD CHIP MULCH SHALL NOT BE PLACED IN THE WETLAND AREA.

4. DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH WETLAND GRASS ESTABLISHMENT. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE SEEDED WITH CONSERVATION SEEDING FOR SLOPES, OR OTHER SEED MIX AS SPECIFIED. ALL AREAS SHALL BE RESTORED.

5. ALL PLANT MATERIAL SHALL BE NURSERY GRADE STRAIGHT SPECIES, CONFORMING TO SECTION 3 OF THE AMERICAN STANDARDS FOR NURSERY STOCK. CTDOT OEP WILL REVIEW AND APPROVE PROPOSED PLANTINGS.

6. NO PLANTINGS SHALL BE PLACED IN MOW AREA.

7. AREA TO BE TREATED FOR INVASIVES AND PROPERLY PREPARED FOR FINAL PLANTING, SEEDING, AND RESTORATION.



SCHEMATIC PLANTING

LANDSCAPE ITEMS

KEY	BOTANICAL NAME	COMMON NAME	SIZE	QTY.	SPACING	WETLAND INDICATOR
A.a.	Aronia arbutifolia	Red Chokeberry	18" - 24" HT. B.B.	9	5' On Center	FACW
C.r.	Cornus racemosa	Gray Dogwood	2' - 3' HT. B.B.	14	5' On Center	FAC
H.v.	Hamamelis virginiana	Witch Hazel	2' - 3' HT. B.B.	11	5' On Center	FACU
Vi.a.	Viburnum acerifolia	Mapleleaf Viburnum	2' - 3' HT. B.B.	12	5' On Center	UPL
V.d.	Viburnum dentatum	Arrowwood Viburnum	24" - 36" HT. NO. 3 Container	10	5' On Center	FAC

NOTE: FOR INFORMATION ONLY. CONTRACTOR SHALL REFER TO THE CONTRACT PLANS FOR BIDDING PURPOSES.
NOTE: LANDSCAPE ITEMS FOR SLOPE STABILIZATION PLANTINGS TO BE FIELD LOCATED BY DOT LANDSCAPE DESIGN

PERMIT PLANT LIST

BOTANICAL NAME	COMMON NAME AND SIZE	QTY.	SPACING	WETLAND INDICATOR
ACER RUBRUM	RED MAPLE 2"-2½" CAL. BB	8	FIELD LOCATE	FAC
ACER RUBRUM	RED MAPLE 3'-4' HT 1 GAL. CONT.	20	FIELD LOCATE	FAC
ACER RUBRUM	RED MAPLE 6'-8' HT 3 GAL. CONT.	20	FIELD LOCATE	FAC
LINDERA BENZOIN	COMMON SPICEBUSH 2'-3' HT BB	50	5'	FACW
CLETHRA ALNIFOLIA	SWEET PEPPERBUSH 3'-4' HT BB	50	5'	FAC
CORNUS RACEMOSA	GRAY DOGWOOD 3'-4' HT BB	50	5'	FAC
ALNUS INCANA	SPECKLED ALDER 4'-5' HT BB	40	5'	FACW
ASCLEPIAS TUBEROSA	BUTTERFLY MILKWEED 1 GALLON CONTAINER	40	1'-6" ON CENTER	NI
CONSERVATION SEEDING				
CONTROL AND REMOVAL OF INVASIVE VEGETATION		25970 SF	SEE HATCHING AND NOTE 7	

NOTE: ACER RUBRUM 3'-4' HT 1 GAL. CONT. AND ACER RUBRUM 6'-8' HT 3 GAL. CONT. TO BE PAID FOR UNDER ITEM #0949875A - WETLAND PLANTINGS

ENVIRONMENTAL PERMIT PLANS
PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: CHECKED BY:

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: PERMIT PLANTING PLAN

DRAWING NO. PMT-07
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-7_PermitPlantingPlan.dgn
PLOTTED DATE: 5/9/2024

Compliance Certification Form

File Number: NAE-2022-00196 **State: Connecticut** **County: New Haven**

Permittee: CT DOT, Kimberly Lesay
Date Verification Issued: 11/25/2024
Project Manager: Kathleen Tucker

Within one month of completion of the activity authorized by this permit and any mitigation required by the permit (you must submit this form after mitigation is complete, but not the mitigation monitoring, which requires separate submittals), sign this certification and return it to the following address:

US ARMY CORPS OF ENGINEERS
New England District
Attn: Kathleen Tucker
696 Virginia Road
Concord, MA 01742
or
kathleen.a.tucker@usace.army.mil and cenae-r-tu@usace.army.mil

Please note that your permitted activity is subject to a compliance inspection by a U. S. Army Corps of Engineers (USACE) representative. Failure to comply with any terms or conditions of this authorization may result in the USACE suspending, modifying, or revoking the authorization and/or issuing a Class I administrative penalty, or initiating other appropriate legal action.

I hereby certify that the work, and mitigation (if applicable), authorized by the above referenced permit has been completed in accordance with the terms and conditions of the said permit including any general or specific conditions.

Date Authorized Work Started: _____ **Completed: _____**

Describe any deviations from permit (attach drawing(s) depicting the deviations):

_____

_____

***Note: The description of any deviations on this form does not constitute approval by the USACE.**

_____ _____

Signature of Permittee **Date**

CONNECTICUT

CTDOT CONNECTICUT TRANSPORTATION

July 9, 2024

Ms. Eva Szigeti
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Subject: State Project No. 0087-0148
DA#: NAE-2022-00196
Rehabilitation of Bridge No. 06772
Route 63 over Straitsville Brook
Town of Naugatuck

Dear Ms. Szigeti:

For USACE's review and approval, enclosed please find the completed Eng. Form 4345 with attachments for a Pre-Construction Notification under GP-19 of the General Permits for the State of Connecticut. Applications were previously submitted to the Connecticut Department of Energy and Environmental Protection for the Pre-Construction Notification - USACE General Permits for CT and Individual Inland Wetlands and Watercourses Permit under a separate cover letter for processing.

The project has been submitted to the United States Fish & Wildlife Service on February 20, 2024, *Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and Federal Transit Administration (FTA) Range-wide Programmatic Informal Consultation for Indiana Bat and Northern Long-eared Bat* by DOT's Office of Environmental Planning on behalf of FHWA. The project has received a determination of No Effect on the Northern Long-Eared Bat.

Any questions pertaining to this application may be directed to Amanda M. Saul, Transportation Supervising Planner of my staff at amanda.saul@ct.gov or (860)594-2939.

Very truly yours,

Christine Xenelis

Digitally signed by Christine Xenelis
DN: C=US, E=christine.xenelis@ct.gov, O=Connecticut Department of Transportation, OU=Office of Environmental Planning, CN=Christine Xenelis
Date: 2024.07.09 11:27:13-04'00'

Christine A. Xenelis
Transportation Assistant Planning Director
Bureau of Policy and Planning

2800 Berlin Turnpike
P.O. Box 317546
Newington, CT 06131-7546
860-594-2946

U.S. Army Corps of Engineers (USACE)

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

For use of this form, see 33 CFR 325. The proponent agency is CECW-CO-R.

Form Approved - OMB No. 0710-0003 Expires: 08-31-2023

The public reporting burden for this collection of information, OMB Control Number 0710-0003, is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR APPLICATION TO THE ABOVE EMAIL.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned. System of Record Notice (SORN). The information received is entered into our permit tracking database and a SORN has been completed (SORN #A1145b) and may be accessed at the following website: http://dpcld.defense.gov/Privacy/SORNsIndex/DOD-wide-SORN-Article-View/Article/570115/a1145b-ce.aspx

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - Middle - Last -	First - Middle - Last -
Company - Connecticut Department of Transportation	Company -
E-mail Address - Christine.Xenelis@ct.gov	E-mail Address -
6. APPLICANT'S ADDRESS:	9. AGENT'S ADDRESS:
Address- 2800 Berlin Turnpike, PO Box 317546	Address-
City - Newington State - CT Zip - 06111 Country - USA	City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE	10. AGENTS PHONE NOs. w/AREA CODE
a. Residence b. Business 860-594-2928 c. Fax	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____ SIGNATURE OF APPLICANT _____ DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
CTDOT 0087-0148 Rehabilitation of Bridge No. 06772 on Route 63

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
Straitsville Brook	Address Bridge No. 06772 on Route 63
15. LOCATION OF PROJECT	City - Naugatuck State- CT Zip- 06770
Latitude: ◦N 731630.12 Longitude: ◦W 924390.69	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID Municipality

Section - Township - Range -

17. DIRECTIONS TO THE SITE

The location is approximately 2 miles east of Route 8 Exit 26. Directions from USACE New England are as follows: Take I-95 South in Lexington from Virginia Rd for 3.3 miles. Take I-90 W and I-84 to CT-70 E/State HWY 801 in Cheshire. Take exit 26 from I-84 for 120 miles. Travel on Summit Rd and Straitsville Rd to New Haven Rd in Naugatuck for approximately 8 miles to arrive at the project location.

18. Nature of Activity (Description of project, include all features)

Please see attached sheet.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

The purpose of this project is to rehabilitate Bridge No. 06772 due to the structure being rated as structurally inadequate due to loss of asphaltic coating and high presence of rust and holes and perforations along the invert. The proposed activities include lining the existing structure with an 8' span by 5'6" steel plate pipe-arch, replacement of the existing headwall and wingwalls at the inlet, and replacement of the endwall at the outlet. The project also includes slope stabilization of an eroded embankment 300 feet downstream of Bridge No. 06772 with the installation of a 140 foot long riprap revetment.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Please see attached sheet.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
Please see attached sheet		

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres Please see attached sheet.

or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

Please see attached sheet.

24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address-

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
CT DEEP	PCN	202407000	6/6/2024		
CT DEEP	Indiv. Wetlands	202407001	6/6/2024		

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

Kimberly Lesay Digitally signed by Kimberly Lesay DN: cn=Kimberly Lesay, o=Connecticut Department of Transportation, ou=Bureau Chief of Policy & Planning, email=kimberly.lesay@ct.gov, c=US Date: 2024.07.09 11:29:05 -04'00' — 07/09/2024

SIGNATURE OF APPLICANT | DATE | SIGNATURE OF AGENT | DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

USACE Pre-Construction Notification GP-19
Response to Block 18: Nature of Activity

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
On Route 63 over Straitsville Brook
Town of Naugatuck

Project 0087-0148 proposes to rehabilitate Bridge No. 06772 supporting Route 63 over Straitsville Brook and to stabilize the downstream eroded embankment.

Existing Conditions

Bridge No 06772 is a single barrel, asphalt-coated corrugated steel arch culvert that supports Route 63 over Straitsville Brook in Naugatuck, CT. The current ADT is listed at 11,600 vehicles per day. The project area is located approximately two miles southeast of downtown Naugatuck and approximately 2 miles east of Route 8 Exit 26. The land surrounding the project location is mostly used for business and commercial purposes. The area to the north is residential property, the area to the northeast is commercial property, and the area to the southeast is currently a shopping plaza. New Haven Rd or CT-63 over Bridge No. 06772 is used for travel to these areas.

The existing structure has an overall length of 75 feet with a span of 9 feet 6 inches and a rise of 6 feet 5 inches. The existing structure includes a masonry wingwall extending northeast from the inlet. The most recent Routine Bridge Inspection Report (BIR) notes the existing bridge is buried under approximately 2 to 3 feet of fill and lacks formal endwalls. The steel for this culvert is rated in poor condition, the inlet wingwall and cutoff wall are in fair condition, scour is noted at the inlet, and the outlet is perched. The existing condition of the structure consists of many holes along the invert, large quantities of debris within the structure, and complete loss of the asphalt coating with moderate to heavy rust and perforations.

Approximately 300’ downstream of Bridge No. 06772 is an eroded embankment. The erosion has resulted in vegetation loss and the collapse of several large trees across the channel. Additionally, a dam is located approximately 2000 feet north on Candee Rd.

The project is located in sub-regional drainage basin Beacon Hill Brook (6918). Straitsville Brook has a drainage area of approximately 0.69 square miles and is rated Class A for surface water quality.

Overhead utilities run along the north side of Route 63 on the east side of the bridge, and support lines crossing the roadway on the west side of the bridge. There are three water mains within the Project limits owned by CT Water. One 10-inch diameter cast iron raw water main located within the Route 63 roadway, a 24-inch diameter cast iron distribution water main that crosses below Straitsville brook at the inlet side of Bridge 06772, and a 20-inch diameter cast iron distribution main that crosses below Bridge 06772 at the inlet side. The 24-inch and 20-inch lines will be combined into a single 16-inch diameter main by CT water before construction begins under

Project 0087-0148. There is a 0.75-inch gas main that runs below ground perpendicular to the culvert. The gas main passes over the outlet of the structure just outside the edge of road. This gas line will be maintained and protected during construction activities.

Proposed Conditions

The proposed project will rehabilitate Bridge No. 06772 by lining the existing structure with a corrugated steel tunnel plate liner. The proposed structure will have a span of 8 feet and a rise of 5 feet 6 inches. The invert of the liner will be set at 3 inches above the existing invert elevations, and the slope of the liner will match that of the existing structure. The existing inlet structures will be replaced with a cast-in-place concrete headwall and wingwalls. A 16 foot 3 inch portion of the existing structure will be cut back and the steel plate liner will extend 8 feet 3 inches past where the inlet of the existing structure will be partially removed. This will result in daylighting of 8 feet of watercourse at the inlet. The outlet endwall will be cast in front of the existing structure and the proposed liner will extend to the proposed endwall. There is an existing abandoned 10" cast iron pipe adjacent to the outlet that will be removed. There is an existing 15" corrugated metal pipe culvert adjacent to the outlet which will be cut back to the slope and fitted with a mitered pipe end fitting.

The existing 20 inch and 24 inch cast iron watermains below the upstream portion of the watercourse will be abandoned prior to the initiation of this project. If encountered during construction, they will be removed by the contractor within the limits of the watercourse and the area will be restored with natural streambed material.

Earth retaining systems will be required at both the inlet and outlet sides of the structure to support the roadway embankment during reconstruction of the inlet headwall and wingwalls as well as installation of the outlet endwall. The earth retaining systems outside of the watercourse will be cut 2 feet below finished grade and left in place after construction. Earth retaining systems within the watercourse upstream of the culvert will be removed in their entirety. The earth retaining system at the outlet will be left in place to prevent undermining of the existing endwall and is shown on PMT-04 of the Environmental Permit Plans in Attachment 14. All areas of temporary impact will be restored. An access road will be built from Candee Rd. to perform work at the inlet of the structure. The existing roadway and driveway southeast of the structure will be used to access the outlet.

The existing eroded embankment will be regraded starting approximately 300 feet downstream of Bridge No. 06772, and approximately 140 feet of the embankment will be stabilized with a riprap revetment. A temporary access road and temporary crane mat platform will be needed to access the work areas. The access road will constructed from Beacon Valley Road towards the eroded embankment and connect to a temporary crane-mat platform supported by concrete blocks over the watercourse. Construction of the access road will require clearing and grubbing. The access road orientation is designed to minimize the required tree removal directly adjacent to Straitsville Brook. The access road and crate-mat platform will be removed, and the impacted areas will be restored and planted with native species upon construction completion. Plantings

along the proposed revetment have been coordinated with DOT Landscape Design to ensure stability of the embankment. Natural streambed material will be washed into the proposed riprap up to the 2-year water surface elevation. All areas of temporary impact will be restored.

Temporary water-handling during the rehabilitation of Bridge 06772 will consist of temporary water-handling-cofferdams. Flow of the watercourse will be maintained through an 18 inch bypass pipe through the structure or by pumping around the work area. A secondary temporary water-handling system will be installed at the downstream eroded embankment using temporary water-handling-cofferdams. Flow of the watercourse will also be maintained through the work area by an 18 inch bypass pipe under a temporary crane-mat platform or by pumping around the work area.

Construction Sequence

Two sequences are provided to detail work to the slope revetment and the pipe relining. Work may be performed at both sites simultaneously or consecutively.

Bridge Rehabilitation

The rehabilitation of Bridge No. 06772 is anticipated to begin with the relocation of existing utilities and the construction of a temporary access road from Candee Rd to the culvert inlet. The existing roadway and driveway southeast of the culvert will be used to access the outlet. A sedimentation control system will be installed around the work area. The access road will be built entirely in the upland and impacts to wetlands are not anticipated as a result of proposed work. Tree removal and grading will be necessary for access road construction.

Temporary water-handling cofferdams will then be installed. Flow from Straitsville Brook will be conveyed through an 18 inch temporary bypass pipe through the existing structure or by pumping around the work area. Sediment will then be removed, and regrading will be done at the inlet of the structure. The existing structure will be cleaned and grout will be placed to fill voids and perforations within the strutcure. An earth retaining system will then be installed at the inlet and outlet. A 16 foot 3 inch portion of the structure will be removed from the inlet and the end sections of existing drainage pipes will be replaced. The tunnel liner plate sections will then be installed within the existing structure. The liner will extend 8 foot inches past where the inlet of the existing structure will be partially removed. Bulkheads will then be installed at the inlet and outlet and slip-lining grout will be placed between the existing structure and proposed liner. Construction of the inlet headwall and wingwalls will then take place including cutting and leaving the earth retaining system in place outside of the watercourse limits. The earth retaining system at the outlet will be entirely removed with the exception of a portion that will be cut behind the proposed endwall and left in place. Natural streambed material will be used to fill excavated areas at the inlet and outlet. Large stones and boulders immediately downstream of the structure will be removed and stockpiled prior to construction and reset in original locations after construction is complete. The water-handling system will be removed after construction is complete, and all areas of temporary impact will be restored. Existing overhead utilities will be relocated to final positioning.

Areas where tree removal is required for construction of the access road will be restored and revegetated with native plantings and seeding. Temporarily impacted areas shall be restored to existing conditions following construction.

Slope Revetment

The construction of the downstream slope revetment is anticipated to begin with constructing a temporary access road from Beacon Valley Rd to the existing eroded slope. A sedimentation control system will be installed around the work area. Temporary water-handling cofferdams will then be installed. Flow from Straitsville Brook will be conveyed through an 18 inch temporary bypass pipe within the channel or by pumping around the work area. A construction access platform will then be constructed over the watercourse using crane mats and concrete blocks across the watercourse. The 140 foot slope revetment will then be constructed, and riprap armoring will be placed. The temporary access platform will then be removed and final grading and placement of natural streambed material will be completed. Natural streambed material will be washed into proposed riprap to the 2-year water surface elevation. The temporary water handling and access road will be removed.

Areas where tree removal is required for construction of the access road shall be re-stabilized with clean soil and a ground cover. Appropriate trees and vegetation shall be reestablished through plantings and conservation seed mix. Temporarily impacted areas shall be restored to natural conditions following construction. Areas will be restored and revegetated with native plantings and seeding.

USACE Pre-Construction Notification GP-19
Response to Block 20: Reason for Discharge

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
On Route 63 over Straitsville Brook
Town of Naugatuck

The proposed project will rehabilitate the existing asphalt-coated corrugated metal pipe arch by relining the structure with an 8 foot span by 5 foot 6 inch rise corrugated steel tunnel plate liner. Placement of the liner within the existing culvert and grouting the annular space, is considered fill within the watercourse. This work is required to rehabilitate the existing structure.

Channel regrading is proposed at both the inlet and outlet of the culvert to restore the area disturbed by the construction of headwalls and wingwalls at the inlet and the endwall at the outlet. Channel regrading will consist of a minimum 1’ of natural streambed material over 1’ of crushed stone at the inlet and 1’ of natural streambed material at the outlet to match the existing grade. Large stones and boulders within the watercourse immediately downstream of the structure will be removed and temporarily stockpiled during excavation and reset in the original locations during final grading.

Re-grading the existing downstream eroded embankment and the installation of the 140 foot riprap revetment includes the placement of heavy riprap with crushed stone and modified riprap along the slope for stabilization. Topdressing of native streambed material is proposed up to the 2-year water surface elevation.

Temporary watercourse impacts associated with temporary water-handling are anticipated for this project at both sites. Water-handling during the rehabilitation of Bridge 06772 will consist of temporary water-handling-cofferdams. Flow of the watercourse will be managed by an 18 inch bypass pipe through the structure or by pumping around the work area. A secondary temporary water-handling system will be installed at the downstream eroded embankment using water-handling-cofferdams. Flow of the watercourse will be managed by an 18 inch bypass pipe under a temporary crane-mat platform or by pumping around the work area. Water-handling will be removed, and areas of temporary impact will be restored following construction.

USACE Pre-Construction Notification GP-19
Response to Block 21: Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
On Route 63 over Straitsville Brook
Town of Naugatuck

Material	Volume (Cubic Yards)	Comment
Concrete	27	Closure Pours, wingwalls, headwall, endwall, footing
Grout	10	For filling voids within the existing culvert and between the existing and proposed structure
Riprap	310	Revetment for slope stabilization
Natural Streambed Material	233	Inlet and outlet of culvert, revetment for slope stabilization
No. 6 Crushed Stone	75	Revetment for slope stabilization
Earth Retaining System Left in Place	4	At existing outlet to prevent undermining

USACE Pre-Construction Notification GP-19
Response to Block 22: Surface Area in Acres of Wetland or Other Waters Filled

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
On Route 63 over Straitsville Brook
Town of Naugatuck

There are no state and federally regulated wetlands within the project area, therefore the project will not result in temporary or permanent fill within state or federally regulated wetlands.

The project includes 5,250 s.f. (0.121 ac) of permanent watercourse impacts associated with pipe lining the existing culvert with a 8 foot span by 5 foot inch rise corrugated steel tunnel plate liner, replacement of headwall and wingwalls at the inlet, replacement of the endwall at the outlet, the earth retaining system to be left in place at culvert outlet, installation of 140 foot long riprap revetment, associated regrading of Straitsville Brook and placement of natural streambed material. In addition, the project includes 1,670 s.f. (0.038 ac) of temporary watercourse impacts associated with temporary water-handling to perform the work in the dry. Total watercourse impacts for this project is 6,920 s.f. (0.159 ac) All areas of temporary impact will be restored upon construction completion.

Wetland/Watercourse Impact Table			
	Wetland Impacts	Watercourse Impacts	Total
Permanent Impacts	0 s.f (0 ac)	5,250 s.f. (0.121 ac)	5,250 s.f. (0.121 ac)
Temporary Impacts	0 s.f (0 ac)	1,670 s.f. (0.038 ac)	1,670 s.f. (0.038 ac)
Total Impacts	0 s.f (0 ac)	6,920 s.f. (0.159 ac)	6,920 s.f. (0.159 ac)

USACE Pre-Construction Notification GP-19
Response to Block 23: Description of Avoidance, Minimization, and Compensation

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
On Route 63 over Straitsville Brook
Town of Naugatuck

The following measures were taken to avoid and/or minimize the impacts to the surrounding wetlands and watercourse:

- The project has been designed to minimize impacts to wetlands and watercourses while providing adequate work area to complete the proposed work.
- Invasive species will be controlled during construction using the Department's Control and Removal of Invasive Vegetation specification within the project limits.
- Water-handling-cofferdams that convey flow to a 18-inch diameter temporary pipe will be used during the construction to prevent sediment and debris from entering the watercourse. This will also allow the watercourse to flow freely during construction.
- The water pumped from behind the water-handling-cofferdams will be directed into dewatering basins to minimize the number of suspended particles entering the watercourse.
- All areas of temporary impact will be restored.
- All construction activities will be conducted in accordance with the Department's Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 818, Section 1.10 and will also follow required best management practices (BMPs).
- Sedimentation and erosion control measures will be used in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control and the 2004 Connecticut Stormwater Quality Manual.
- All areas of temporary disturbance within the project limits will be stabilized and restored with native plantings and/or seeding.

Alternatives that were considered for the culvert included:

- Replacement with a box culvert/three-sided frame. This alternative was eliminated due for various reasons including interference with underground water and raw water mains beneath the inlet that are unable to be cutoff, interference with an underground gas main above the structure, staged construction, increased environmental ROW impacts and high costs associated with the work. Additionally, a three-sided structure would require total stream reconstruction that would increase stream velocities.
- Replacement using pipe jacking. This alternative was eliminated due for various reasons including interference with underground water and raw water mains beneath the inlet that are unable to be cutoff, interference with an underground gas main above the structure, difficulties with jacking in rocky substrate, increased environmental ROW impacts and high costs associated with the work. Additionally, pipe-jacking a

culvert of this size raised significant concern for damaging through direct conflict or vibration.

- Replacement culvert with skew to match natural channel alignment. This alternative was eliminated due to interference with overhead and underground utilities. Additionally, a replacement structure would require total stream reconstruction that would increase stream velocities.
- Alternatives for providing fish passage through the structure were investigated.
    - Installation of step pools: Due to the steepness of the watercourse and the drop at the culvert outlet providing passage through the culvert would have required a step pool system extending 300 feet downstream of the culvert outlet with a 6 inch depth of riprap throughout the entire channel. CT DEEP Fisheries determined that the amount of disturbance downstream would not be beneficial due to existing natural upstream barriers to fish passage and limited habitat availability upstream of the culvert.
    - Installation of an engineered concrete fishway: Providing a max 15% slope would require 150 foot engineered fishway extending downstream from the culvert outlet. CT DEEP Fisheries determined that the amount of disturbance downstream would not be beneficial due to existing natural upstream barriers to fish passage and limited habitat availability upstream of the culvert.

The proposed project alternative using pipe-ling maintains hydraulic adequacy, reduces construction duration, reduces traffic impacts, reduces environmental and ROW impacts, reduces impacts to overhead and underground utilities, and it has a reduced cost compared to the other alternatives.

Alternatives that were considered for access roads included:

- Installing an access road from Route 63 to access the eroded embankment and culvert outlet. Due to the steep slopes there were constructability concerns about placement of shoring to support the access road. Additionally, this would have required extensive clearing on the slope adjacent to Straitsville Brook and access to install the proposed revetment would be difficult.
- Installation of an access road from Beacon Valley Road to the culvert outlet. This alternative would have had an access road leading from the currently proposed access road along Straitsville Brook to the outlet of the culvert. This alternative would have resulted in significant clearing along Straitsville Brook. There were additional constructability concerns due to an existing underground stormwater detention system located adjacent to the slope for the existing commercial property.

The proposed temporary access road orientations are proposed to minimize the required tree removal directly adjacent to Straitsville Brook. The access roads will be removed after construction is completed, and impacted areas will be restored. An antitracking pad will be installed at the entrance of access roads.

USACE ENG FORM 4354, Pre-Construction Notification
List of Attachments

Applicant: Connecticut Department of Transportation
Project: State Project No. 0087-0148
Rehabilitation of Bridge No 06772
Naugatuck, Connecticut

List of Attachments:

Attachment A:	Location Map
	USGS Map
	Aerial Map
Attachment B:	Site Permit Plans
Attachment C:	Site Photographs
Attachment D:	Environmental Report
	NRCS Soil Map
	Wetland Determination Data Form
Attachment E:	State Historic Preservation Office (SHPO)
Attachment F:	Tribal Historic Preservation Office (THPO)
Attachment G:	Interagency Coordination Meeting Notes
Attachment H:	USFWS Coordination

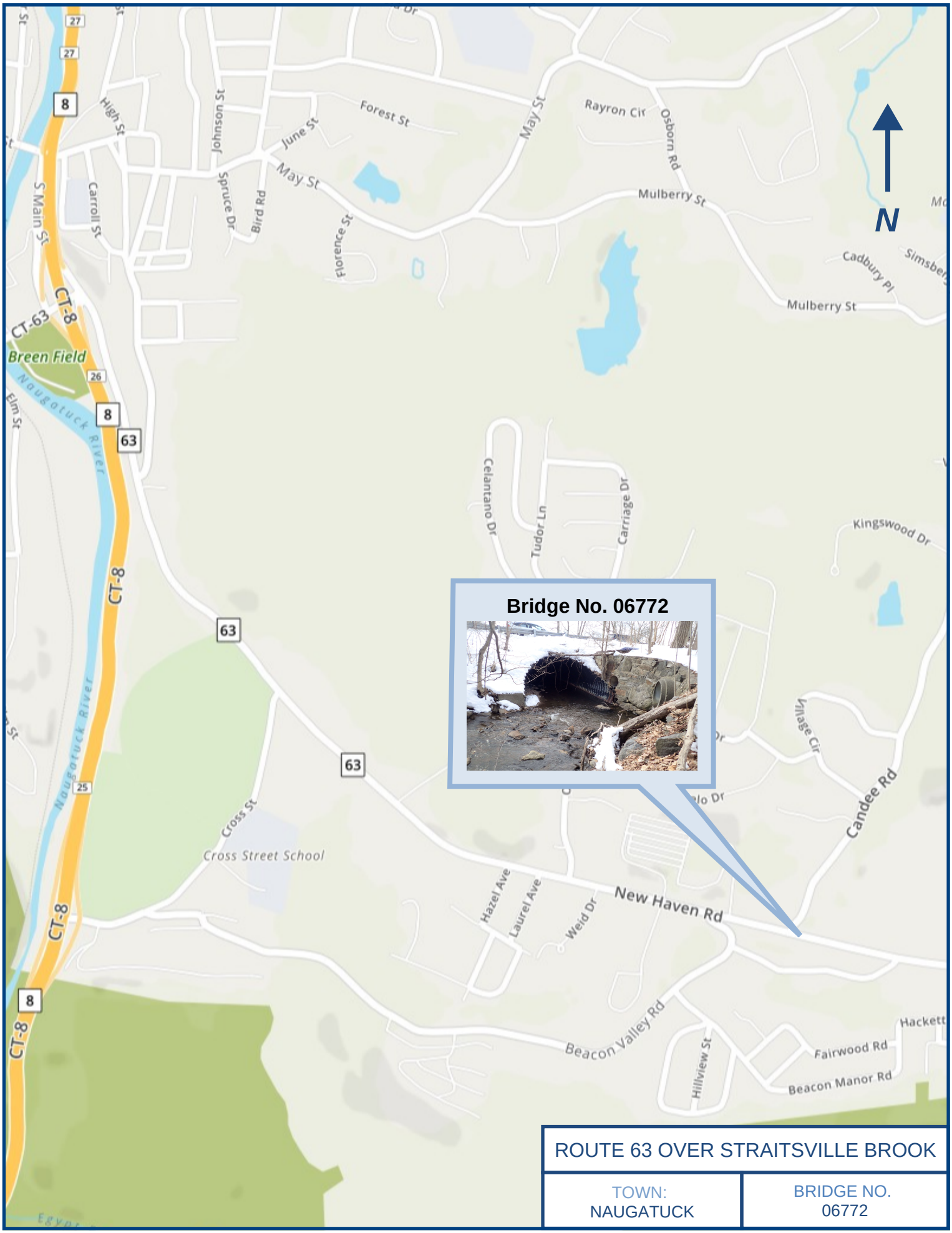
USACE ENG FORM 4354, Pre-Construction Notification
Attachment A: Location Maps

Applicant: Connecticut Department of Transportation
Project: State Project No. 0087-0148
Rehabilitation of Bridge No 06772
Naugatuck, Connecticut

Location Map

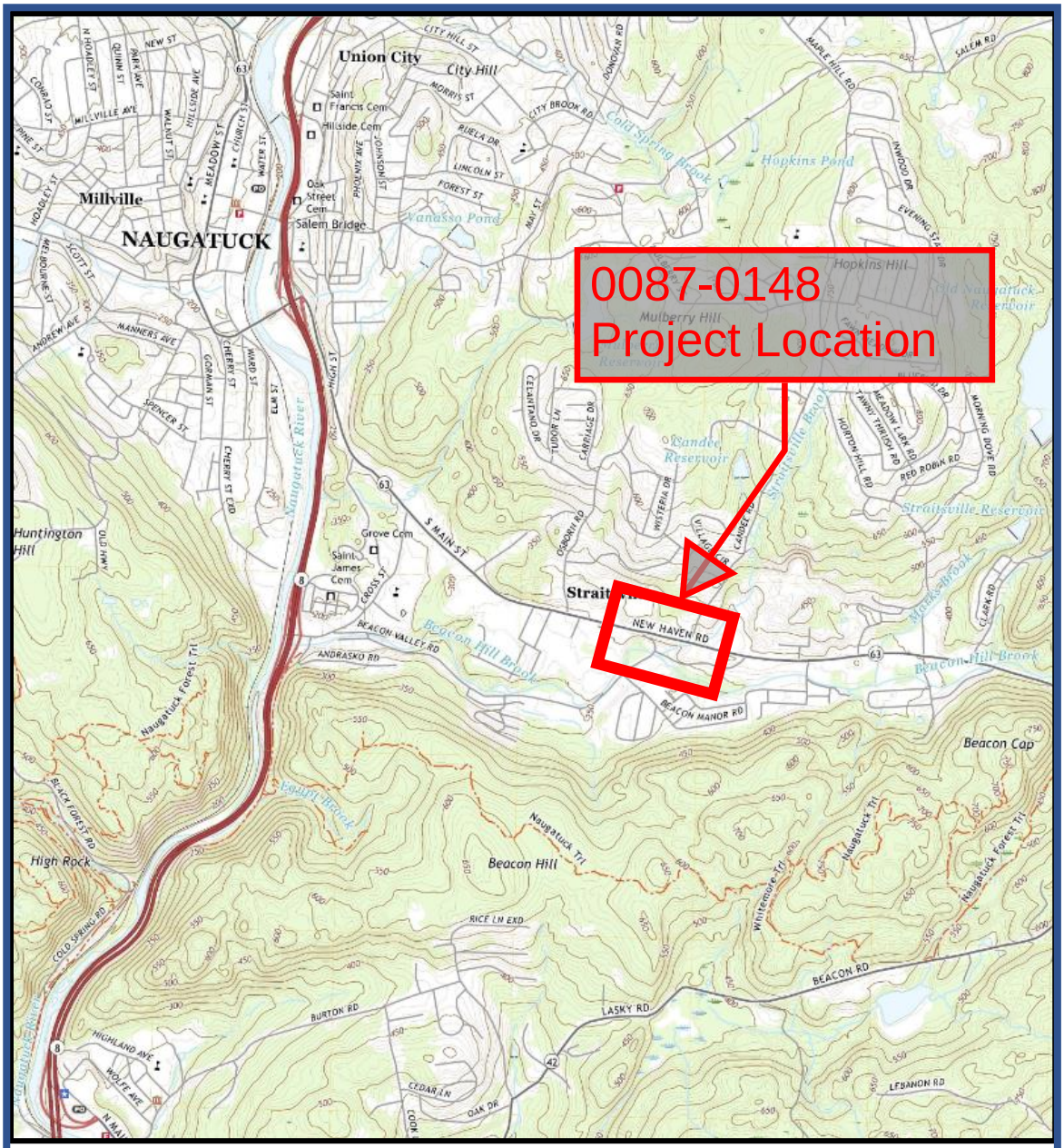
USGS Map

Aerial Map



ROUTE 63 OVER STRAITSVILLE BROOK

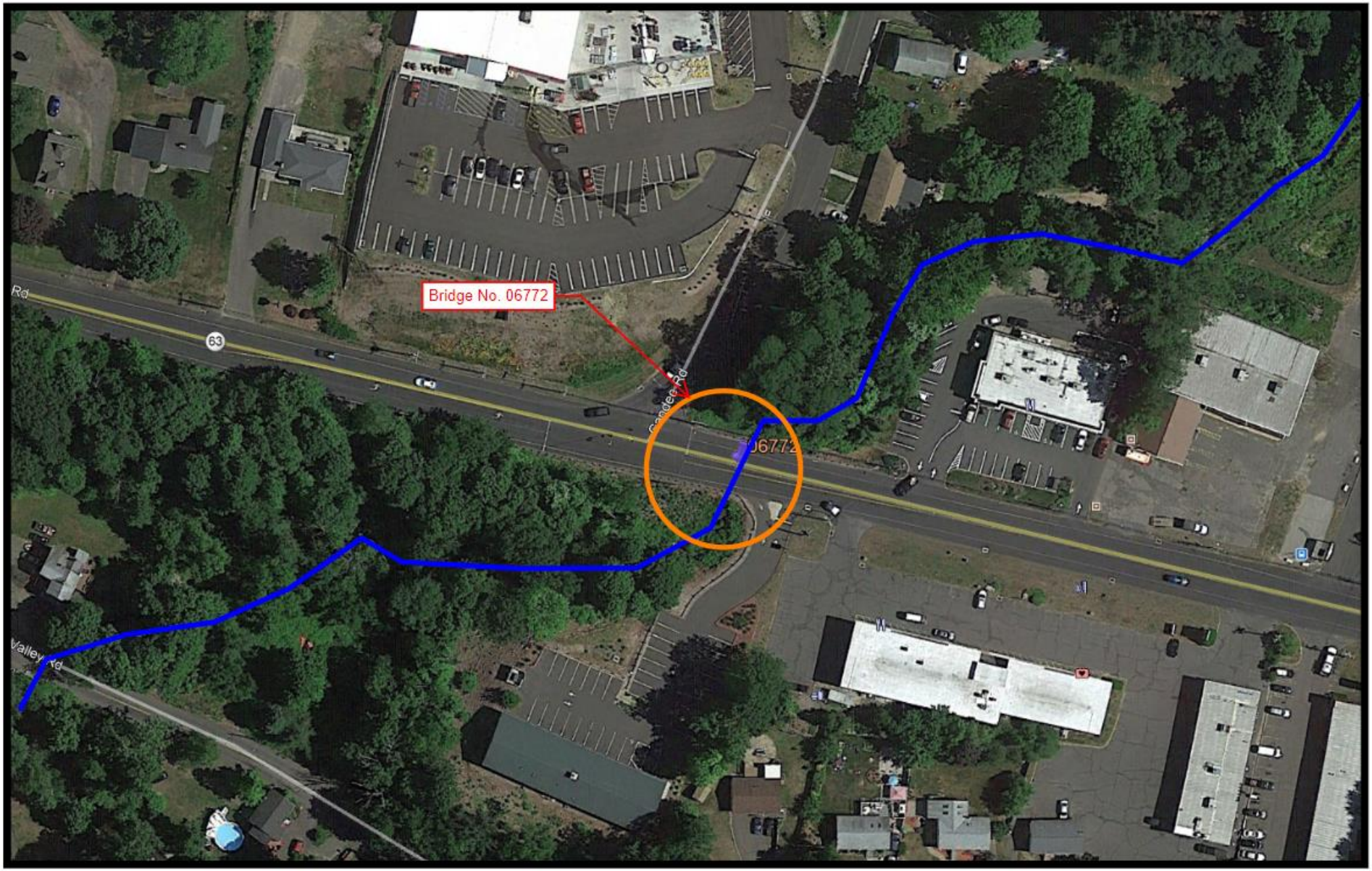
TOWN:	BRIDGE NO.
NAUGATUCK	06772



USGS Topographic Map

Project No. 0087-0148
Rehabilitation of Bridge No. 06772 on Route 63 over Straitsville Brook
City of Naugatuck, CT

Connecticut Department of Transportation
2800 Berlin Tpk., Newington, CT 06111



Project No. 87-148
Rehabilitation of Bridge No. 06772
on Route 63 over Straitsville Brook
Town of Naugatuck

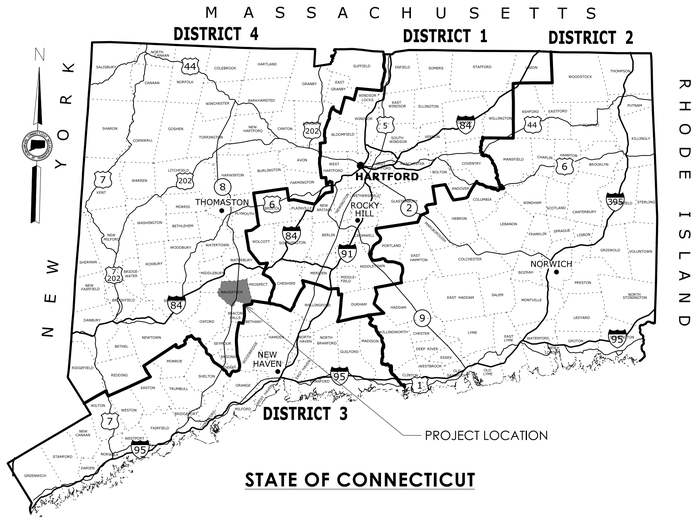
Aerial View

USACE ENG FORM 4354, Pre-Construction Notification
Attachment B: Site Permit Plans

Applicant: Connecticut Department of Transportation
Project: State Project No. 0087-0148
Rehabilitation of Bridge No 06772
Naugatuck, Connecticut

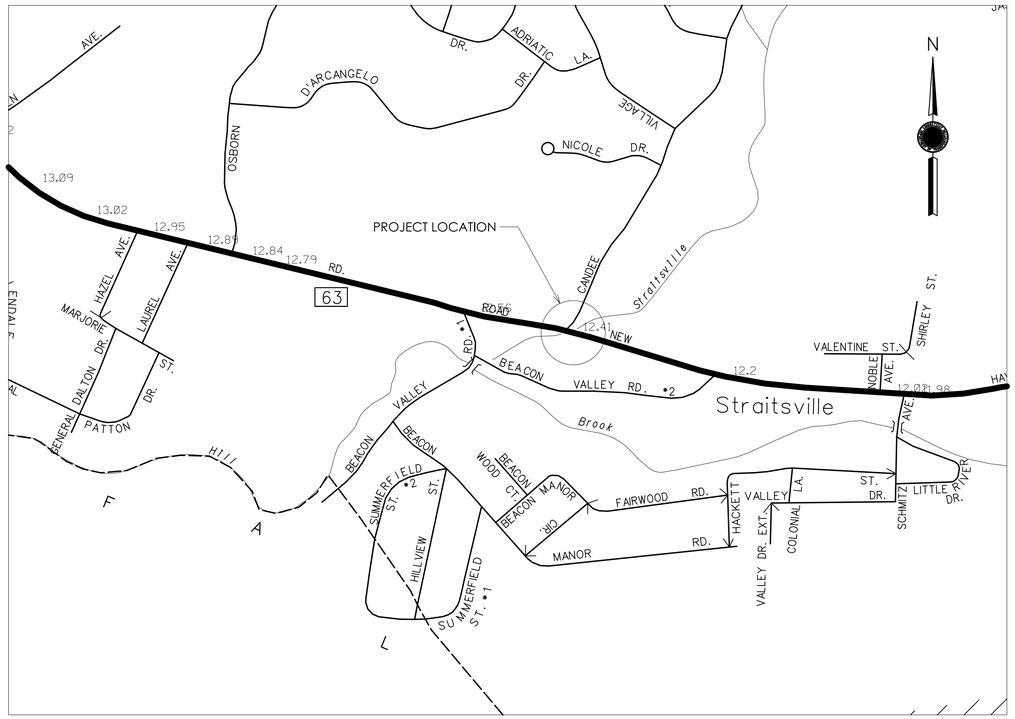
Site Permit Plans

- PMT-01 Title Sheet
- PMT-02 General Site Plan
- PMT-03 Wetland/Watercourse Impact Plan
- PMT-04 Elevations and Section Plan
- PMT-05 Revetment Section
- PMT-06 Staging and Water Handling Plan
- PMT-07 Permit Planting Plan



STATE OF CONNECTICUT

ENVIRONMENTAL PERMIT PLANS
STATE PROJECT NO. 0087-0148
REHABILITATION OF BRIDGE NO. 06772
CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
IN THE TOWN OF NAUGATUCK, CT



LOCATION PLAN

1" = 500'-0"

GENERAL NOTES

1. THESE PLANS ARE NOT FOR CONSTRUCITON AND ARE INTENDED ONLY FOR ENVIRONMENTAL PERMITTING PURPOSES. THESE PLANS HOLD AUTHORITY FOR ALL ACTIVITIES CONCERNING THE REGULATED AREA. FOR DETAILED PLANIMETRIC INFORMATION AND PAYMENT REFER TO THE APPLICABLE CONTRACT DOCUMENTS.
2. THE DEPARTMENT OF TRANSPORTATION WILL ONLY SUBMIT REVISIONS TO DEEP AND USACE FOR CHANGES TO THE DESIGN THAT WILL EFFECT REGULATED AREAS.
3. FOR A DESCRIPTION OF THE WATERCOURSES, WETLANDS, AND WETLAND SOILS, SEE RELEVANT SECTIONS OF THE PERMIT APPLICATION.
4. 400 FOOT GRID BASED ON CONNECTICUT COORDINATE SYSTEM N.A.D. 1927 VERTICAL DATUM BASED ON NGVD OF 1929.
5. ALL CONSTRUCTION ACTIVITIES WILL BE CONDUCTED IN ACCORDANCE WITH THE DEPARTMENTS STANDARD SPECIFICATIONS FOR ROADS, BRIDGES, FACILITIES AND INCIDENTAL CONSTRUCTION, FORM 818, SECTION 1.10 AND WILL ALSO FOLLOW REQUIRED BEST MANAGEMENT PRACTICES (BMP's) AND SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH THE 2002 EROSION AND SEDIMENTATION CONTROL GUIDELINES AND THE 2004 STORMWATER QUALITY MANUAL.

LIST OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
PMT-01	TITLE SHEET
PMT-02	GENERAL SITE PLAN
PMT-03	WETLAND/ WATERCOURSE IMPACT PLAN
PMT-04	ELEVATIONS AND SECTION PLAN
PMT-05	REVETMENT SECTION
PMT-06	STAGING AND WATER HANDLING PLAN
PMT-07	PERMIT PLANTING PLAN

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

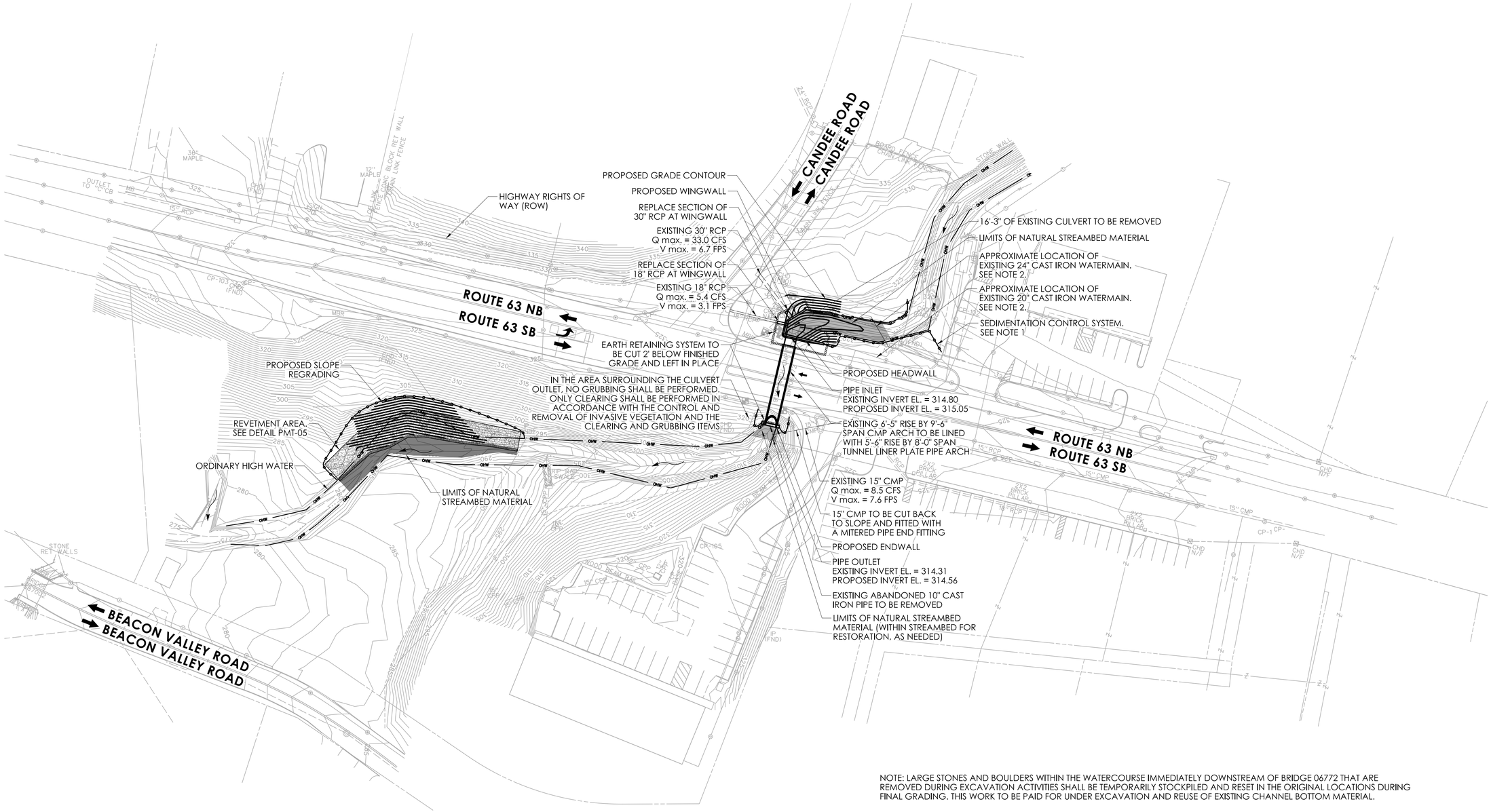
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STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: TITLE SHEET

DRAWING NO. PMT-01
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-1_Title Sheet.dgn
PLOTTED DATE: 5/9/2024



NOTE: LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.

BRIDGE NO. 06772 GENERAL SITE PLAN

SCALE: 1" = 40'

LEGEND

- OHW — ORDINARY HIGH WATER
- SURVEYED EDGE OF WATER
- SEDIMENTATION CONTROL SYSTEM

NOTES:

1. APPROXIMATE LOCATION OF SEDIMENTATION CONTROL SYSTEM SHOWN AT FINAL CONDITION
2. LOCATION OF EXISTING WATERMAINS ARE UNKNOWN. IF ENCOUNTERED DURING CONSTRUCTION THE ABANDONED WATERMAINS WITHIN THE REGULATED AREA WILL BE REMOVED AND THE DISTURBED AREA WILL BE RESTORED WITH NATURAL STREAMBED MATERIAL.
3. SEDIMENTATION CONTROL SYSTEM TO BE PLACED AT CATCH BASIN(S) AS NEEDED OR AS DIRECTED BY THE ENGINEER

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

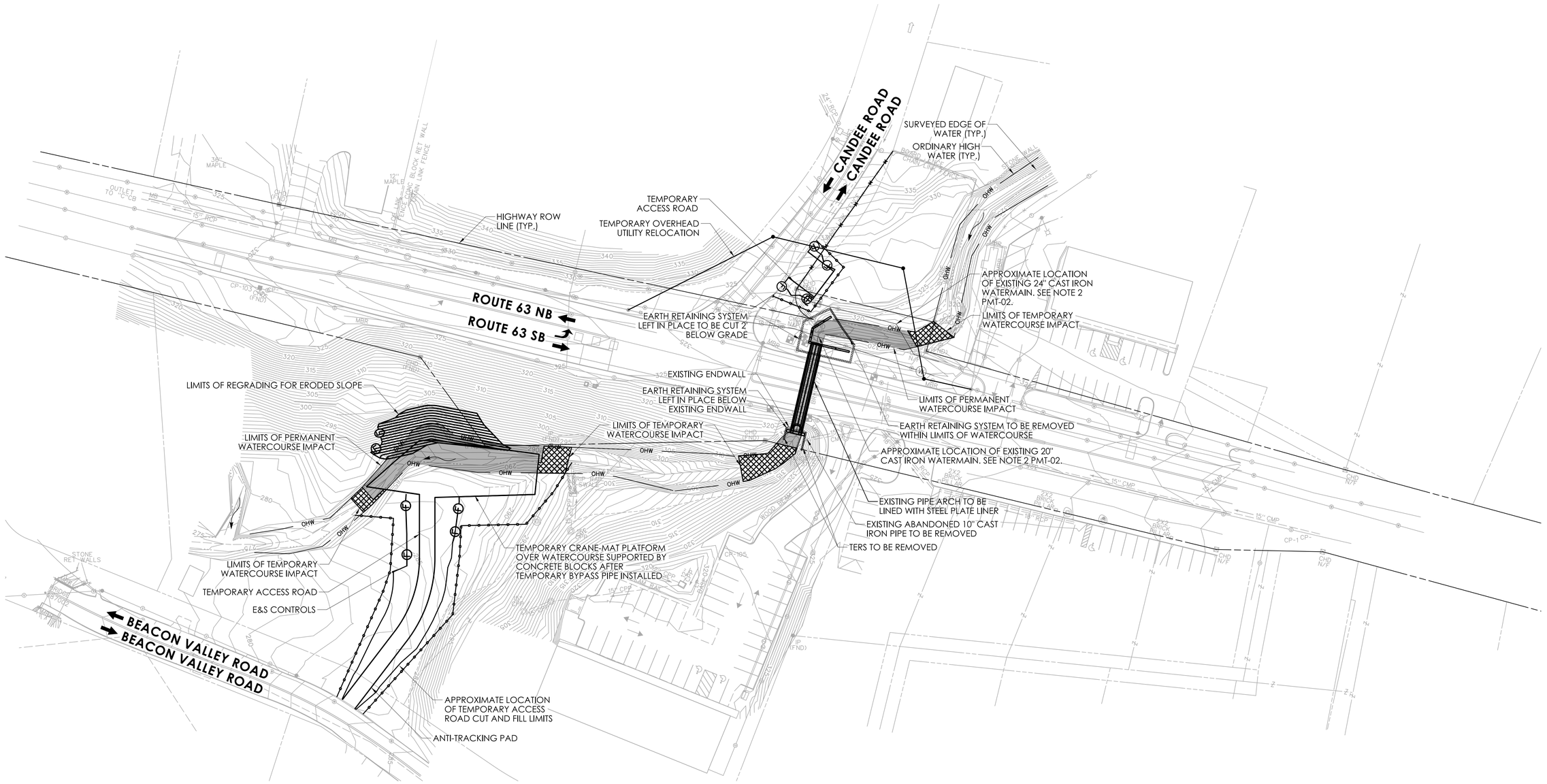
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STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: GENERAL SITE PLAN

DRAWING NO. PMT-02
SHEET NO.

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PLOTTED DATE: 5/9/2024



LEGEND

TEMPORARY WETLAND/WATERCOURSE IMPACT

PERMANENT WETLAND/WATERCOURSE IMPACT

NOTE:

THE CONTRACTOR SHALL NOT WORK WITHIN THE LIMITS OF THE WETLANDS AND WATERCOURSE WITH THE EXCEPTION OF THOSE AREAS DELINEATED AS TEMPORARY OR PERMANENT IMPACTS TO THE WERLANDS AND WATERCOURSE. ALL DISTURBED AREAS SHALL BE RESTORED

BRIDGE NO. 06772 IMPACT PLAN

SCALE: 1" = 40'

WETLAND/WATERCOURSE IMPACT TABLE			
	WETLAND IMPACTS	**WATERCOURSE IMPACTS**	**TOTAL**
PERMANENT IMPACTS	0 S.F. (0 AC.)	5250 S.F. (0.121 AC)	5250 S.F. (0.121 AC)
TEMPORARY IMPACTS	0 S.F. (0 AC.)	1670 S.F. (0.038 AC)	1670 S.F. (0.038 AC)
TOTAL IMPACTS	0 S.F. (0 AC.)	6920 S.F. (0.159 AC)	6920 S.F. (0.159 AC)

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REVISION DESCRIPTION | DATE | REV.

DESIGNER/DRAFTER: JJS CHECKED BY:

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: WATERCOURSE IMPACT PLAN

DRAWING NO. PMT-03
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-3_WetlandImpactPlan.dgn
PLOTTED DATE: 5/9/2024

HYDRAULIC DATA	
DRAINAGE AREA	0.69 SQ. MILE
DESIGN FREQUENCY	50 YEAR
DESIGN DISCHARGE	220 CFS
UPSTREAM AVERAGE DAILY FLOW ELEVATION	315.4 FT
DOWNSTREAM AVERAGE DAILY FLOW ELEVATION	308.9 FT
UPSTREAM DESIGN WATER SURFACE ELEVATION	320.6 FT
DOWNSTREAM DESIGN WATER SURFACE ELEVATION	311.4 FT

NATIVE STREAMBED MATERIAL NOTES:

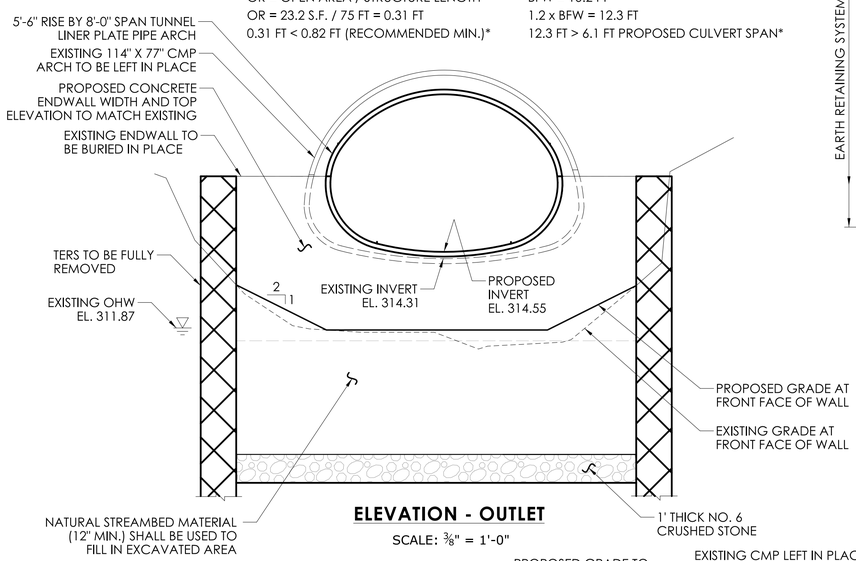
1. NATIVE STREAMBED MATERIAL EXCAVATED DURING THE PIPE RELINING, RIPRAP INSTALLATION AND CHANNEL REGRADING SHALL BE STOCKPILED AND THEN REPLACED OUTSIDE THE LIMITS OF THE RIPRAP AREAS AS NEEDED FOR REGRADING TO THE DEPTH SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH THE SPECIAL PROVISION "EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL."
2. ADDITIONAL STREAMBED MATERIAL, IF REQUIRED, SHALL BE IN ACCORDANCE WITH SPECIAL PROVISION "SUPPLEMENTAL STREAMBED CHANNEL MATERIAL."
3. THE STOCKPILE SHALL BE LOCATED OUTSIDE THE WETLAND LIMITS AND PROTECTED WITH SEDIMENTATION CONTROL SYSTEM.
4. LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.

OPENNESS RATIO (OR):

OR = OPEN AREA / STRUCTURE LENGTH
OR = 23.2 S.F. / 75 FT = 0.31 FT
0.31 FT < 0.82 FT (RECOMMENDED MIN.)*

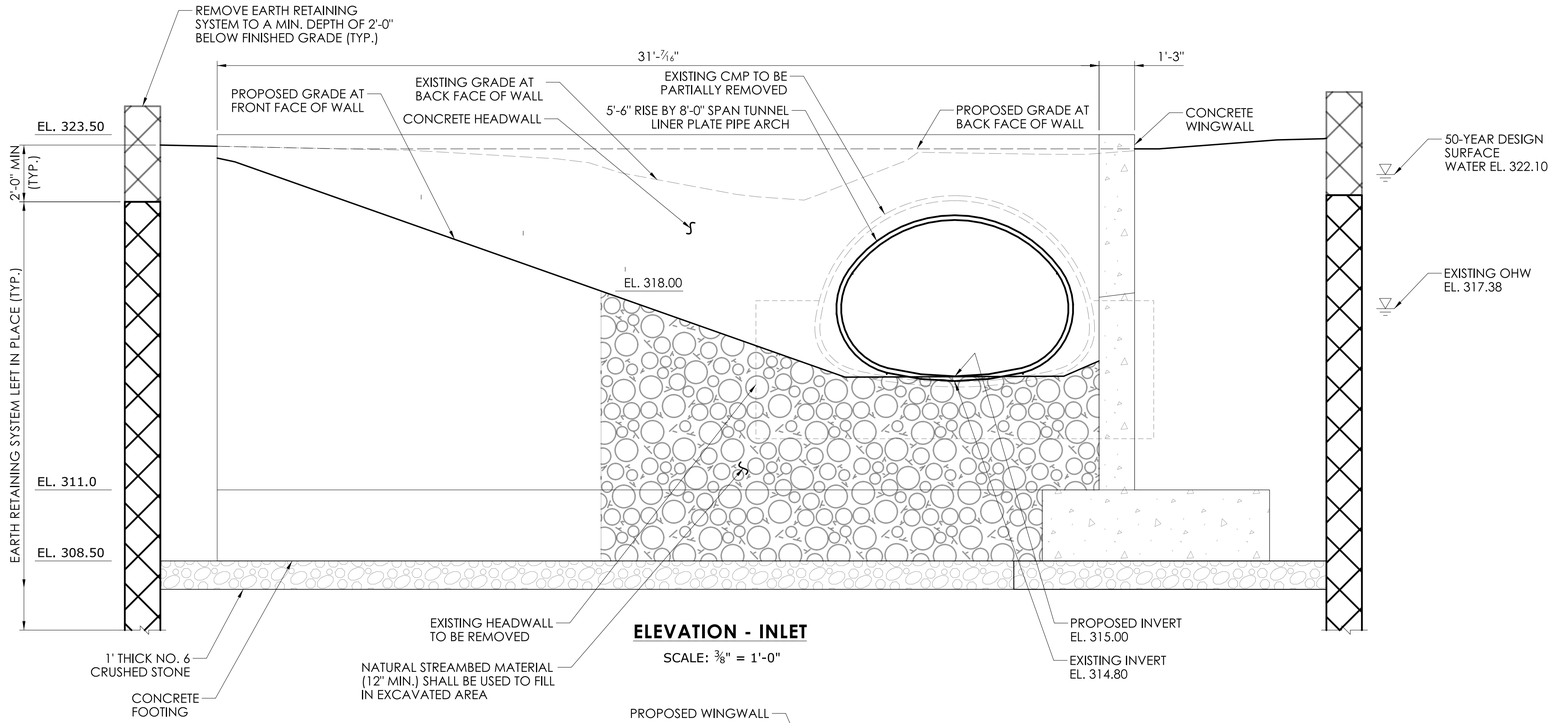
BANKFULL WIDTH (BFW):

BFW = 10.2 FT
1.2 x BFW = 12.3 FT
12.3 FT > 6.1 FT PROPOSED CULVERT SPAN*



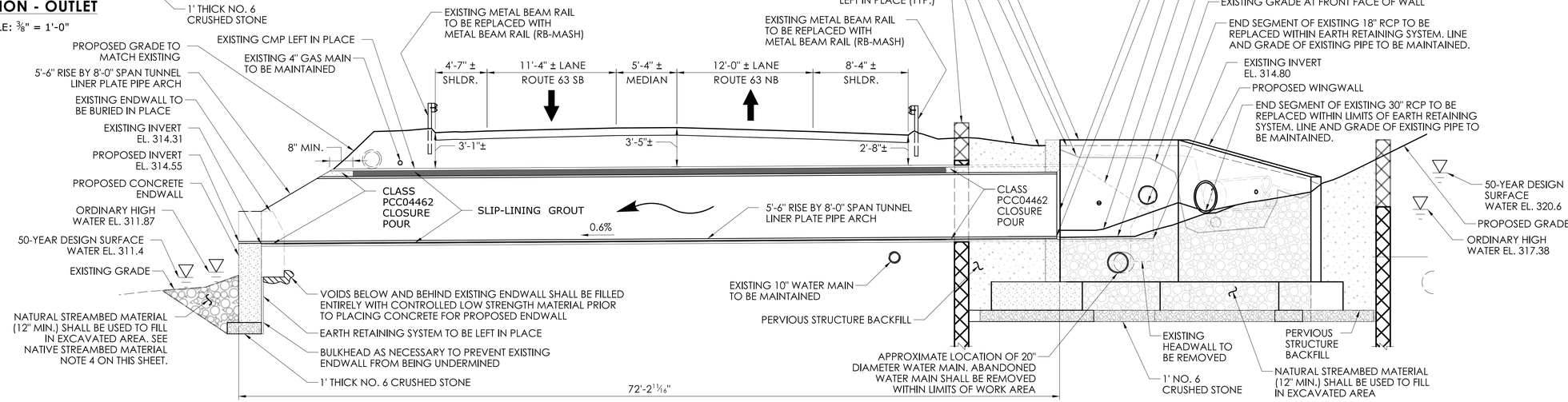
ELEVATION - OUTLET

SCALE: 3/8" = 1'-0"



ELEVATION - INLET

SCALE: 3/8" = 1'-0"



SECTION - INLET

SCALE: 3/16" = 1'-0"

NOTES:
IF LEDGE IS ENCOUNTERED PRIOR TO REACHING DEPTH OF EXCAVATION AS SHOWN ON THIS SHEET, LEDGE NEED NOT BE REMOVED AND PROPOSED ENDWALL SHALL BE CAST DIRECTLY AGAINST LEDGE.

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

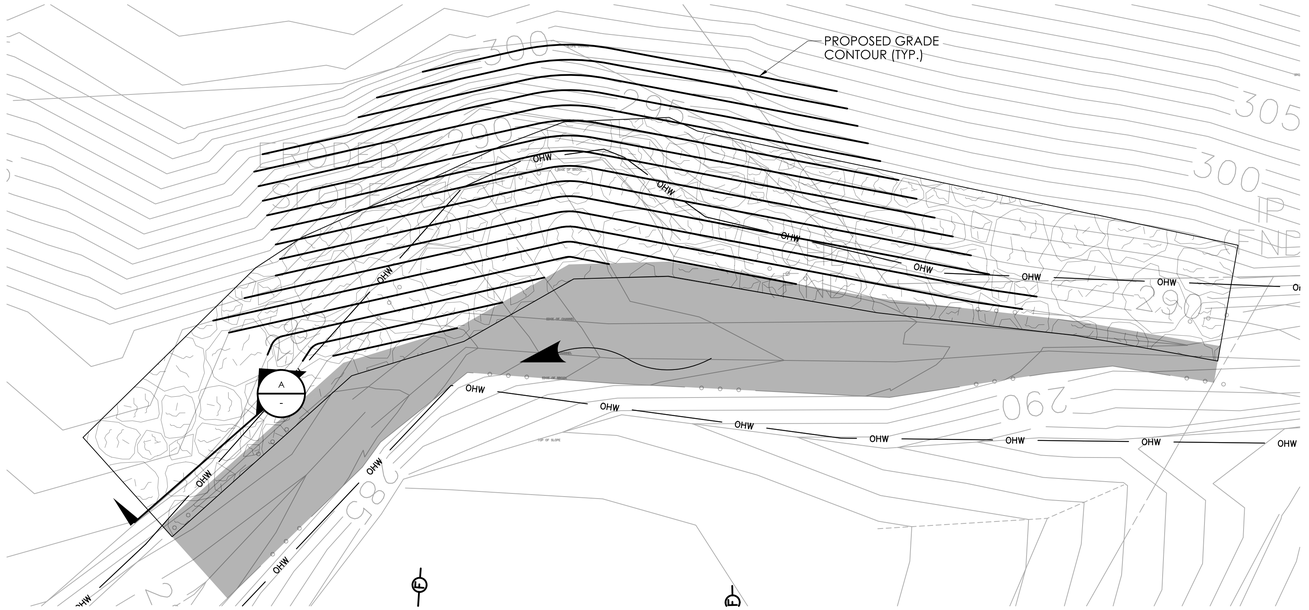
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: ELEVATION AND SECTION PLAN

DRAWING NO. PMT-04
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-4_ElevationSectionPlan.dgn
PLOTTED DATE: 5/9/2024



COORDINATE GRID

NAD 83(2011)

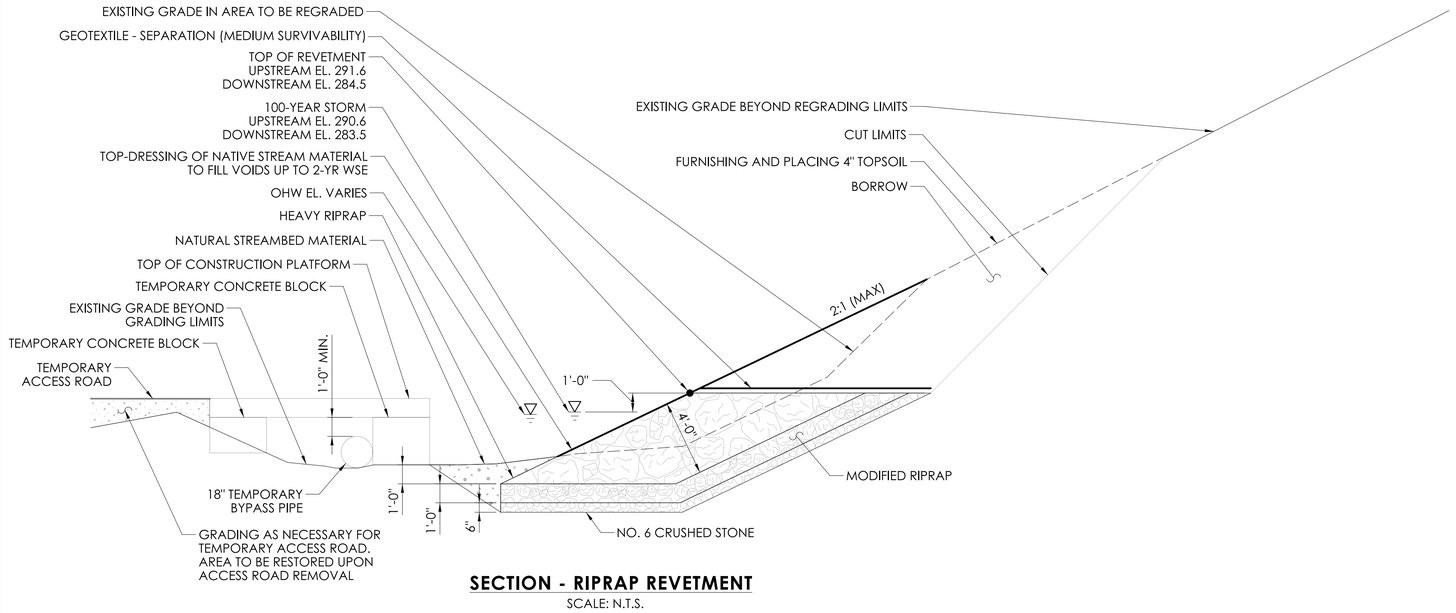
CONNECTICUT

4' HEAVY RIPRAP ON 1' MODIFIED RIPRAP, ON 6" NO. 6 CRUSHED STONE. NATURAL STREAMBED MATERIAL TO BE WASHED INTO RIPRAP UP TO 2-YR WSE.

NATURAL STREAMBED MATERIAL

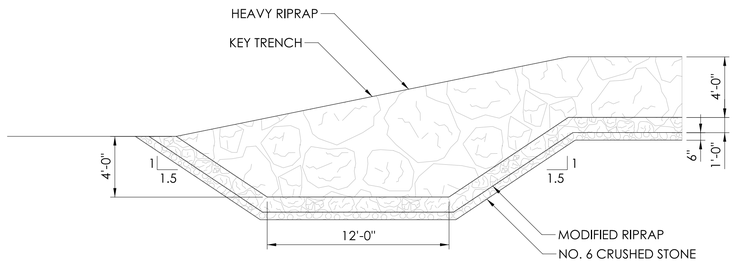
REVETMENT PLAN

SCALE: 1" = 10'



SECTION - RIPRAP REVETMENT

SCALE: N.T.S.



SECTION - REVETMENT KEY-IN

A
-

SCALE: 1" = 5'

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: CHECKED BY:

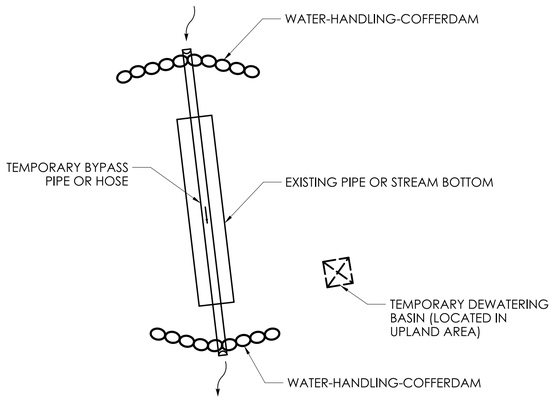
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STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: REVETMENT SECTION

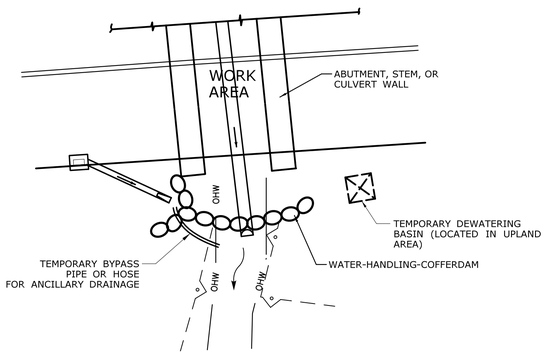
DRAWING NO. PMT-05
SHEET NO.

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PLOTTED DATE: 5/9/2024



TEMPORARY PIPE

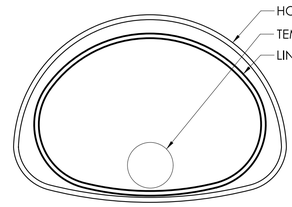
(NOT TO SCALE)



ANCILLARY STORM DRAINAGE NEAR WORK AREA

(NOT TO SCALE)

NOTE: ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING OR PROPOSED STORM DRAINAGE SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREAS. THE CONTRACTOR SHALL SUBMIT THE MEANS AND METHODS OF HANDLING STORM DRAINAGE TO THE ENGINEER FOR APROVAL.

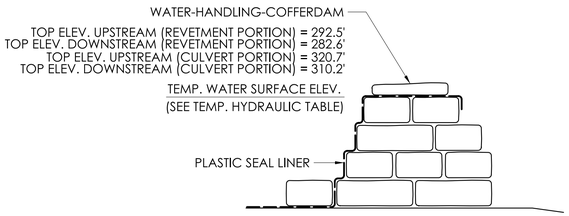


WATER HANDLING

SCALE: N.T.S.

TEMPORARY HYDRAULIC DATA	
AVERAGE DAILY FLOW	1.3 CFS
AVERAGE SPRING FLOW	2.5 CFS
2-YEAR FREQUENCY DISCHARGE	45 CFS
TEMPORARY DESIGN FREQUENCY	3 X A.S.F.
LOW FLOW PUMPING TEMPORARY DESIGN DISCHARGE	7.5 CFS
GRAVITY FLOW BYPASS PIPE TEMPORARY DESIGN DISCHARGE	7.5 CFS
UPSTREAM WATER SURFACE ELEVATION (CULVERT PORTION)	319.7 FT
DOWNSTREAM WATER SURFACE ELEVATION (CULVERT PORTION)	309.2 FT
UPSTREAM WATER SURFACE ELEVATION (REVETMENT PORTION)	291.5 FT
DOWNSTREAM WATER SURFACE ELEVATION (REVETMENT PORTION)	280.5 FT

NOTES:
1. TABLE IS APPLICABLE FOR BOTH CULVERT AND REVETMENT WATER HANDLING
2. VALUES AND ELEVATIONS MAY VARY SLIGHTLY FROM THE CONTRACT PLANS



WATER-HANDLING-COFFERDAM TYPICAL SECTION

SCALE: NOT TO SCALE

SUGGESTED CONSTRUCTION SEQUENCE - SLOPE REVETMENT

1. INSTALL SEDIMENTATION CONTROL SYSTEM.
2. PERFORM CLEARING AND GRUBBING AND CONTROL AND REMOVAL OF INVASIVE VEGETATION.
3. CONSTRUCT TEMPORARY ACCESS ROAD FROM BEACON VALLEY ROAD TO THE WORK AREA.
4. INSTALL TEMPORARY WATER HANDLING SYSTEM INCLUDING WATER-HANDLING-COFFERDAMS AND TEMPORARY BYPASS PIPE.
5. DIVERT WATER THROUGH THE TEMPORARY BYPASS PIPE TO DRY THE WORK AREA.
6. CONSTRUCT ACCESS PLATFORM WITH CRANE MATS AND CONCRETE BLOCKS TO SPAN THE TEMPORARY BYPASS PIPE AS NEEDED FOR ACCESS TO THE DOWNSTREAM REVETMENT WORK AREA.
7. CONSTRUCT SLOPE REVETMENT.
8. REMOVE TEMPORARY ACCESS ROADS, CRANE MATS, AND PERFORM FINAL GRADING.
9. REMOVE TEMPORARY WATER-HANDLING-COFFERDAMS AND BYPASS PIPE.
10. CONSERVATION SEEDING FOR SLOPES, PERMIT PLANTINGS. REMOVE SEDIMENTATION CONTROL SYSTEMS UPON FINAL STABILIZATION.

SUGGESTED CONSTRUCTION SEQUENCE - PIPE RELINING

1. RELOCATE OVERHEAD UTILITIES TEMPORARILY.
2. INSTALL SEDIMENTATION CONTROL SYSTEM.
3. PERFORM CLEARING AND GRUBBING AND CONTROL AND REMOVAL OF INVASIVE VEGETATION.
4. CONSTRUCT TEMPORARY ACCESS ROAD FROM CANDEE ROAD TO CULVERT INLET.
5. INSTALL TEMPORARY WATER HANDLING SYSTEM INCLUDING WATER-HANDLING-COFFERDAMS AND TEMPORARY BYPASS PIPE.
6. DIVERT WATER THROUGH THE TEMPORARY BYPASS PIPE TO DRY THE HOST STRUCTURE.
7. REMOVE SEDIMENT AND REGRADE AREA AT HOST STRUCTURE INLET.
8. CLEAN HOST STRUCTURE BY HAND THROUGH REMOVAL OF DEBRIS. THE CULVERT CLEANING AND THE GROUTING PROCESS SHALL NOT CAUSE TURBIDITY OF THE EXISTING WATER COURSE.
9. GROUT ALL VOIDS AND PERFORATIONS TO ENSURE FULL BEARING OF MATERIAL TO THE EXTRADOS OF THE EXISTING PIPE ARCH.
10. PLACE TEMPORARY EARTH RETAINING SYSTEM. REMOVE END SECTION OF EXISTING STRUCTURE AT THE INLET. REPLACE END SECTIONS OF 30" RCP AND 18" RCP AT INLET WINGWALL.
11. INSTALL TUNNEL LINER PLATE SECTIONS WITHIN THE HOST STRUCTURE. THE CONTRACTOR SHALL TAKE THE NECESSARY MEANS TO ENSURE THAT DEBRIS DOES NOT ENTER THE CULVERT SYSTEM DURING INSTALLATION OF THE CORRUGATED STEEL STRUCTURAL PLATE LINER.
12. INSTALL PCC00462 BULKHEADS AT THE INLET AND OUTLET.
13. PLACE SLIP-LINING GROUT.
14. EXCAVATE AND CONSTRUCT WINGWALLS, HEADWALL, AND ENDWALL ON NO. 6 CRUSHED STONE. REMOVE ABANDONED WATER MAINS IF ENCOUNTERED. CUT LEFT IN PLACE EARTH RETAINING SYSTEM AT 2 FEET BELOW GRADE. BACKFILL AND REMOVE REMAINING TEMPORARY EARTH RETAINING SYSTEM.
15. PLACE NATURAL STREAMBED MATERIAL AND PERFORM FINAL GRADING. LARGE STONES AND BOULDERS WITHIN THE WATERCOURSE IMMEDIATELY DOWNSTREAM OF BRIDGE 06772 THAT ARE REMOVED DURING EXCAVATION ACTIVITIES SHALL BE TEMPORARILY STOCKPILED AND RESET IN THE ORIGINAL LOCATIONS DURING FINAL GRADING. THIS WORK TO BE PAID FOR UNDER EXCAVATION AND REUSE OF EXISTING CHANNEL BOTTOM MATERIAL.
16. REMOVE TEMPORARY WATER-HANDLING-COFFERDAMS AND BYPASS PIPE AT BOTH INLET AND OUTLET. RETURN FLOW TO HOST STRUCTURE.
17. REMOVE TEMPORARY ACCESS ROAD AND RESTORE IMPACTED AREAS.
18. CONSERVATION SEEDING FOR SLOPES, PERMIT PLANTINGS. REMOVE SEDIMENTATION CONTROL SYSTEMS UPON FINAL STABILIZATION.
19. RELOCATE OVERHEAD UTILITIES TO FINAL POSITIONING.

WATER HANDLING NOTES:

1. THE CONTRACTOR SHALL MAINTAIN WATER THROUGH THE TEMPORARY GRAVITY FLOW BYPASS PIPE (OR PUMP AND HOSE SYSTEM DESIGNED BY THE CONTRACTOR) AS SHOWN ON THIS SHEET DURING CLEANING AND REPAIR OF THE HOST STRUCTURE, GROUTING OF THE ANNULAR SPACE BETWEEN THE HOST STRUCTURE AND THE LINER AND DURINGESTABLISHMENT OF FINAL GRADES AS REQUIRED BY THE STAGE CONSTRUCTION SEQUENCES.
2. A DEWATERING BASIN SHALL BE ESTABLISHED OUTSIDE OF THE WETLAND LIMITS. THE LOCATION OF THE DEWATERING BASIN IS APPROXIMATE. THE EXACT POSITION MAY VARY BASED ON THE PUMPING DESIGN SUBMISSION AND APPROVED BY THE ENGINEER.
3. TEMPORARY WATER-HANDLING-COFFERDAM SHALL CONSIST OF AN APPROVED SYSTEM THAT THE CONTRACTOR ELECTS TO USE WHICH WILL SAFELY CONVEY WATER FLOWS THROUGH THE CONSTRUCTION AREA, SHALL BE ABLE TO SUPPORT CONSTRUCTION ACTIVITY AND SHALL CONFORM TO PERMITS.

   ANY WATER HANDLING SCHEME DEPICTED WITHIN THE DEPARTMENT'S 'HANDLING WATER TYPICAL SCHEMATICS' MAY BE UTILIZED UNLESS SPECIFICALLY PROHIBITED. A MEANS AND METHOD FOR WATER HANDLING SYSTEM SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR APPROVAL.
4. WATER HANDLING MEASURES SHALL NOT EXCEED IMPACT AREAS SHOWN ON THE WETLAND SHEET OF THE PERMIT PLANS.
5. ANY STORM DRAINAGE DISCHARGING INTO A CONFINED WORK AREA FROM EXISTING OR PROPOSED STORM DRAINAGE PIPES SHALL BE DIVERTED OR PUMPED OUTSIDE THE CONFINED AREAS. PUMPS/PIPES SHALL BE SIZED BY THE CONTRACTOR TO HANDLE THE EXPECTED FLOWS AND BE DISCHARGED TO A STABLE LOCATION. THE CONTRACTOR SHALL SUBMIT THE MEANS AND METHODS OF HANDLING STORM DRAINAGE TO THE ENGINEER FOR APPROVAL AND IS INCLUDED AS PART OF WATER HANDLING.
6. IF A SHORT DURATION PUMP SYSTEM IS PROPOSED DURING LOW FLOW CONDITIONS, THE PUMP SYSTEM SHALL BE DESIGNED BY THE CONTRACTOR AND HAVE A MINIMUM CAPACITY AS SHOWN IN THE TEMPORARY HYDRAULIC TABLE. PUMP SYSTEM PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

   BASED UPON FIELD CONDITIONS, WORK DURATION, AND EXPECTED WEATHER CONDITIONS, THE ENGINEER MAY APPROVE A WATER HANDLING PLAN WITH LOWER PUMPING FLOWS, PROVIDED THAT THIS INCLUDES A CONTINGENCY PLAN, WHICH MINIMIZES NEGATIVE IMPACTS AND SAFELY CONVEYS LARGER FLOWS THROUGH THE WORK AREA.

UNCONFINED IN-STREAM WORK BMP NOTE:

ANY UNCONFINED IN-STREAM WORK WITHIN THE WATERCOURSE SHALL BE RESTRICTED TO THE PERIOD FROM JUNE 1 TO SEPTEMBER 30, INCLUSIVE. UNLESS OTHERWISE INCLUDED AS A SPECIAL PROVISION OF THE LICENSE, THE CONDITION SHALL APPLY TO PROJECTS IN NON-COASTAL WATERS.

THE DEPARTMENT WILL REVIEW AND MAY APPROVE THE METHODS OF UNCONFINED IN-WATER WORK WITH CONSIDERATION OF THE FOLLOWING:

- PROPOSED SCHEDULE FOR WORK OPERATIONS
- ALL UNCONFINED IN-WATER WORK SHALL BE MINOR IN NATURE
- DISTURBANCE SHALL BE LIMITED TO AREAS THAT HAVE BEEN APPROVED FOR TEMPORARY AND PERMANENT IMPACT
- BEST MANAGEMENT PRACTICE SHALL BE UTILIZED WHEREVER POSSIBLE TO MINIMIZE TURBIDITY/SEDIMENT TRANSPORT DOWNSTREAM
- DISTURBED AREAS AND THE DURATION OF DISTURBANCE SHALL BE MINIMIZED TO THE EXTENT POSSIBLE
- INSTREAM WORK SHALL BE DONE DURING PERIODS OF LOW FLOW

ENVIRONMENTAL PERMIT PLANS

PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: JJS CHECKED BY:

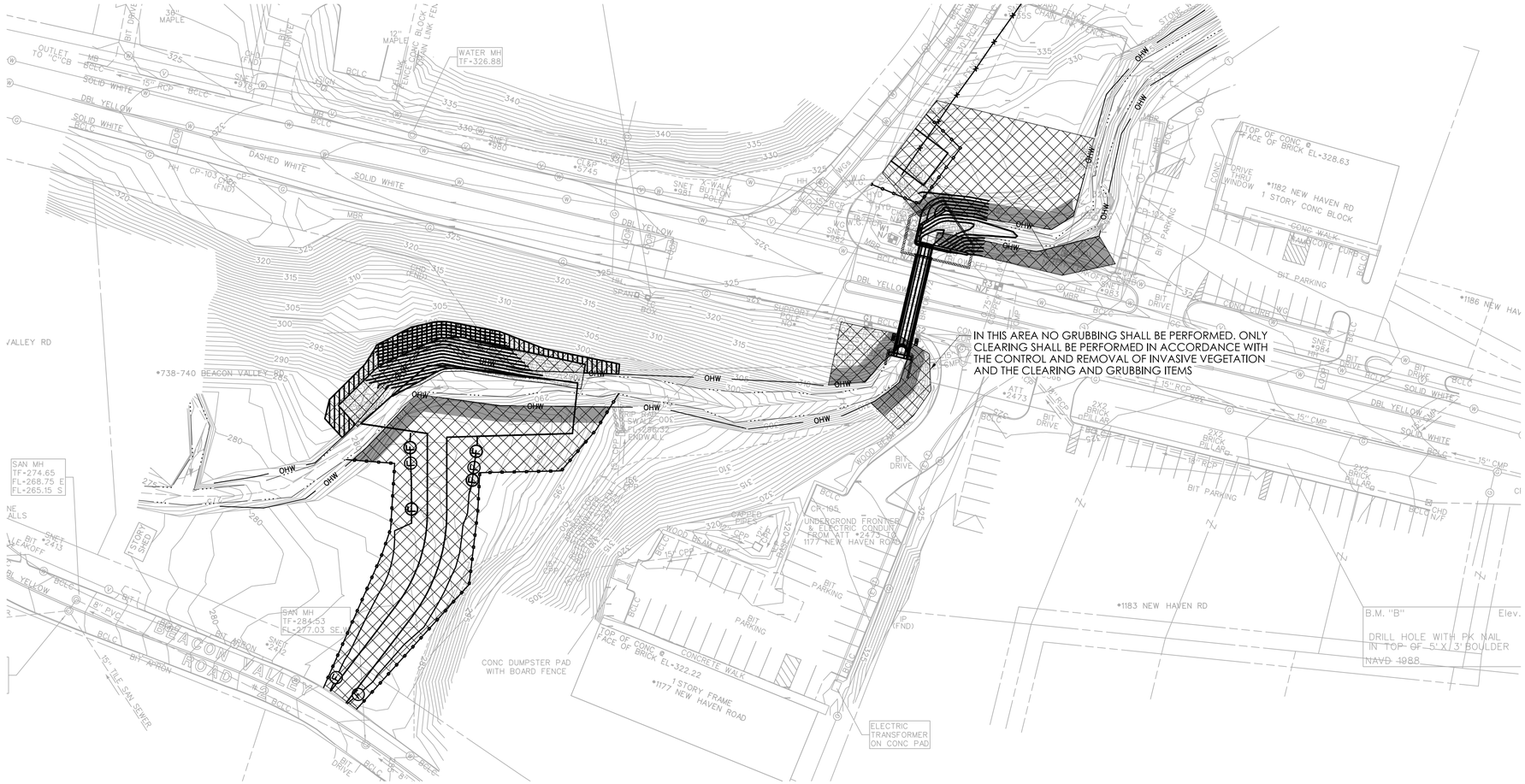
SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: STAGING AND WATER HANDLING

DRAWING NO. PMT-06
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-6_StagingWaterHandling.dgn
PLOTTED DATE: 5/9/2024



CONTROL AND REMOVAL OF INVASIVE VEGETATION
SEE NOTE 7

SLOPE STABILIZATION PLANTINGS

TOTAL PLANTS = 56
TOTAL PLANTING AREA = 1800 S.F.

AREA TO BE RESTORED WITH PLANTINGS

TOTAL PLANTS = 238
TOTAL PLANTING AREA = 5060 S.F.

PERMIT PLANTING PLAN

SCALE: 1" = 40'

NOTES

1. PLANTINGS ON THIS SHEET ARE FOR ENVIRONMENTAL PERMITTING. ANY SUBSTITUTIONS TO THE PERMIT PLANTINGS SHALL BE COORDINATED WITH THE DEPARTMENT'S OFFICE OF ENVIRONMENTAL PLANNING (OEP).

2. PROPOSED PLANTINGS TO BE FIELD LOCATED BY CTDOT OEP OR THEIR DESIGNATED REPRESENTATIVE.

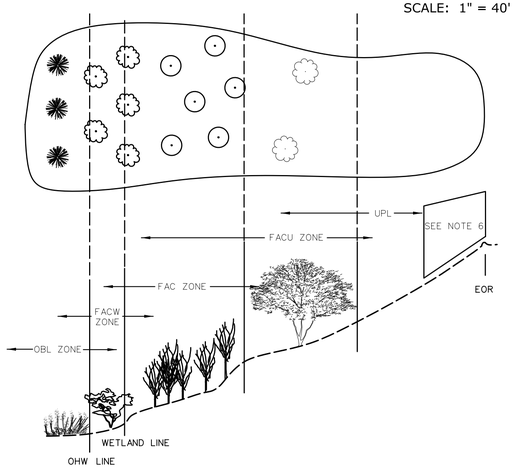
3. WOOD CHIP MULCH SHALL NOT BE PLACED IN THE WETLAND AREA.

4. DISTURBED AREAS BELOW THE WETLAND LIMIT SHALL BE SEEDED WITH WETLAND GRASS ESTABLISHMENT. DISTURBED AREAS ABOVE THE WETLAND LIMIT SHALL BE SEEDED WITH CONSERVATION SEEDING FOR SLOPES, OR OTHER SEED MIX AS SPECIFIED. ALL AREAS SHALL BE RESTORED.

5. ALL PLANT MATERIAL SHALL BE NURSERY GRADE STRAIGHT SPECIES, CONFORMING TO SECTION 3 OF THE AMERICAN STANDARDS FOR NURSERY STOCK. CTDOT OEP WILL REVIEW AND APPROVE PROPOSED PLANTINGS.

6. NO PLANTINGS SHALL BE PLACED IN MOW AREA.

7. AREA TO BE TREATED FOR INVASIVES AND PROPERLY PREPARED FOR FINAL PLANTING, SEEDING, AND RESTORATION.



SCHEMATIC PLANTING

LANDSCAPE ITEMS

KEY	BOTANICAL NAME	COMMON NAME	SIZE	QTY.	SPACING	WETLAND INDICATOR
A.a.	Aronia arbutifolia	Red Chokeberry	18" - 24" HT. B.B.	9	5' On Center	FACW
C.r.	Cornus racemosa	Gray Dogwood	2' - 3' HT. B.B.	14	5' On Center	FAC
H.v.	Hamamelis virginiana	Witch Hazel	2' - 3' HT. B.B.	11	5' On Center	FACU
Vi.a.	Viburnum acerifolia	Mapleleaf Viburnum	2' - 3' HT. B.B.	12	5' On Center	UPL
V.d.	Viburnum dentatum	Arrowwood Viburnum	24" - 36" HT. NO. 3 Container	10	5' On Center	FAC

NOTE: FOR INFORMATION ONLY. CONTRACTOR SHALL REFER TO THE CONTRACT PLANS FOR BIDDING PURPOSES.
NOTE: LANDSCAPE ITEMS FOR SLOPE STABILIZATION PLANTINGS TO BE FIELD LOCATED BY DOT LANDSCAPE DESIGN

PERMIT PLANT LIST

BOTANICAL NAME	COMMON NAME AND SIZE	QTY.	SPACING	WETLAND INDICATOR
ACER RUBRUM	RED MAPLE 2"-2½" CAL. BB	8	FIELD LOCATE	FAC
ACER RUBRUM	RED MAPLE 3'-4' HT 1 GAL. CONT.	20	FIELD LOCATE	FAC
ACER RUBRUM	RED MAPLE 6'-8' HT 3 GAL. CONT.	20	FIELD LOCATE	FAC
LINDERA BENZOIN	COMMON SPICEBUSH 2'-3' HT BB	50	5'	FACW
CLETHRA ALNIFOLIA	SWEET PEPPERBUSH 3'-4' HT BB	50	5'	FAC
CORNUS RACEMOSA	GRAY DOGWOOD 3'-4' HT BB	50	5'	FAC
ALNUS INCANA	SPECKLED ALDER 4'-5' HT BB	40	5'	FACW
ASCLEPIAS TUBEROSA	BUTTERFLY MILKWEED 1 GALLON CONTAINER	40	1'-6" ON CENTER	NI
CONSERVATION SEEDING				
CONTROL AND REMOVAL OF INVASIVE VEGETATION		25970 SF	SEE HATCHING AND NOTE 7	

NOTE: ACER RUBRUM 3'-4' HT 1 GAL. CONT. AND ACER RUBRUM 6'-8' HT 3 GAL. CONT. TO BE PAID FOR UNDER ITEM #0949875A - WETLAND PLANTINGS

ENVIRONMENTAL PERMIT PLANS
PLAN DATE: May 9, 2024

REV.	DATE	REVISION DESCRIPTION

DESIGNER/DRAFTER: CHECKED BY:

SIGNATURE/ BLOCK:

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT NUMBER: 0087-0148
PROJECT DESCRIPTION: REHABILITATION OF BRIDGE NO. 06772 CARRYING ROUTE 63 OVER STRAITSVILLE BROOK
TOWN(S): NAUGATUCK
DRAWING TITLE: PERMIT PLANTING PLAN

DRAWING NO. PMT-07
SHEET NO.

LASTED SAVED BY: SoltysJ **FILE NAME:** C:\Users\soltysj\State of Connecticut\0087-0148 - Design\Bridge\Contract_Plans\Permit Plans\Permit_PMT-7_PermitPlantingPlan.dgn
PLOTTED DATE: 5/9/2024

USACE ENG FORM 4354, Pre-Construction Notification
Attachment C: Site Photos

Applicant: Connecticut Department of Transportation
Project: State Project No. 0087-0148
Rehabilitation of Bridge No 06772
Naugatuck, Connecticut

Site Photographs

North Elevation - Inlet



South Elevation – Outlet



Inlet – Looking Upstream



Outlet – Looking Downstream



Interior Looking North - Upstream



Interior Typical Holes in Invert



Streambank Erosion (300 feet downstream of culvert)
Looking West



Streambank Erosion (300 feet downstream of culvert)
Looking East



Streambank Erosion (300 feet downstream of culvert)
Looking North



Streambank Erosion (300 feet downstream of culvert)
Looking southwest



USACE ENG FORM 4354, Pre-Construction Notification
Attachment D: Environmental Report, NRCS Soil Map, and Wetland Delineation Datasheets

Applicant: Connecticut Department of Transportation
Project: State Project No. 0087-0148
Rehabilitation of Bridge No 06772
Naugatuck, Connecticut

Environmental Report

NRCS Soil Map

Wetland Determination Data Forms

Wetland Report

State Project 0087-0148
Rehabilitation of Bridge No. 06772 carrying
Route 63 over Straitsville Brook
Naugatuck, Connecticut

Introduction:
Prepared for the Connecticut Department of Transportation, May 31, 2024

- The project is located at Bridge No. 06772, Route 63 over Straitsville Brook in Naugatuck, CT.
- The purpose of this project is to rehabilitate Bridge No. 06772 due to the structure being rated as structurally inadequate due to loss of asphaltic coating and high presence of rust and holes and perforations along the invert. The proposed activities include lining the existing structure with an 8' span by 5'6" steel plate pipe-arch, replacement of the existing headwall and wingwalls at the inlet, and replacement of the endwall at the outlet. The project also includes slope stabilization of an eroded embankment 300 feet downstream of Bridge No. 06772 with the installation of a 140 foot long riprap revetment.

Delineation Methodology: Inland wetlands were delineated by identifying soil types defined by Connecticut General Statute Section 22a-38(2). Watercourses were identified as defined in Connecticut General Statute Section 22a-38(16). Federal wetlands were delineated in accordance with the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (version 2.0).



Figure 1: Inlet of Bridge No 06772 Looking Upstream

Delineation Results: Field investigation has determined there are no inland wetlands present within the proposed project area. Therefore, no inland wetlands will be impacted by the proposed project. All regulated impacts associated with the proposed project are associated watercourse impacts below the Ordinary High Water (OHW) elevation.

Upland Area:
* *Denotes an invasive species*

The upland area downstream of the culvert contains steep and rocky slopes. There are no species present in the tree stratum. In the sapling stratum, Multiflora Rose (*Rosa multiflora*)*, Silky Dogwood (*Cornus amomum*), and Sugar Maple (*Acer saccharum*) are the dominant species. In the herb stratum, Japanese Knotweed (*Reynoutria japonica*)* is dominant, and Jewelweed (*Impatiens capensis*) is also present. The woody vine stratum is dominated by Fox Grape (*Vitis labrusca*).

The upland area upstream of the culvert has a dominant tree stratum containing Sugar Maple

(*Acer saccharum*) and Black Locust (*Robinia pseudoacacia*)*. Black Cherry (*Prunus serotina*) is also present. The sapling stratum is dominated by Sugar Maple (*Acer saccharum*) and Japanese Barberry (*Berberis thunbergia*) *. American Elm (*Ulmus americana)* and Tree of Heaven (*Ailanthus altissima*)* are also present. The herb stratum is dominated by Japanese Knotweed (*Reynoutria japonica*)*, Garlic Mustard (*Alliaria petiolate*)*, and Common Wormwood *(Artemisia vulgaris*)*. Jewelweed (*Impatiens capensis*) is also present. The woody vine stratum is dominated by Virginia Creeper (*Parthenocissus quinquefolia*), Oriental Bittersweet (*Celastrus orbiculatus*)*, and Fox Gape (*Vitis labrusca*).

The upland area adjacent to the eroded embankment has a slope around 15 percent. This location has a tree stratum that is dominated by Red Maple (*Acer rubrum*), Sugar Maple (*Acer saccharum*), Northern Red Oak (*Quercus rubra*), Yellow Birch (*Betula alleghaniensis*), and Pignut Hickory (*Carya glabra*). American Elm (*Ulmus americana*) is also present. The sapling stratum is dominated by Japanese Barberry (*Berberis thunbergia*)*. Northern Spicebush (*Lindera benzoin*), White Oak (*Quercus alba*), Winged Euonymus (*Euonymus alatus*)*, White Ash (*Fraxinus americana*), and Multiflora Rose (*Rosa multiflora*)* are also present. The herb stratum is dominated by White Wood Aster (*Eurybia divaricate*) with Wrinkleleaf Goldenrod (*Solidago rugosa*) is also present. There are no species present in the woody vine stratum in this area.



Figure 2: Looking downstream of Straitsville Brook from culvert outlet.

<u>Watercourse Description:</u>
Straitsville Brook is a perennial stream that is approximately 0.8 miles long and generally flows north to south. Straitsville Brook is rated Class A for water quality according to the CT DEEP 2018 Water Quality Classification Map. The approximate bankfull width is 10.2 feet. The watercourse is not within a FEMA Flood Hazard Zone.

The watercourse flows through Bridge No. 06772 and meets Beacon Hill Brook approximately 640 feet downstream then drains into the Naugatuck River. The existing stream channel is mainly comprised of boulders and cobbles with some sands and gravels with steep slopes. Upstream and downstream of the crossing, the watercourse consists of a high gradient, boulder and cobble dominated riffle. Straitsville Brook has a drainage area of approximately 0.69 square miles.

The streambank approximately 300 feet downstream of Bridge No. 06772 exhibits erosion and vegetation loss. This eroded embankment supports Route 63.

<u>Existing Conditions:</u> The project is located in sub-regional drainage basin Beacon Hill Brook #6918. The project affects Straitsville Brook, which generally flows north to south. The project is not within a FEMA Flood Hazard Zone or DEEP NBBD area (CT DEEP June 2022 data).

Soils at the eastern portion of the project area include Udorthents-Urban Land Complex with steep slopes, and soils in the western area of the project are classified as Hinckley Gravelly Sandy Loam with steep slopes. An evaluation done by CTDOT Office of Environmental

Planning indicated that extensive soil disturbances and reconfiguration of the landscape have taken place within the project area over time. Some disturbances include clearing, filling, grading, and development of abutting properties. More information on soils at this location can be found in the attached NRCS Web Soil Survey Report.

Bridge No. 06772 carries Straitsville Brook. The existing structure is a corrugated steel arch pipe culvert (ACCMP) that has an overall length of 75 feet with a span of 114" and a rise of 77". Upstream and downstream of the crossing, the watercourse consists of a high gradient, boulder and cobble dominated riffle. Comments from DEEP Fisheries concluded that the current structure is a barrier for upstream fish passage due to the shallow water conditions in the culvert and the 4-foot drop at the outlet. Additionally, DEEP Fisheries has determined that fish passage is not warranted at this site due to lack of available habitat upstream.

Approximately 300' downstream of Bridge No. 06772 there is an embankment supporting Route 63. This embankment is heavily eroded and exhibits vegetation loss including the collapse of several large trees.

The project area is located approximately two miles southeast of downtown Naugatuck and approximately 2 miles east of Route 8 Exit 26. The land surrounding the project location is mostly used for business and commercial purposes. The area to the north is residential property, the area to the northeast is commercial property, and the area to the southeast is currently a shopping plaza. New Haven Rd or CT-63 over Bridge No. 06772 is used for travel to these areas.



Figure 3: Eroded embankment approximately 300 feet downstream of Bridge No. 06772

<u>Functions and Values</u>

There are no inland wetlands present within the proposed project area. Therefore, no inland wetlands will be impacted by the proposed project. All regulated impacts associated with the project are watercourse impacts below OHW.

The principal functions of the watercourse impacted by the project include: Fish and Shellfish Habitat and Floodflow Alteration. Additional functions the watercourse is suitable for include: Sediment/Toxicant Retention and Sediment/shoreline stabilization.

There were no values found for this watercourse.

Fish and shellfish habitat is a principal function of the watercourse due to the presence of spawning areas that support wild Brook Trout and wild Brown Trout as sampled by CT DEEP. This function may be temporarily impacted by the use of water-handling cofferdams to perform work in the dry, relining of Bridge 06772, removal of 16 foot 3 inch portion of existing culvert inlet, replacement of inlet headwall and wingwalls at the inlet, the replacement of the outlet endwall, construction of temporary crane-mat platform, installation of riprap revetment, channel regrading and the placement

of natural streambed material. However, impacts will be minimized by the use of best management practices. Removal of a portion of the existing culvert at the inlet will result in an additional 8 feet of natural stream channel upstream of the culvert. Additionally, a field meeting with DEEP LWRD determined fish passage barriers further upstream make the project area unsuitable for fish habitat. No adverse impacts to fish and shellfish habitat are anticipated.

Floodflow alteration is a principal function of the watercourse due to the channel flow and flat land cover downstream. This function may be temporarily impacted by the use of water-handling cofferdams to perform work in the dry, temporary water handling, construction of temporary access roads, construction of temporary access platform, construction of riprap revetment, channel regrading, and placement of natural streambed material. However, impacts will be minimized by the use of best management practices and the project is not within a FEMA flood hazard zone. No adverse impacts to floodflow alteration are anticipated.

Sediment/toxicant retention and sediment/shoreline stabilization are additional functions of the watercourse due to the potential sources of excess sediment located above the channel, indications of erosion at the downstream eroded embankment, and high flow velocities. These functions may be temporarily impacted by this project; however, impacts will be minimized through the use of best management practices. Additionally, installation of the 140' riprap revetment may improve these functions by decreasing stream velocities and increasing the opportunity for sediment trapping.

Construction will be temporary, and no adverse environmental impacts are expected to the watercourse. Best management practices will be used throughout construction. Minor, unavoidable impacts will occur during construction. The functions and values will be restored upon completion of the project.

Proposed Conditions

The proposed project proposes to rehabilitate Bridge No. 06772 and bring it to a state of good repair. This will involve lining the existing structure with an 8 foot span by 5 foot 6 inch rise corrugated steel tunnel plate liner. The liner invert will be set 3" above the host pipe invert elevations, and the existing slope will remain. The existing headwall and wingwalls will be replaced at the inlet and the endwall will be replaced at the outlet. A 16 foot 3 inch portion of the existing structure will be cut back and the steel plate liner will extend 8 feet 3 inches past where the inlet of the existing structure will be partially removed. This will result in daylighting of 8 feet of watercourse at the inlet. There is an existing abandoned 10" cast iron pipe adjacent to the outlet that will be removed. There is an existing 15" corrugated metal pipe culvert adjacent to the outlet which will be cut back to the slope and fitted with a mitered pipe end fitting.

The existing 20 inch and 24 inch cast iron watermains below the upstream portion of the watercourse will be abandoned prior to the initiation of this project. If encountered during construction, they will be removed by the contractor within the limits of the watercourse and the area will be restored with natural streambed material.

A temporary access road will be constructed on the south side of Candee Rd northwest of Bridge No. 06772 to access the inlet of the structure. The existing roadway and driveway southeast of the culvert will be used to access the outlet. The earth retaining systems outside of the watercourse will be cut 2 feet below finished grade and left in place after construction. Earth retaining systems within the

watercourse upstream of the culvert will be removed in their entirety. The earth retaining system at the outlet will be left in place to prevent undermining of the existing endwall

The project also includes the installation of a 140 foot riprap revetment to stabilize the eroded embankment located approximately 300' downstream of the culvert outlet. The proposed work includes re-grading the embankment and armoring with riprap. A temporary access road will be constructed from Beacon Valley Rd to the eroded embankment. Temporary water-handling cofferdams will be installed to construct the temporary crane-mat platform supported by concrete blocks across the watercourse. The access road and temporary crane-mat will be removed upon construction completion. Natural streambed material will be washed into proposed riprap to the 2-year water surface elevation.

Temporarily impacted areas of Straitsville Brook will be restored.

Water Handling:
Water-handling during the rehabilitation of Bridge 06772 will consist of temporary water-handling-cofferdams. Flow of the watercourse will be conveyed through an 18 inch bypass pipe through the structure or by pumping around the work area. A secondary temporary water-handling system will be installed at the downstream eroded embankment using temporary water-handling-cofferdams. Flow of the watercourse will be conveyed by an 18 inch bypass pipe under a temporary crane-mat platform or by pumping around the work area.

Impacts and Mitigation
Permanent impacts are a result of:
Pipe lining the existing culvert with a 8 foot span by 5 foot 6 inch rise corrugated steel tunnel plate liner, replacement of headwall and wingwalls at the inlet, replacement of the endwall at the outlet, the earth retaining system to be left in place at culvert outlet, installation of 140 foot long riprap revetment, associated regrading of Straitsville Brook and placement of natural streambed material

Temporary impacts are associated with: Temporary water-handling to preform work in the dry.

WETLANDS AND WATERCOURSES IMPACT TABLE

	WETLAND IMPACTS	WATERCOURSE IMPACTS (BELOW O.H.W.)	TOTAL
PERMANENT IMPACTS	0	5250 S.F. (0.121 AC)	5250 S.F. (0.121 AC)
TEMPORARY IMPACTS	0	1670 S.F. (0.038 AC)	1670 S.F. (0.038 AC)
TOTAL	0	6920 S.F. (0.159 AC)	6920 S.F. (0.159 AC)

It is anticipated that the following permits will be required for this work:
- DEEP Pre-Construction Notification (PCN) - USACE General Permits for CT
- DEEP Individual Inland Wetlands and Watercourses Permit
- USACE Pre-Construction Notification (PCN) - GP19

Construction is anticipated to start Summer 2025 and last two construction seasons.

Alternatives that were considered for the culvert included:

- Replacement with a box culvert/three-sided frame. This alternative was eliminated due for various reasons including interference with underground water and raw water mains beneath the inlet that are unable to be cutoff, interference with an underground gas main above the structure, staged construction, increased environmental ROW impacts and high costs associated with the work. Additionally, a three-sided structure would require total stream reconstruction that would increase stream velocities.
- Replacement using pipe jacking. This alternative was eliminated due for various reasons including interference with underground water and raw water mains beneath the inlet that are unable to be cutoff, interference with an underground gas main above the structure, difficulties with jacking in rocky substrate, increased environmental ROW impacts and high costs associated with the work. Additionally, pipe-jacking a culvert of this size raised significant concern for damaging through direct conflict or vibration.
- Replacement culvert with skew to match natural channel alignment. This alternative was eliminated due to interference with overhead and underground utilities. Additionally, a replacement structure would require total stream reconstruction that would increase stream velocities.
- Alternatives for providing fish passage through the structure were investigated.
    - Installation of step pools: Due to the steepness of the watercourse and the drop at the culvert outlet providing passage through the culvert would have required a step pool system extending 300 feet downstream of the culvert outlet with a 6 inch depth of riprap throughout the entire channel. CT DEEP Fisheries determined that the amount of disturbance downstream would not be beneficial due to existing natural upstream barriers to fish passage and limited habitat availability upstream of the culvert.
    - Installation of an engineered concrete fishway: Providing a max 15% slope would require 150 foot engineered fishway extending downstream from the culvert outlet. CT DEEP Fisheries determined that the amount of disturbance downstream would not be beneficial due to existing natural upstream barriers to fish passage and limited habitat availability upstream of the culvert.

The proposed project alternative using pipe-ling maintains hydraulic adequacy, reduces construction duration, reduces traffic impacts, reduces environmental and ROW impacts, reduces impacts to overhead and underground utilities, and it has a reduced cost compared to the other alternatives.

Alternatives that were considered for access roads included:

- Installing an access road from Route 63 to access the eroded embankment and culvert outlet. Due to the steep slopes there were constructability concerns about placement of shoring to support the access road. Additionally, this would have required extensive clearing on the slope adjacent to Straitsville Brook and access to install the proposed revetment would be difficult.
- Installation of an access road from Beacon Valley Road to the culvert outlet. This alternative would have had an access road leading from the currently proposed access road along Straitsville Brook to the outlet of the culvert. This alternative would have resulted in significant clearing along Straitsville Brook. There were additional constructability

concerns due to an existing underground stormwater detention system located adjacent to the slope for the existing commercial property.

The proposed temporary access road orientations are proposed to minimize the required tree removal directly adjacent to Straitsville Brook. The access roads will be removed after construction is completed, and impacted areas will be restored. An antitracking pad will be installed at the entrance of access roads.

During construction, impacts will be minimized through the use of Best Management Practices (BMPs) stipulated in the Department's *Standard Specifications for Roads, Bridges, and Incidental Construction, Form 817*, Section 1.10, Environmental Compliance, Best Management Practices, and the implementation of an erosion and sediment control plan consistent with the *2002 CT Guidelines for Soil Erosion and Sediment Control.* District inspection personnel, as well as staff from the Office of Environmental Planning, will oversee construction during the construction activity. The following are site specific measures utilized to positively influence water quality:

- Invasive species will be controlled during construction through the use of the Department's Control and Removal of Invasive Vegetation specification within the project limits.
- Water-handling-cofferdams that convey flow to a 18-inch diameter temporary pipe will be used during the construction to prevent sediment and debris from entering the watercourse. This will also allow the watercourse to flow freely during construction.
- The water pumped from the temporary water-handling-cofferdam will be directed into dewatering basins.
- Sedimentation and erosion control measures will be used in accordance with the 2002 Erosion and Sedimentation Control Guidelines and the 2004 Stormwater Quality Manual.
- All disturbed areas within the project limits will be stabilized and restored with native plantings and seeding.

Mitigation for the project impacts were coordinated with CT DEEP and USACE in an Interagency Coordination Meeting and are not required. Native plantings are proposed and included in the permit plans to restore vegetative communities. Native streambed material will be used to fill excavated areas during the bridge rehabilitation and washed into the riprap at the 2-year water surface elevation during regrading of the downstream eroded embankment.

Invasive Species

Invasive species will be controlled during construction through the use of the Department's *Control and Removal of Invasive Vegetation* specification within the project limits. Invasive species that may be controlled include: Japanese Barberry (*Berberis thunbergia*), Japanese Knotweed (*Reynoutria japonica*), Oriental Bittersweet (*Celastrus orbiculatus*), Garlic Mustard (*Alliaria petiolate*), and Common Wormwood *(Artemisia vulgaris*), Black Locust (*Robinia pseudoacacia*), and Multiflora Rose (*Rosa multiflora*). Seeding and native plantings are proposed for all disturbed areas within the project limits. The proposed control methods and the subsequent native plantings should provide for native plant community establishment within the project limits.

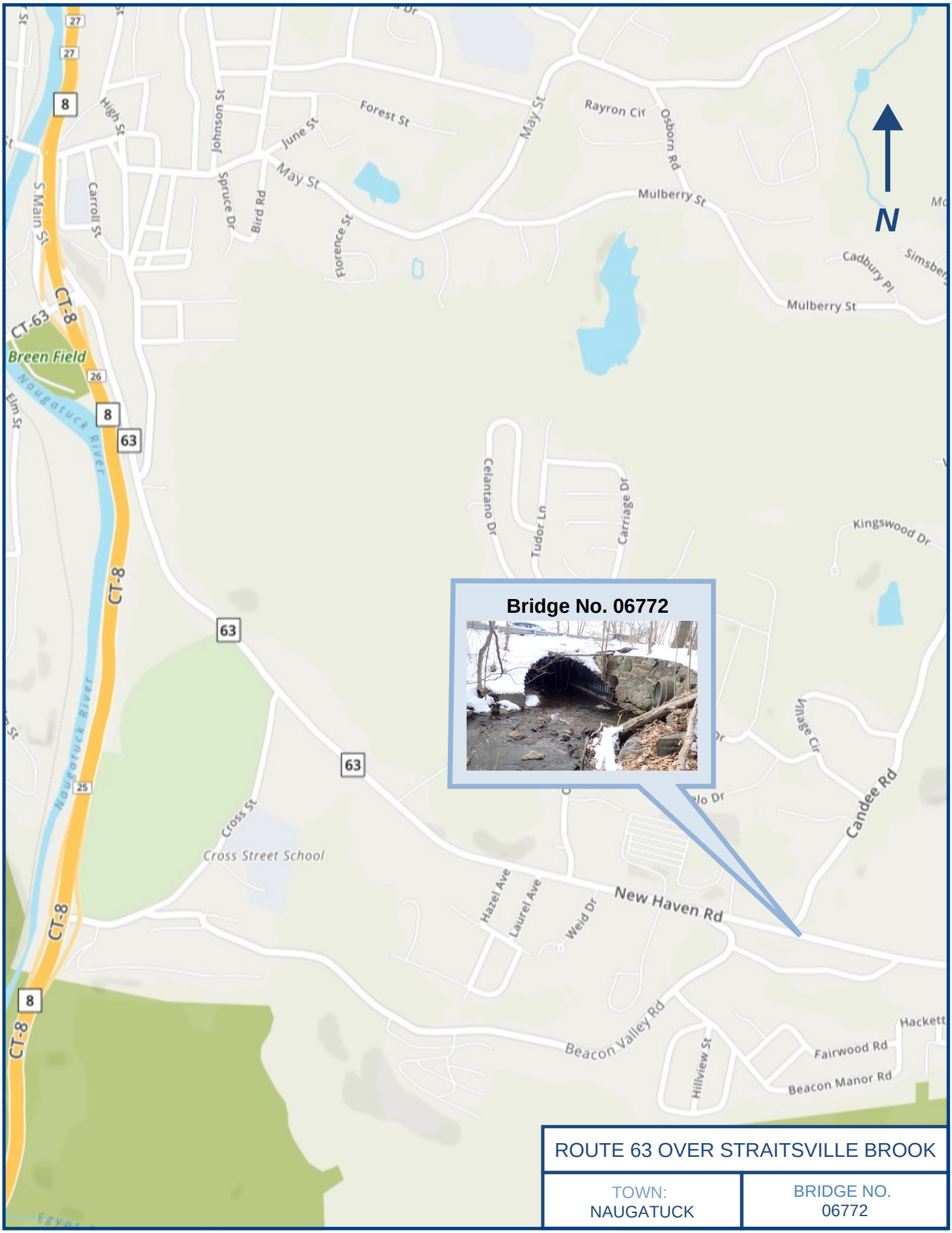
Summary

The functions and values provided by Straitsville Brook will not be significantly impacted by the

proposed activities. Impacts are limited and are mitigated through the use of BMPs, erosion and sediment controls, project oversight, and the implementation of a native planting and stabilization plan.

Prepared by: Sarah Monroe, DOT Office of Environmental Planning

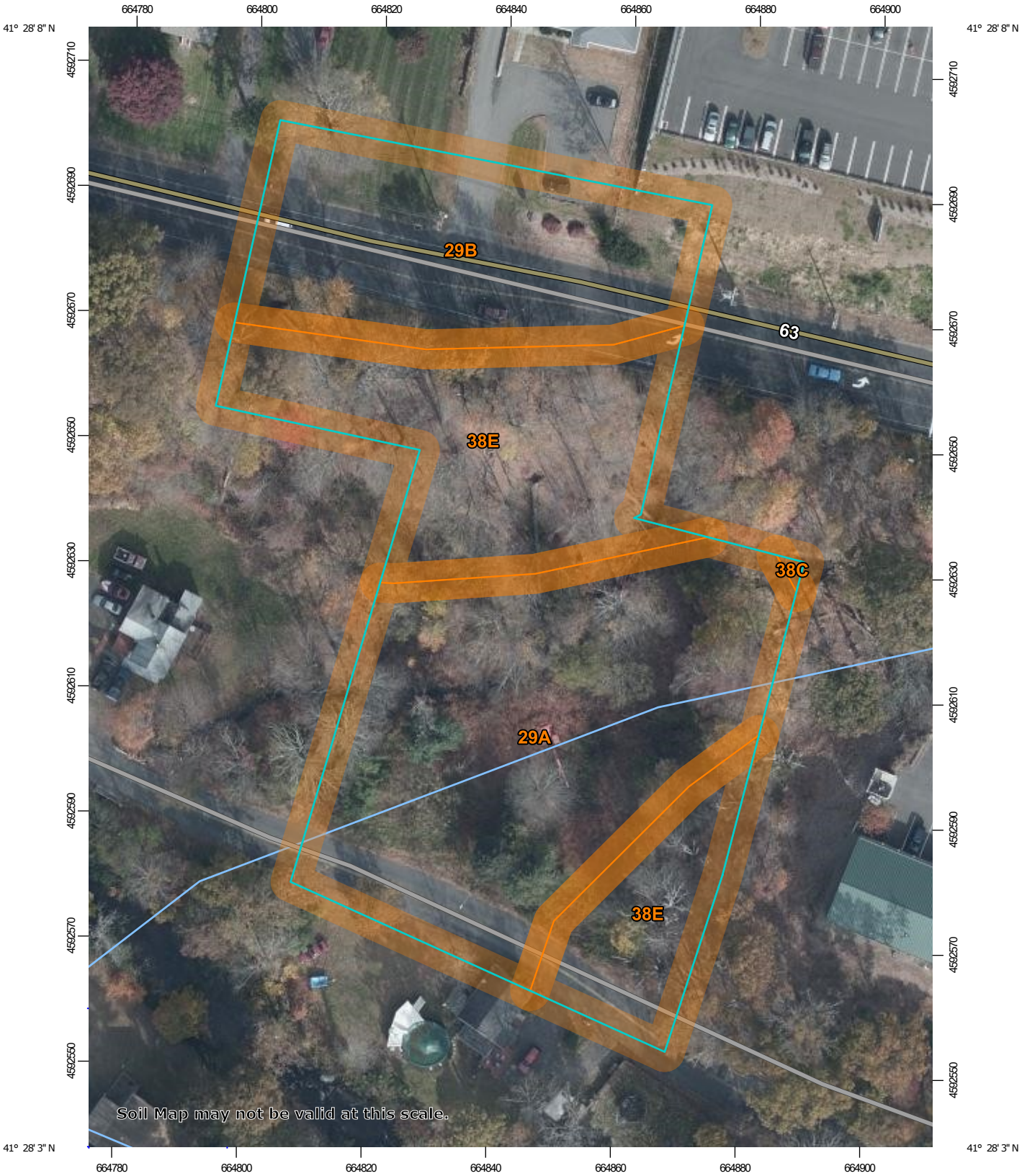
Appendix A: Location Map
Appendix B: Soils map & report from USDA Web Soil Survey
Appendix C: Aerial Photograph with Sketch of Wetland Classifications
Appendix D: USACE Data sheets & ACOE Highway Methodology Wetland Function-Value Evaluation Forms
Appendix E: Site Photographs



ROUTE 63 OVER STRAITSVILLE BROOK

TOWN:	BRIDGE NO.
NAUGATUCK	06772

Soil Map—State of Connecticut
(0087-0148 Soil Map)



Map Scale: 1:872 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 10 20 40 60

Feet
0 40 80 160 240

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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: State of Connecticut
Survey Area Data: Version 22, Sep 12, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 22, 2018—Nov 1, 2018

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
29A	Agawam fine sandy loam, 0 to 3 percent slopes	0.9	42.8%
29B	Agawam fine sandy loam, 3 to 8 percent slopes	0.5	24.5%
38C	Hinckley loamy sand, 3 to 15 percent slopes	0.0	0.1%
38E	Hinckley loamy sand, 15 to 45 percent slopes	0.7	32.6%
Totals for Area of Interest		**2.1**	**100.0%**

Map Unit Description (Brief, Generated)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, provide information on the composition of map units and properties of their components.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description (Brief, Generated)

State of Connecticut

Map Unit: 29A—Agawam fine sandy loam, 0 to 3 percent slopes

Component: Agawam (85%)

The Agawam component makes up 85 percent of the map unit. Slopes are 0 to 3 percent. This component is on outwash terraces on valleys. The parent material consists of coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from gneiss, granite, schist, and/or phyllite. Depth to a root restrictive layer, strongly contrasting textural stratification, is 15 to 35 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the F145XY008MA Dry Outwash ecological site. Nonirrigated land capability classification is 2s. This soil does not meet hydric criteria.

Component: Ninigret (5%)

Generated brief soil descriptions are created for major soil components. The Ninigret soil is a minor component.

Component: Windsor (4%)

Generated brief soil descriptions are created for major soil components. The Windsor soil is a minor component.

Component: Hinckley (3%)

Generated brief soil descriptions are created for major soil components. The Hinckley soil is a minor component.

Component: Walpole (3%)

Generated brief soil descriptions are created for major soil components. The Walpole soil is a minor component.

Map Unit: 29B—Agawam fine sandy loam, 3 to 8 percent slopes

Component: Agawam (85%)

The Agawam component makes up 85 percent of the map unit. Slopes are 3 to 8 percent. This component is on outwash terraces on valleys. The parent material consists of coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from gneiss, granite, schist, and/or phyllite. Depth to a root restrictive layer, strongly contrasting textural stratification, is 15 to 35 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the F145XY008MA Dry Outwash ecological site. Nonirrigated land capability classification is 2s. This soil does not meet hydric criteria.

Component: Sudbury (5%)

Generated brief soil descriptions are created for major soil components. The Sudbury soil is a minor component.

Component: Hinckley (5%)

Generated brief soil descriptions are created for major soil components. The Hinckley soil is a minor component.

Component: Merrimac (3%)

Generated brief soil descriptions are created for major soil components. The Merrimac soil is a minor component.

Component: Windsor (2%)

Generated brief soil descriptions are created for major soil components. The Windsor soil is a minor component.

Map Unit: 38C—Hinckley loamy sand, 3 to 15 percent slopes

Component: Hinckley (85%)

The Hinckley component makes up 85 percent of the map unit. Slopes are 3 to 15 percent. This component is on kame terraces on valleys. The parent material consists of sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 95 percent. Below this thin organic horizon the organic matter content is about 6 percent. This component is in the F144AY022MA Dry Outwash ecological site. Nonirrigated land capability classification is 4e. This soil does not meet hydric criteria.

Component: Windsor (5%)

Generated brief soil descriptions are created for major soil components. The Windsor soil is a minor component.

Component: Merrimac (5%)

Generated brief soil descriptions are created for major soil components. The Merrimac soil is a minor component.

Component: Agawam (3%)

Generated brief soil descriptions are created for major soil components. The Agawam soil is a minor component.

Component: Sudbury (2%)

Generated brief soil descriptions are created for major soil components. The Sudbury soil is a minor component.

Map Unit: 38E—Hinckley loamy sand, 15 to 45 percent slopes

Component: Hinckley (85%)

The Hinckley component makes up 85 percent of the map unit. Slopes are 15 to 45 percent. This component is on eskers on valleys. The parent material consists of sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 95 percent. Below this thin organic horizon the organic matter content is about 6 percent. This component is in the F144AY022MA Dry Outwash ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Component: Windsor (5%)

Generated brief soil descriptions are created for major soil components. The Windsor soil is a minor component.

Component: Merrimac (5%)

Generated brief soil descriptions are created for major soil components. The Merrimac soil is a minor component.

Component: Agawam (3%)

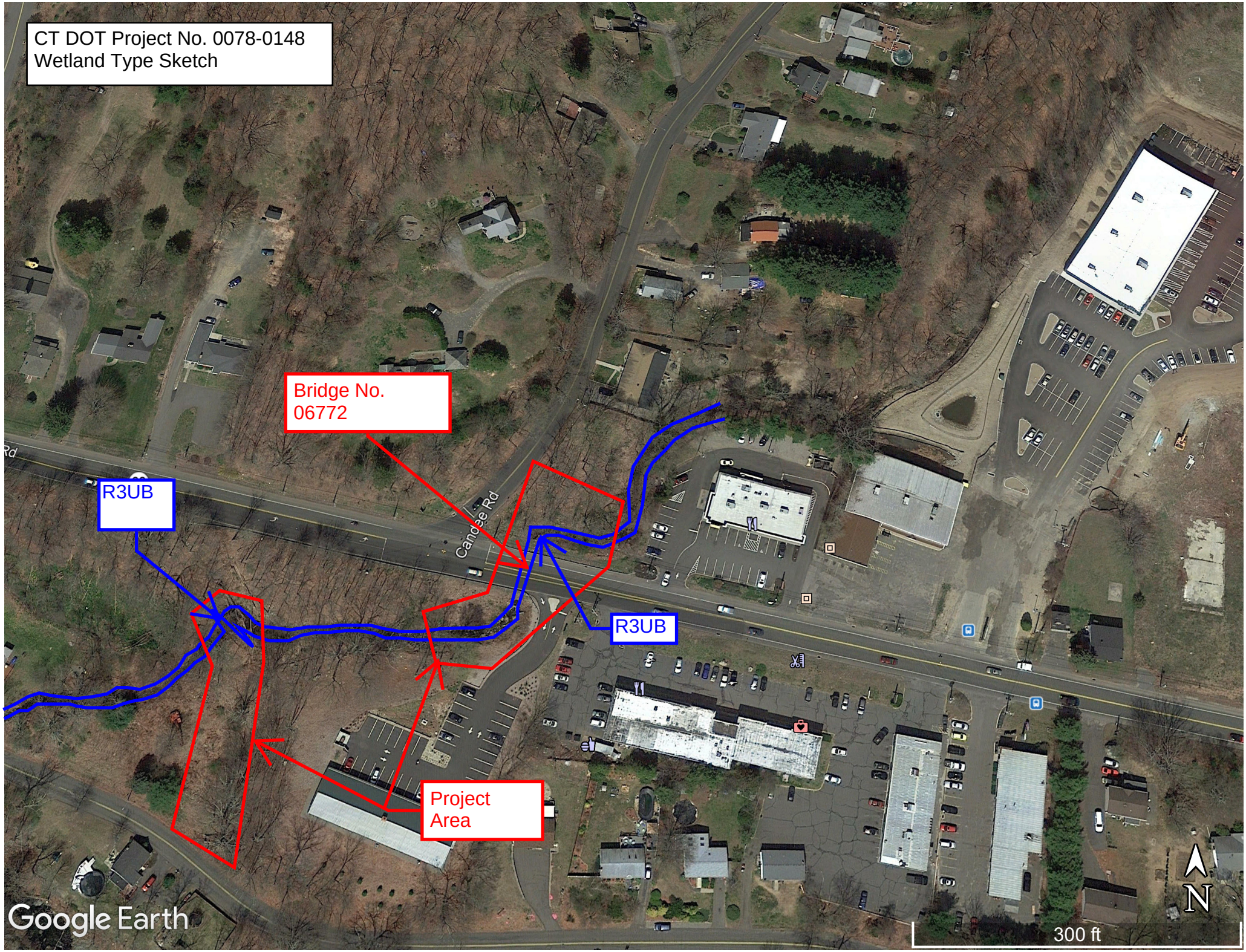
Generated brief soil descriptions are created for major soil components. The Agawam soil is a minor component.

Component: Sudbury (2%)

Generated brief soil descriptions are created for major soil components. The Sudbury soil is a minor component.

Data Source Information

Soil Survey Area: State of Connecticut
Survey Area Data: Version 22, Sep 12, 2022


CT DOT Project No. 0078-0148
Wetland Type Sketch
Bridge No.
06772
R3UB
R3UB
Project
Area
Candee Rd
Google Earth
300 ft
N

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 0087-0148 City/County: Naugatuck Sampling Date: 06-15-2022

Applicant/Owner: CTDOT State: CT Sampling Point: DS UPL

Investigator(s): MJS, MRG Section, Township, Range:

Landform (hillslope, terrace, etc.): Steep slope Local Relief (concave, convex, none):

Slope (%): 10 Lat: 41 28'05.98" N Long: 73 01'30.18" W Datum:

Soil Map Unit Name: Agawam fine sandy loam NWI Classification:

Are Climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks).

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** **Yes** ☐ **No** ☒
Hydric Soil Present Yes ☐ No ☒	If yes, optional Wetland Site ID:
Wetland Hydrology Present? Yes ☐ No ☒	

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches):

Water Table Present? Yes ☐ No ☒ Depth (inches):

Saturation Present? Yes ☐ No ☒ Depth (inches):
(includes capillary fringe)

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photographs, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: DS UPL

Tree Stratum (Plot Size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling/Shrub Stratum (Plot Size: 15')			
1. *Rosa multiflora*	20	Yes	FACU
2. *Cornus amomum*	5	Yes	FACW
3. *Acer saccharum*	5	Yes	FACU
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot Size: 5')			
1. *Reynoutria japonica*	100	Yes	FACU
2. *Impatiens capensis*	5	No	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	= Total Cover		
Woody Vine Stratum (Plot Size: 30')			
1. *Vitis labrusca*	10	Yes	FACU
2.			
3.			
4.			
	= Total Cover		

Dominance Test Worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That are OBL, FACW, or FAC: 20 (A/B)

Prevalence Test Worksheet:

	Total % Cover of		Multiply by	
OBL Species		x 1 =		
FACW species	10	x 2 =	20	
FAC species		x 3 =		
FACU species	135	x 4 =	536	
UPL species		x 5 =		
Column Totals:	145	(A)	556	(B)

Prevalence Index = B/A = 3.83

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. (7.6cm) or more in diameter at breast height (DBH), regardless of height

Sapling/shrub – Woody plants less than 3in. DBH and greater than 3.28 ft (1m) 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** ☒

Remarks: (include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DS UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/1	100					Sandy Loam	
4-10	10YR 3/3	100					Sandy Loam	
10-16	10YR4/4	100						
16-20	10YR 4/6	100						refusal at 20"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleated 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 Glayed Matrix (F2)
- ☐ Depleated Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleated Dark Surface (F7)
- ☐ Redox Depression (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 (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): 20"

Hydric Soil Present? Yes ☐ **No** ☒

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 0087-0148 City/County: Naugatuck Sampling Date: 06-15-2022

Applicant/Owner: CTDOT State: CT Sampling Point: UPS UPL

Investigator(s): MJS, MRG Section, Township, Range:

Landform (hillslope, terrace, etc.): Sloping Local Relief (concave, convex, none):

Slope (%): 12 Lat: 41 28'06.29" N Long: 73 01'28.89" W Datum:

Soil Map Unit Name: Agawam fine sandy loam NWI Classification:

Are Climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks).

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** **Yes** ☐ **No** ☒
Hydric Soil Present Yes ☐ No ☒	If yes, optional Wetland Site ID:
Wetland Hydrology Present? Yes ☐ No ☒	

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches):

Water Table Present? Yes ☐ No ☒ Depth (inches):

Saturation Present? Yes ☐ No ☒ Depth (inches):
(includes capillary fringe)

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photographs, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: UPS UPL

Tree Stratum (Plot Size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharum*	50	Yes	FACW
2. *Robinia pseudoacacia*	15	Yes	FACU
3. *Prunus serotina*	5	No	FACU
4.			
5.			
6.			
7.			
	70	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 15')			
1. *Acer saccharum*	20	Yes	FACW
2. *Berberis thunbergii*	7	Yes	FACU
3. *Ulmus americana*	5	No	FACW
4. *Ailanthus altissima*	3	No	UPL
5.			
6.			
7.			
	35	= Total Cover	
Herb Stratum (Plot Size: 5')			
1. *Reynoutria japonica*	20	Yes	FACU
2. *Alliaria petiolata*	10	Yes	FACU
3. *Artemisia vulgaris*	10	Yes	UPL
4. *Impatiens capensis*	5	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	45	= Total Cover	
Woody Vine Stratum (Plot Size: 30')			
1. *Parthenocissus quinquefolia*	5	Yes	FACU
2. *Celastrus orbiculatus*	5	Yes	FACU
3. *Vitis labrusca*	5	Yes	FACU
4.			
	15	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of Dominant Species That are OBL, FACW, or FAC: 20 (A/B)

Prevalence Test Worksheet:

	Total % Cover of		Multiply by	
OBL Species		x 1 =		
FACW species	80	x 2 =	160	
FAC species		x 3 =		
FACU species	72	x 4 =	288	
UPL species	10	x 5 =	50	
Column Totals:	162	(A)	498	(B)

Prevalence Index = B/A = 3.07

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. (7.6cm) or more in diameter at breast height (DBH), regardless of height

Sapling/shrub – Woody plants less than 3in. DBH and greater than 3.28 ft (1m) 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** ☒

Remarks: (include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UPS UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/1	100						
2-8	10YR 4/6	100						
8-16	10YR 4/4	100						refusal at 16 inches

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleated 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 Glayed Matrix (F2)
- ☐ Depleated Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleated Dark Surface (F7)
- ☐ Redox Depression (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 (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____

Depth (inches): 16"

Hydric Soil Present? Yes ☐ **No** ☒

Remarks:

-edge of roadway

-heavy roadway sand

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 0087-0148 City/County: Naugatuck Sampling Date: 11-23-2022

Applicant/Owner: CTDOT State: CT Sampling Point: UPL 3

Investigator(s): SAM, MJS, MRG, PM, ML Section, Township, Range:

Landform (hillslope, terrace, etc.): hillslope Local Relief (concave, convex, none): concave

Slope (%): 15 Lat: 41 28'05.86" N Long: 73 01'31.61" W Datum:

Soil Map Unit Name: Agawam fine sandy loam NWI Classification:

Are Climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks).

Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (if needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point location, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐ No ☒	**Is the Sampled Area within a Wetland?**	**Yes** ☐ **No** ☒
Hydric Soil Present	Yes ☐ No ☒	If yes, optional Wetland Site ID:	
Wetland Hydrology Present?	Yes ☐ No ☒		

Remarks: (Explain alternative procedures here or in a separate report)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ Marl Deposits (B15)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐ No ☒	Depth (inches):	
Water Table Present?	Yes ☐ No ☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ☐ No ☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photographs, previous inspections), if available:

Remarks:
Eroded embankment

VEGETATION – Use scientific names of plants.

Sampling Point: UPL 3

Tree Stratum (Plot Size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	20	Yes	FAC
2. *Acer saccharum*	5	Yes	FACW
3. *Quercus rubra*	5	Yes	FACU
4. *Betula alleghaniensis*	5	Yes	FAC
5. *Carya glabra*	5	Yes	FACU
6. *Ulmus americana*	2	No	FACW
7.			
	42	= Total Cover	
Sapling/Shrub Stratum (Plot Size: 15')			
1. *Berberis thunbergii*	70	Yes	FACU
2. *Lindera benzoin*	8	No	FACW
3. *Quercus alba*	5	No	FACU
4. *Euonymus alatus*	5	No	FAC
5. *Fraxinus americana*	5	No	FACU
6. *Rosa multiflora*	2	No	FACU
7.			
	95	= Total Cover	
Herb Stratum (Plot Size: 5')			
1. *Eurybia divaricata*	30	Yes	FACU
2. *Solidago rugosa*	2	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	32	= Total Cover	
Woody Vine Stratum (Plot Size: 30')			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That are OBL, FACW, or FAC: 42 (A/B)

Prevalence Test Worksheet:

	Total % Cover of		Multiply by	
OBL Species		x 1 =		
FACW species	15	x 2 =	30	
FAC species	32	x 3 =	96	
FACU species	122	x 4 =	488	
UPL species		x 5 =		
Column Totals:	169	(A)	614	(B)

Prevalence Index = B/A = 3.63

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. (7.6cm) or more in diameter at breast height (DBH), regardless of height

Sapling/shrub – Woody plants less than 3in. DBH and greater than 3.28 ft (1m) 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** ☒

Remarks: (include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UPL 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/1	100					Silt Loam	
8-16	10YR 3/3	100						refusal at 16"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleated 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 Glayed Matrix (F2)
- ☐ Depleated Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleated Dark Surface (F7)
- ☐ Redox Depression (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 (F21)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: rock

Depth (inches): 16"

Hydric Soil Present? Yes ☐ **No** ☒

Remarks:

-Hillslope failure and erosion washing into watercourse
-Sample taken at top of bank failure

Wetland Function-Value Evaluation Form

Total area of wetland_____ Human made?___No__ Is wetland part of a wildlife corridor?___No___ or a "habitat island"?___No___

Adjacent land use____Residential/Highway_____ Distance to nearest roadway or other development_____100ft_____

Dominant wetland systems present__Watercourse (R3UB)_____ Contiguous undeveloped buffer zone present_____No_____

Is the wetland a separate hydraulic system?___No_____ If not, where does the wetland lie in the drainage basin? Straitsville Brook

How many tributaries contribute to the wetland?_____Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D.__Watercourse_____

Latitude41°28'11.03"N Longitude__-73°01'35.28"W

Prepared by:_CTDOT_ Date_____

Wetland Impact:
Type_____Area_____

Evaluation based on:
Office_____ Field___X____

Corps manual wetland delineation completed? Y_X_ N___

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge		X			Not likely to significantly impact groundwater recharge or discharge
Floodflow Alteration	X		8, 9, 10, 13, 15	X	Wetland is associated with Straitsville Brook
Fish and Shellfish Habitat	X		2, 3, 7, 8, 10, 12, 17	X	DEEP Fisheries found this brook to be suitable for aquatic habitat.
Sediment/Toxicant Retention	X		1, 10		Area is likely to experience sediment erosion and wetland likely helps prevent this
Nutrient Removal		X			Not likely to significantly impact nutrient removal.
Production Export		X			Wetland not suitable for production export.
Sediment/Shoreline Stabilization		X			Uplands have experiences erosion from stream shape, wetlands likely help stabilization
Wildlife Habitat		X			Not suitable habitat for many wildlife species.
Recreation		X			Area not suitable for recreational activities.
Educational/Scientific Value		X			Area not suitable for educational or scientific purposes
Uniqueness/Heritage		X			Area not associated with unique or cultural areas
Visual Quality/Aesthetics		X			Area not suitable for visual quality or aesthetic purposes due to its location
ES Endangered Species Habitat		X			Area does not contain endangered species
Other					

Notes:

* Refer to backup list of numbered considerations.

North Elevation - Inlet



South Elevation – Outlet



Inlet – Looking Upstream



Outlet – Looking Downstream



Interior Looking North - Upstream



Interior Typical Holes in Invert



Streambank Erosion (300 feet downstream of culvert)
Looking West



Streambank Erosion (300 feet downstream of culvert)
Looking East



Streambank Erosion (300 feet downstream of culvert)
Looking North



Streambank Erosion (300 feet downstream of culvert)
Looking southwest



USACE ENG FORM 4354, Pre-Construction Notification
Attachment E: State Historic Preservation Office (SHPO) Exemption

Applicant: Connecticut Department of Transportation
Project: State Project No. 0087-0148
Rehabilitation of Bridge No 06772
Naugatuck, Connecticut

State Historic Preservation Office (SHPO)

STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546

Determination of Exemption as a Minor Transportation Project

Author:	Lucas A. Karmazinas	**Date:** June 13, 2024
Project:	State No.:	87-148
	F.A.P. No.:	TBD
	Project Title:	Rehabilitation of Bridge #06772 New Haven Road (Rt. 63) over Straitsville Brook
	Town:	Naugatuck
Category of Exemption:	**Appendix B – Bridge/Culvert Related Project**	

Project Description

Using federal and state funds, the Connecticut Department of Transportation (CTDOT) proposes to rehabilitate Bridge #06772, which carries New Haven Road (Rt. 63) over Straitsville Brook in Naugatuck (Images 1-9). The bridge was built in 1966 and consists of 75'-long by 10'-wide by 6'-tall, single-barrel, asphalt-coated corrugated steel arch pipe culvert (ACCMP). The statewide bridge database maintained by CTDOT identifies the bridge as being Not Eligible for listing on the National Register of Historic Places (NRHP) and Qualified Staff at CTDOT's Office of Environmental Planning (OEP) concurs with this assessment.

This project was previously reviewed by OEP Qualified Staff in March 2022, however, since that time, additional work to address an eroded section of the embankment supporting the south side of New Haven Road has been introduced, this also requiring a proposed new access road (please see "*Revised*" sections below). Minor adjustments to the easement areas have also been made, these fine-tuned as the design has progressed.

As a portion of the project funding is provided by the Federal Highway Administration (FHWA), the undertaking falls under the purview of Section 106 of the National Historic Preservation Act and will be reviewed under the provisions of the Programmatic Agreement executed between CTDOT, FHWA, the Connecticut State Historic Preservation Officer (CT SHPO), and the Advisory Council on Historic Preservation regarding compliance with Section 106 of the National Historic

Preservation Act (NHPA) for Minor Transportation Projects.[1]

Technical Review of Project

Bridge #06772 is a 75'-long by 10'-wide by 6'-tall, single-barrel, asphalt-coated corrugated steel arch pipe culvert (ACCMP) that carries New Haven Road (Route 63) over Straitsville Brook in Naugatuck. The bridge was built as part of a roadway reconstruction project in 1966 and it replaced a 12'-span reinforced concrete bridge of unknown vintage (Images 1-9, 16). The existing structure is located below at least 2' of overburden and lacks formal endwalls or wingwalls. Large riprap protects the brook channel at the inlet and outlet and a mortared stone masonry retaining wall holds back the slope to the northwest of the structure at the inlet. At the outlet, a reinforced concrete cutoff wall supports the lower half of the culvert while large riprap armoring protects the flanking slopes. Numerous drainage pipes discharge into the brook at both the culvert's inlet and outlet, and multiple subterranean utilities run through the project area. Notable among the latter are a 24"-diameter water main, 20"-diameter water main, and 10"-diameter raw water main located north of New Haven Road, and a 4"-diameter gas main located to the south of the roadway (Image 17). Bridge #06772 carries two lanes of traffic, one in each direction, and this section of New Haven Road is an Urban Principal Arterial route with an average daily traffic count of 14,300 as of 2022. Bridge #06772 is categorized as Not Eligible for listing in the NRHP in the statewide bridge inventory database maintained by CTDOT and OEP cultural resources staff concur with this categorization.

Recent inspections show that Bridge #06772 is structurally inadequate, this due to the steel culvert being in "poor" (rating 4) condition. There is a 12" by 8" by 3" dent along the top of the pipe arch, many holes along the invert, complete loss of the asphalt coating with moderate to heavy rust and perforations, and large quantities of sand, gravel, and stones within the structure. The stone masonry retaining wall and reinforced concrete cutoff wall, on the other hand, are both in "fair" condition, while the structure has a "satisfactory" scour rating (6). The retaining wall has cracks in the masonry with stones misaligned up to 1", a missing capstone at the northeast end, and voids along the base. The outlet cutoff wall is exposed full height and there are two voids at the base. Finally, there is a scour hole present at the inlet and a channel drop-off at the outlet.

The proposed project seeks to rehabilitate the bridge and bring it up to standards. This will involve slip-lining the existing structure with a new 66" by 96" pipe and grouting the annular space between the two. New reinforced concrete endwalls and wingwalls will be installed at the inlet and outlet, and the retaining wall at the inlet will also be replaced. While slip-lining can be performed in the wet, during grouting water

[1] *Programmatic Agreement among the Federal Highway Administration, the Connecticut Department of Transportation, the Connecticut State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Implementation of Minor Transportation Projects*, signed October 26, 2012 and revised May 4, 2018. Accessible online at: www.ct.gov\culturalresources.

handling will be addressed through the use of a temporary bypass pipe installed inside the existing host pipe to convey the flow of the brook and to prevent backwater from building up on the inlet side. It is anticipated that construction activities will be performed with limited impact to traffic, although, temporary lane closures may be necessary and overhead utilities will also need to be temporarily relocated. Temporary construction easements on three of the abutting parcels and a section of abutting municipally-maintained roadway will also be required, this for access and to complete construction activities, with a portion of one of the easements potentially becoming permanent to provide for future inspection and maintenance. Finally, a short temporary access road, this located on the south side of New Haven Road west of Bridge #06772 may also be required, however, this will be located within the existing roadway ROW. Evaluation of the need for, and possible elimination of this access road is also being conducted.

Revised Scope

Since the proposed project was originally submitted for consultation in April 2022, it has been requested by environmental regulatory authorities that a section of eroded embankment supporting New Haven Road above Straitsville Brook approximately 290' west of Bridge #06772 be stabilized in an effort to prevent potential impacts to the brook or roadway above. This will require the introduction of a rip rap revetment in a bend in the brook and filling and grading the slope above. Due to the steepness of the slope, and a reluctance to conduct extensive tree cutting that might further destabilize the roadway, access to the newly proposed work area will need to be provided via an access road leading north from Beacon Valley Road (Image 18). This will cross a former residential property and be carried on fill. Two residences and several outbuildings were formerly located on the parcel in question, however, these were all demolished and the parcel largely cleared ca. 2012 (Images 19-22).

Area of Potential Effect (APE)

The project area is located approximately 2.0-mile southeast of downtown Naugatuck and 0.85-mile west of what was once the hamlet of Straitsville, this situated in the vicinity of the intersection of New Haven and Horton Hill Roads. Historic maps and aerial photographs indicate that the area in the immediate vicinity of Bridge #06772 remained lightly developed with scattered residences and mixed agricultural fields and woodland into the mid-20th century, however, during the mid-to-late 20th century, increased suburbanization in the vicinity resulted in both the residential built-up of areas to the north and south of New Haven Road, and commercial development along Route 63 (Images 10-14). As noted, Bridge #06772 was constructed as part of an extensive project to reconstruct New Haven Road in 1966, with this work also including rechannelization of Straitsville Brook north and south of New Haven Road and the construction of extensive subterranean drainage infrastructure along both New Haven and Candee Roads (Image 16-17).

Properties immediately abutting Bridge #06772 have similarly undergone extensive

changes over time. The area to the north was entirely cleared and occupied by a house, garage, driveway, and parking area during the early 20th century, however, these were all razed by the 1960s. The property to the northeast was once crossed by Straitsville Brook, yet the brook was rechannelized northwards and the lot filled, graded, and developed with a commercial building during the 1950s. The parcel to the southeast was once occupied by a residential building set on a wooded lot, yet this was razed and the property cleared, filled, and graded in order to build the current shopping plaza ca. 2012. Finally, the steeply sloped area west of Bridge #06772 was cleared, filled, and graded as part of the 1966 roadway work that included construction of the culvert.

The project's Area of Potential Effect (APE) is centered on Bridge #06772 and includes the approximately 300' x 90' work area within the roadway ROW, as well as 2,180 square-foot, 3,120 square-foot, 1,510 square-foot, and 3,660 square-foot of temporary construction easements areas northwest, north, southeast, and south of the bridge, respectively. This APE encompasses the area that will foreseeably be required to prepare the project area, access the bridge, and complete the project. It is also possible that 1,660 square feet of the 3,660 square-foot temporary easement will become permanent, this to provide access for future inspection and maintenance of the culvert outlet. Properties within or abutting the project area include (clockwise from immediately north of Bridge #06772):

0 New Haven Road (MBLU #S-24E12)

This undeveloped 0.23-acre parcel is located on the north side of New Haven Road (Route 63) immediately north of Bridge #06772. The property is bounded to the south by New Haven Road, to the west by Candee Road, and to the east and south by Straitsville Brook. At present the property is entirely wooded, however, historical aerial imagery indicates that it was once developed with several buildings, these demolished and the lot cleared during the middle of the 20th century.

An approximately 5,000 square-foot temporary construction easement on this parcel will be required for access, however, regardless, the property does not possess any historic properties and is not eligible for the NRHP.

1160 New Haven Road

This 4.16-acre parcel is located on the north side of New Haven Road approximately 100' northwest of Bridge #06772. The parcel is bounded to the south by New Haven Road and to the east by Candee Road. Formerly a residential property, during the mid-2010s the entire parcel was cleared, graded, and developed as the site of a big-box commercial retailer.

No impacts on this parcel will be required, however, regardless, the property does not possess any historic properties and is not eligible for the NRHP.

1177 New Haven Road

This 1.71-acre parcel is located on the south side of New Haven Road

immediately south of Bridge #06772. The property is bounded to the north by New Haven Road and Straitsville Brook and to the south by Beacon Valley Road. Formerly a residential property, during the mid-2010s the entire parcel was cleared, graded, and developed as the site of a small strip mall. Graded fill supports the driveway and parking lot leading to the strip mall and these extend right up to the steep slope leading down to the brook.

An approximately 17,000 square-foot temporary construction easement on this parcel will be required for access, however, regardless, the property does not possess any historic properties and is not eligible for the NRHP.

1183 New Haven Road

This 1.1-acre parcel is located on the south side of New Haven Road approximately 50' east of Bridge #06772. The property is bounded to the north by New Haven Road and is developed with two one-story, red brick, vernacular commercial buildings constructed in 1985. The buildings are surrounded by asphalt-paved parking lots, these covering the full extent of the parcel not occupied by the buildings except for a strip of graded lawn located along New Haven Road.

A 3,660 square-foot temporary construction easement on this parcel will be required for access and to reconstruct the culvert's outlet (1,660 square feet of this easement may become permanent to provide access for future inspection and maintenance of the outlet), however, regardless, the property does not possess any historic properties and is not eligible for the NRHP.

1182 New Haven Road

This 0.8-acre parcel is located on the north side of New Haven Road approximately 75' east of Bridge #06772. The property is bounded to the south by New Haven Road and to the west and north by Straitsville Brook. The parcel is developed with a one-story, steel-frame and concrete block, vernacular chain restaurant constructed in 1995. The building is surrounded by a large asphalt-paved parking lot, this covering the full extent of the parcel not occupied by the buildings except for a strip of graded and landscaped lawn located along New Haven Road.

No impacts on this parcel will be required, however, regardless, the property does not possess any historic properties and is not eligible for the NRHP.

Revised APE and Impacts

The APE has been revised to include the newly proposed slope stabilization work and access road, as well as to accommodate for additional access to install water handling systems along the engineered brook channel downstream of the bridge outlet and around the erosion stabilization work. (Image 18). As noted, the access road will originate on Beacon Valley Road and extend approximately 200' north

to Straitsville Brook. The access road will measure approximately 10' wide, however, the introduction of fill to carry the road will likely extend roughly an additional 10' to each side beyond it. The work area at the toe of the eroded slope will measure approximately 50' x 100', with approximately 2,000 square feet of the filled area located on the steep slope above the brook and adjacent to the roadway ROW being subject to a permanent slope easement. The additional work and access road will be located either within the state roadway ROW, or on a parcel identified as 738-740 Beacon Valley Road.

738-740 Beacon Valley Road

This 1.88-acre parcel is located on the north side of Beacon Valley Road approximately 230' southwest of Bridge #06772. The property is bounded to the south by Beacon Valley Road and to the north by the ROW flanking the south side of New Haven Road. Straitsville Brook roughly divides the parcel in two as it traverses the property from the northeast to the southwest. The parcel is currently vacant; however, it was once developed with two residences, one built during the early 20th century and the other erected ca. 1950. Both were demolished along with several outbuildings located at the rear of the parcel near the brook ca. 2012 (Images 11-14 and 19-21). The portion of the property south of Straitsville Brook was once largely cleared lawn, however, since demolition of the two residences it has been slowly become reclaimed by brush and bracken. Areas north of the brook along the slope leading up to New Haven Road are wooded.

A temporary construction easement totaling approximately 21,100 square feet will be required for the access road and work area. No notable permanent impacts to the property are anticipated, however, as it is already largely cleared of trees (and buildings), has been cleared numerous times in the past, was subject to significant previous impacts when the brook was rechannelized during the project to construction Bridge #06772, and will be restored at the conclusion of the project. The access road will also be carried on fill and supported by anti-tracking matting. Furthermore, the property does not possess any historic properties and is not eligible for the NRHP. The nearest, Site #88-7, is a surface collection of limited historical significance, while the next closes is situated nearly a mile away.

Archaeological Conditions Within or Abutting the APE

Digital site records maintained by the Office of the State Archaeologist, as well as OEP's own internally compiled database of historic resources and previously conducted cultural resource studies, were consulted for the purpose of identifying any known archaeological sites located the APE. No documented archaeological sites or surveys were found to be present within the project area or a 0.2-mile radius.

Soil classification maps maintained by the U.S. Natural Resources Conservation Service were also examined in conjunction with predictive models developed within

the State of Connecticut in order to assess the sensitivity of the project area for previously unknown archaeological resources. The eastern portion of the APE, this including Bridge #06772 itself, falls on soils classified as Udorthents-Urban Land Complex (0-35% slopes), these predicted to consist of disturbed soils having a "poor" likelihood of bearing archaeological resources, while areas to the west fall on soils classified as Hinckley Gravelly Sandy Loam (3-15% slopes) and Hinckley Gravelly Sandy Loam (15-45% slopes), these predicted to have a "high" and "moderate" likelihood of bearing archaeological resources, respectively.

This being said, the project APE was subjected to field evaluation by OEP Qualified Staff on March 15, 2022. In combination with a review of historic maps, historic aerial photography, LiDAR imagery, and project plans for the 1966 reconstruction of New Haven Road and Bridge #06772, this evaluation indicated that extensive soil disturbances and reconfiguration of the landscape have taken place within the APE over time (Images 10-17 and 19-21). These include clearing, filling, grading, and development of abutting properties; replacement of the previous 12'-span reinforced concrete slab bridge with the existing culvert and associated rechannelization of Straitsville Brook; and the installation of extensive subterranean drainage infrastructure and utilities. Among the latter are a 24"-diameter water main, 20"-diameter water main, and 10"-diameter raw water main located north of New Haven Road, and a 4"-diameter gas main located to the south of the roadway (Image 17).

Revised Archaeological Assessment

Evaluation of the additional areas to be impacted by the project due to the revised scope indicate that the APE has experienced significant prior soil impacts over time. These include clearing of the vast majority of the portion of the parcel south of Straitsville Brook numerous times, this visible in aerial imagery from 1934, 1965, 1970, 1986, 2004, and 2012 (Images 11-14 and 19-20). The parcel was also previously impacted during the construction of Bridge #06772, whereupon Straitsville Brook was rechannelized along the northeast corner of the property, this corresponding with the area to be stabilized during construction (Image 16). In addition, the proposed access road and work area will be carried on fill and/or matting, with no significant excavations of the easement area being required. Finally, all of the work along and flanking the brook will take place in areas significantly impacted when the brook was rechannelized or along the steep slopes supporting New Haven Road and the commercial property southeast of Bridge #06772.

Given the aforementioned conditions, OEP Qualified Staff has determined that, based upon the original and subsequent analysis, there is minimal foreseeable potential to impact intact, NRHP-eligible archaeological resources within the project area and no further study is recommended.

Conclusion

Qualified OEP cultural resources staff conducted background research and reviewed

the project scope. A review of records maintained by the Connecticut State Historic Preservation Office (SHPO) did not identify any properties listed on or potentially eligible for the NRHP within the project APE, nor was Bridge #06772 or any of the properties within the APE determined to be potentially eligible for listing. In addition, OEP qualified staff has determined that there is minimal foreseeable potential to impact intact archaeological resources within the project area due to extensive soil disturbances. Finally, consultation was carried out with federally-recognized Native American Tribal authorities with ancestral ties to the state of Connecticut for this undertaking in May and June 2024. None of the Tribes contacted expressed any concern with the project after consultation.

The work proposed under State Project #87-148 meets the criteria of "Bridge/Culvert Related Projects," a type of Minor Transportation Project exempt from Section 106 review under Appendix B – "Screened Undertakings Not Requiring Connecticut CTSHPO Review" of the 2018 Section 106 Programmatic Agreement. As such, no further consultation with the Connecticut State Historic Preservation Officer (CTSPHO) is required. A copy of this determination will be included in the quarterly report of Minor Transportation Projects that is submitted to CTSHPO.



Lucas A. Karmazinas
National Register Specialist
Office of Environmental Planning
Connecticut Department of Transportation

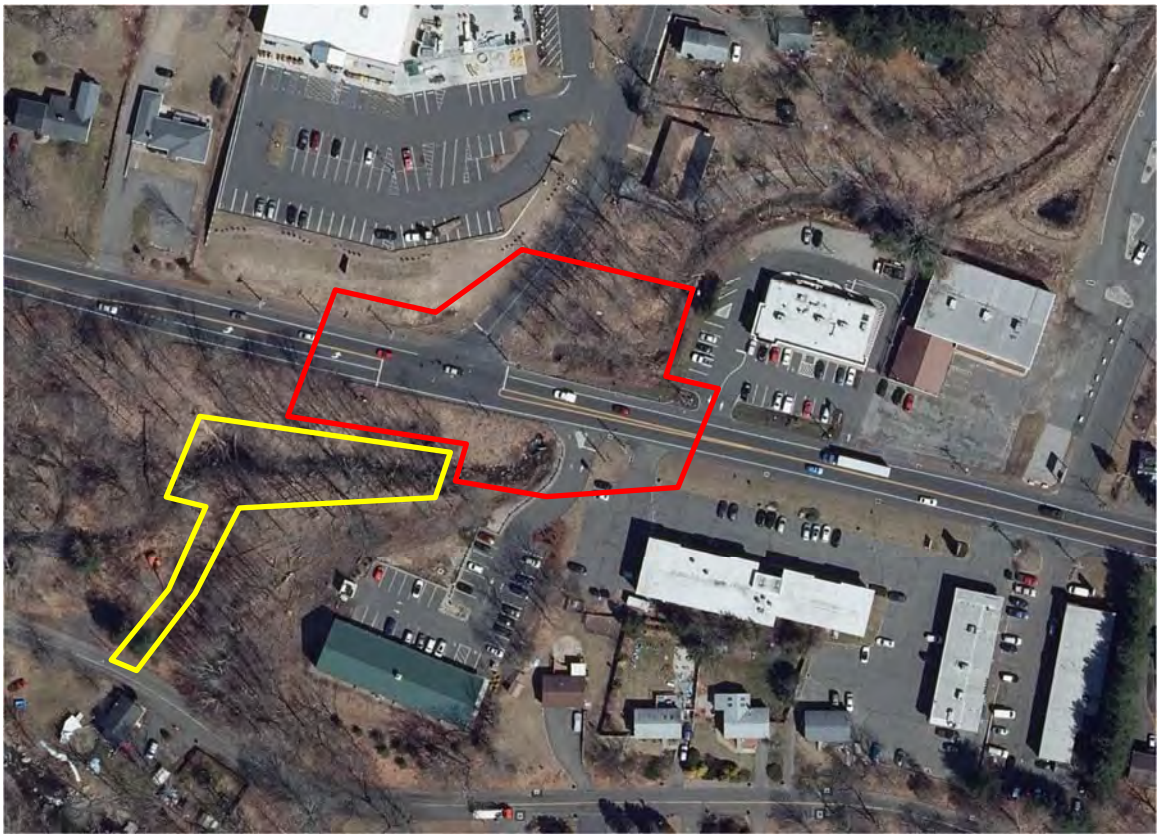


Image 1: 2019 aerial image of project site and vicinity. Approximate project area identified in red. Approximate additional work area and access road path in yellow.



Image 2: South (outlet) end of Bridge #06772 looking northwest. Note the steep slopes of fill material supporting the roadway and abutting driveway at 1177 New Haven Road.



Image 3: Looking southwest (downstream) away from Bridge #06772 along Straitsville Brook. Note the steep slopes and rocky conditions within and flanking the brook, as well as the proximity to the driveway at 1177 New Haven Road.



Image 4: Looking west away from Bridge #06772 along New Haven Road. Note the steeply sloping fill soils supporting the south side of the road.



Image 5: North (inlet) end of Bridge #06772 looking southwest. Note the stone masonry retaining wall with drainage outflows at right.



Image 6: Looking northwest away from Bridge #06772. Note the large drainage outflow located in the retaining wall.



Image 6: Looking northeast away from Bridge #06772 along Straitsville Brook. Note the rechannelized course of the brook and riprap armoring throughout.



Image 7: Looking west at the area north of Bridge #06772. Note this area was once occupied by a driveway and garage and is presently characterized by regrading and push piles associated with the clearing of the lot and subsequent construction of Bridge #06772 during the 1960s.



Image 8: Looking west away from Bridge #06772 along New Haven Road.



Image 9: Looking east away from Bridge #06772 along New Haven Road.



Image 10: 1868 aerial image of project site and vicinity. Approximate project area identified in red.



Image 11: 1934 aerial image of project site and vicinity. Approximate project area identified in red. Approximate additional work area and access road path in yellow. Note the buildings and parking lot formerly located north of the bridge. Also note the house formerly located along the access road path and formerly cleared condition of the parcel.

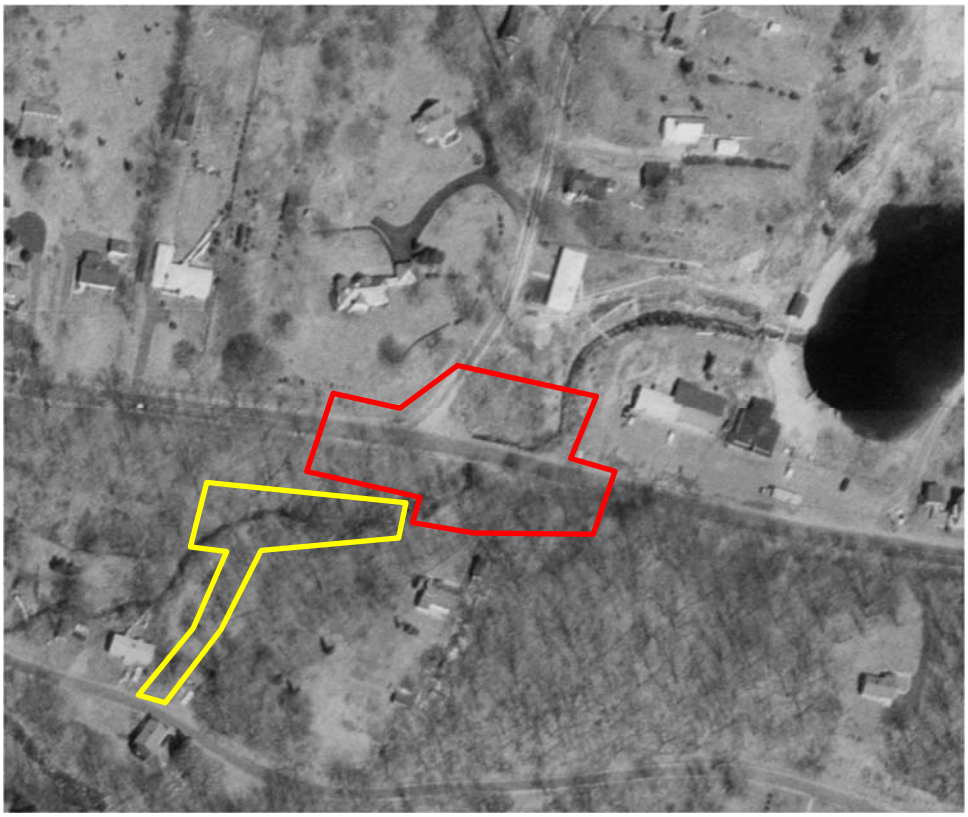


Image 12: 1965 aerial image of project site and vicinity. Approximate project area identified in red. Approximate additional work area and access road path in yellow. Note the demolition of the buildings north of the bridge, as well as the regrading and reconstruction of the southern terminus of Candee Road and the property north of the bridge.



Image 13: 1970 aerial image of project site and vicinity. Approximate project area identified in red. Approximate additional work area and access road path in yellow. Note the soil disturbances resultant of the new road and bridge construction, and rechannelization of the brook north and south of the roadway.

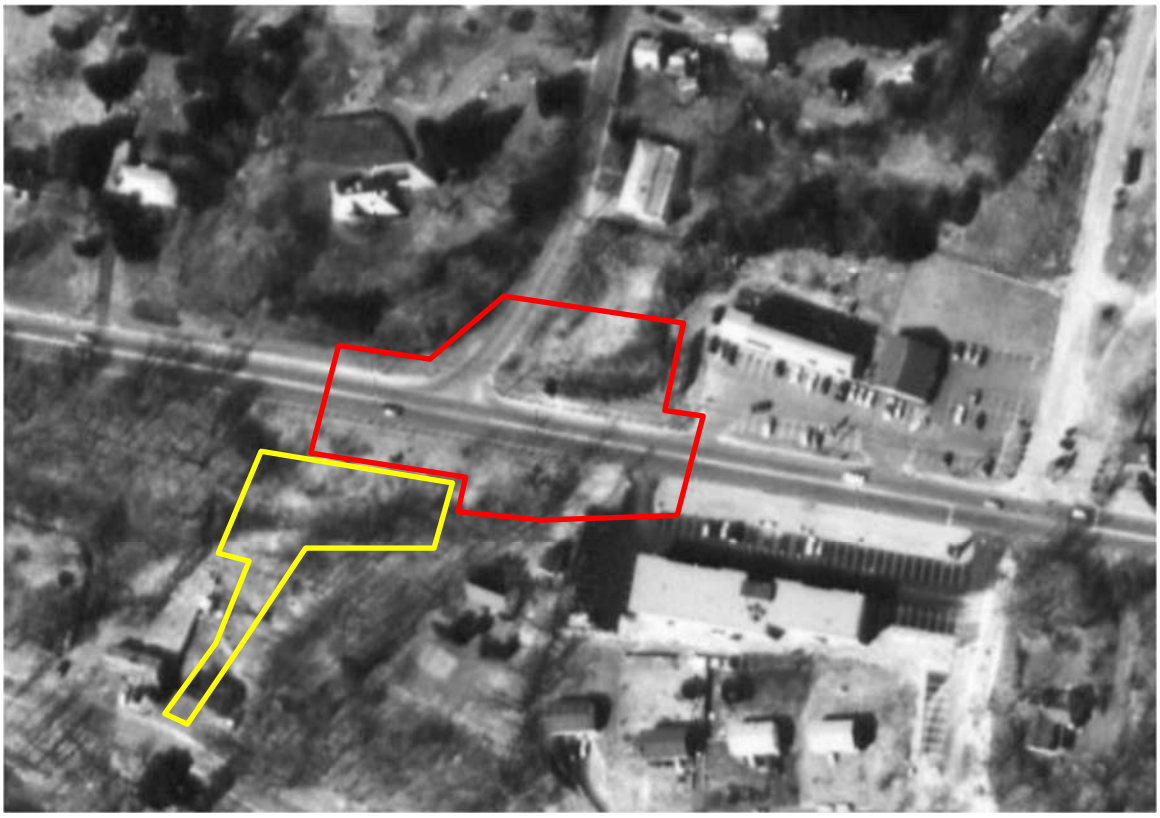


Image 14: 1986 aerial image of project site and vicinity. Approximate project area identified in red. Approximate additional work area and access road path in yellow. Note that the parcel on which the access road will be constructed has been largely cleared of trees and several outbuildings constructed near the brook.

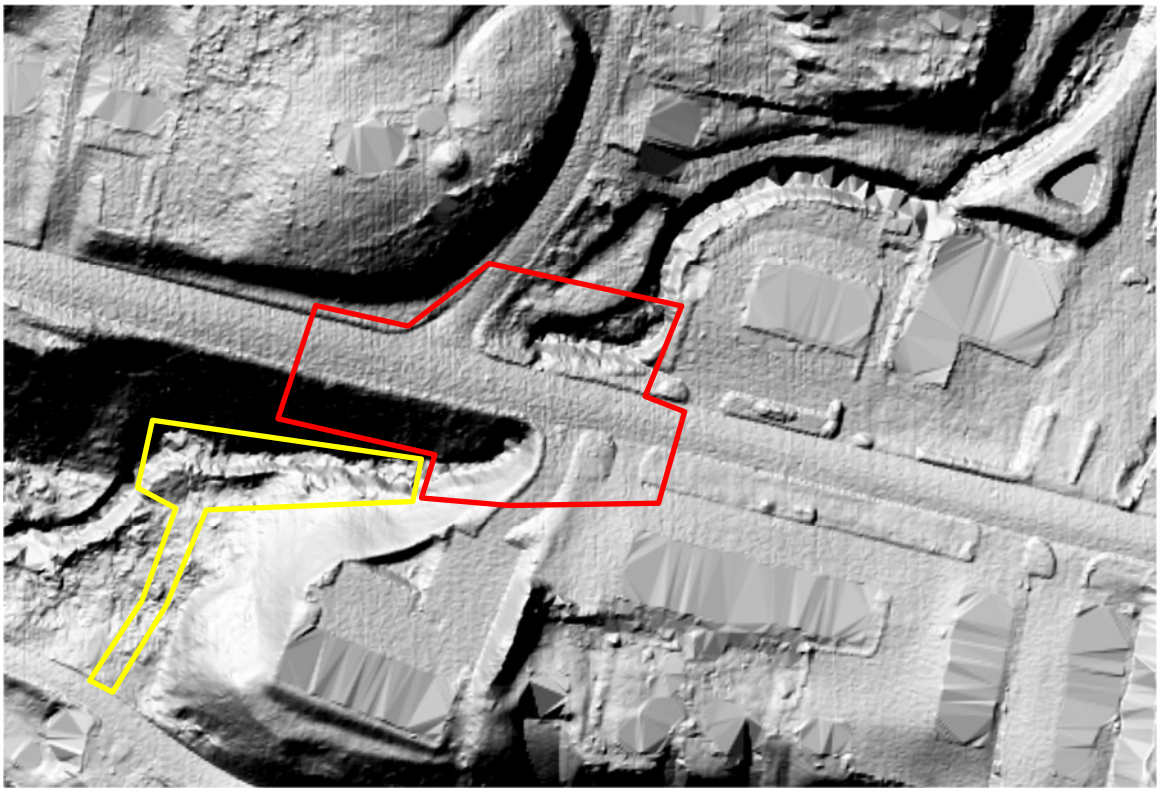


Image 15: 2016 LiDAR image of project site and vicinity. Approximate project area identified in red. Approximate additional work area and access road path in yellow.

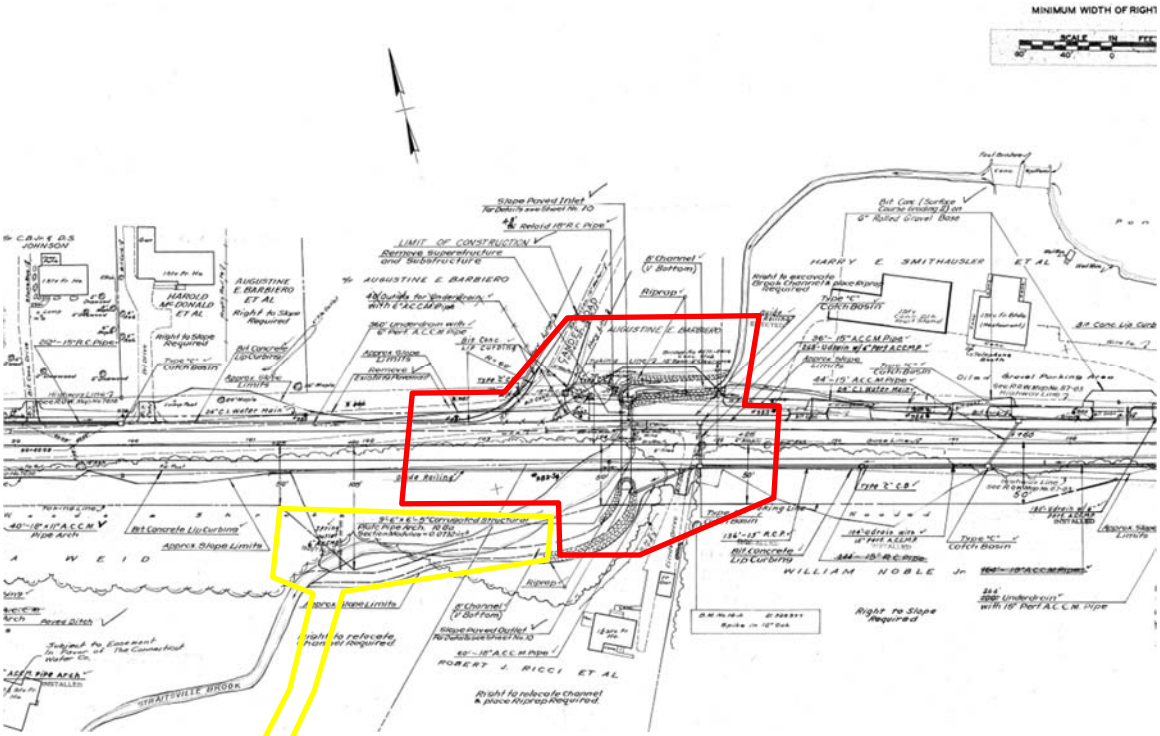


Image 16: Detail from the 1964 project plans for Bridge #06772 showing the design of the reconstructed bridge and roadway. Note the rechannelization of the brook south of the roadway and construction of extensive subterranean drainage infrastructure.

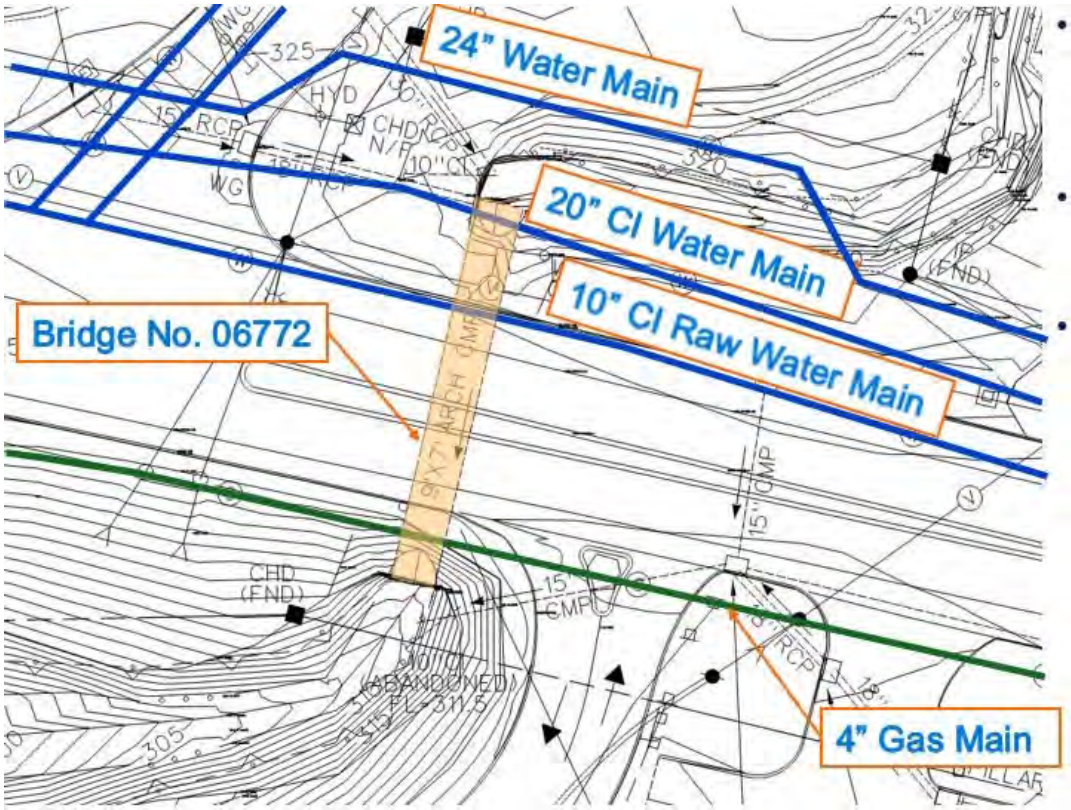


Image 17: Subterranean utilities located within the project area.

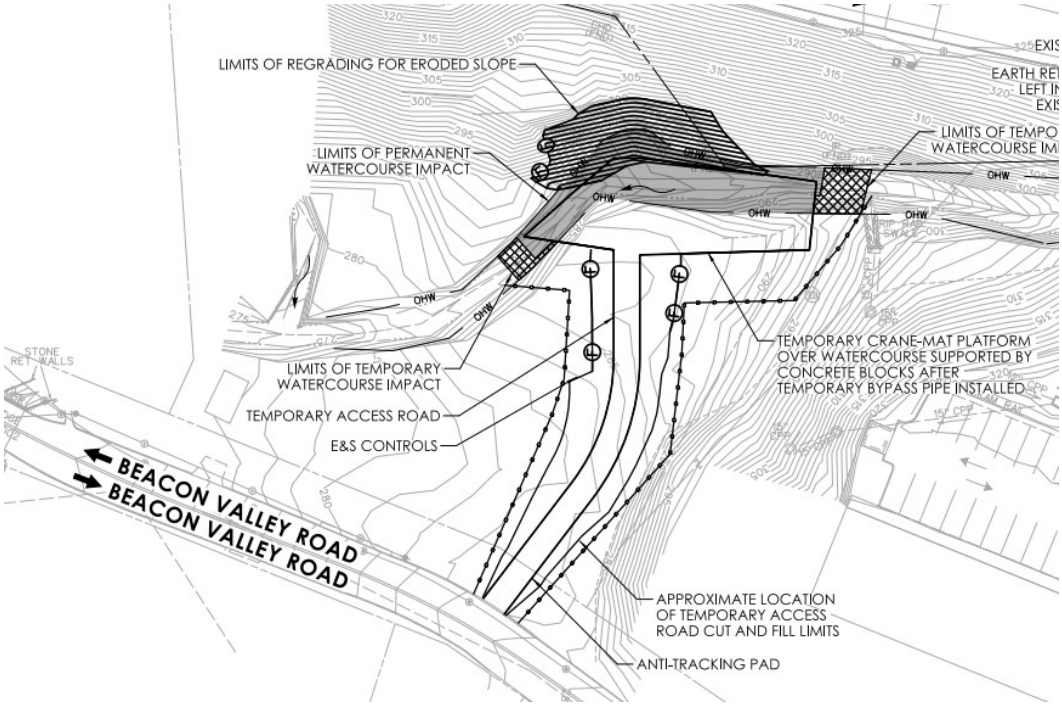


Image 18: Detail of the proposed additional work, including the access road from Beacon Valley Road and work area to stabilize the eroded slope supporting New Haven Road. Note that the access road will be located on fill and anti-tracking pad as it traverses the former residential property.



Image 19: 2004 aerial image of project site and vicinity. Approximate additional work area and access road path in yellow. Note that the parcel on which the access road will be constructed is largely cleared of trees and numerous buildings are located on the property.

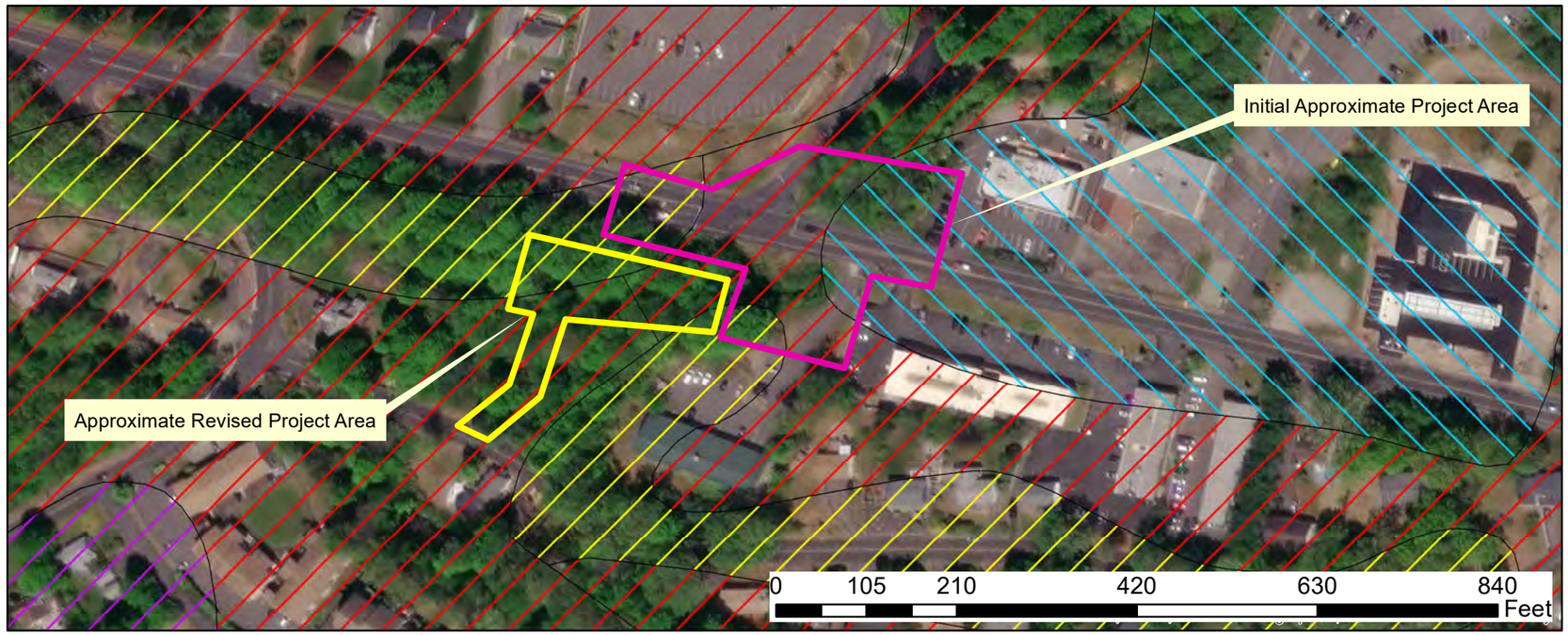


Image 20: 2012 aerial image of project site and vicinity. Approximate additional work area and access road path in yellow. Note that the buildings formerly located on the parcel on which the access road will be constructed have all been demolished and the excavator remains in place.



Image 21: Current image looking north from Beacon Valley Road along the access road corridor. Note that the parcel remains open but is being reclaimed by vegetation. Also note the excavator that demolished the structures formerly located on the property remains in place.

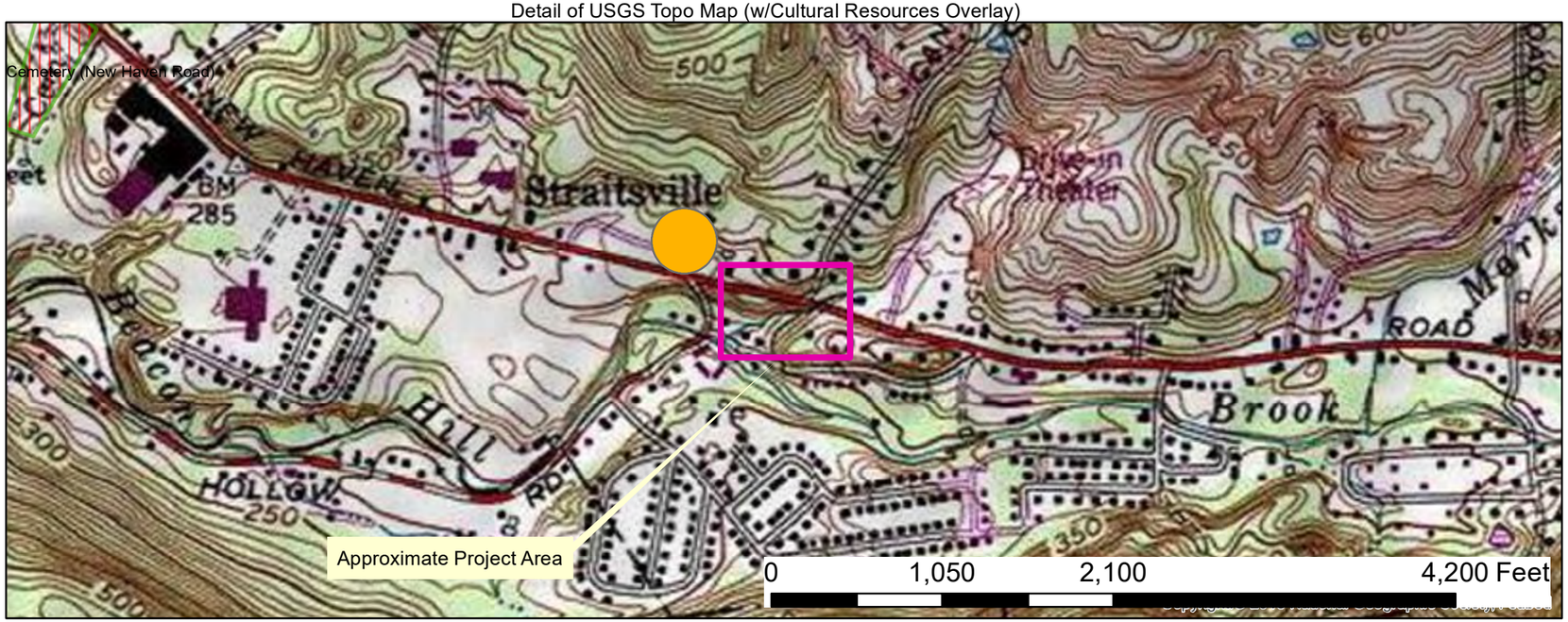
Detail of Recent Aerial Photography (w/Soil Sensitivity Overlay)



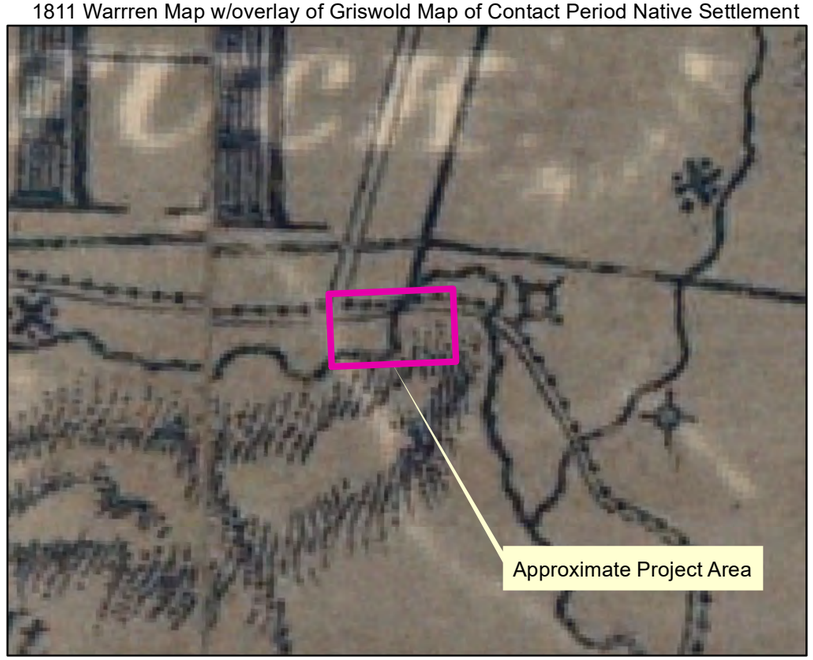
Detail of 1852 Whiteford Map of New Haven County



Detail of USGS Topo Map (w/Cultural Resources Overlay)



1811 Warrren Map w/overlay of Griswold Map of Contact Period Native Settlement



CT Department of Transportation
Office of Environmental Planning
Environmental Review - Historical and Archaeological Resources

State Project No. 87-148
Rehabilitation of Bridge #06772
New Haven Rd. (Rt. 63) over Straitsville Brook
Naugatuck

National Register and Archaeological Resources

- Natl Hist Landmarks
- NRHP Structures
- NRHP Historic Districts
- Arch Survey Areas
- NRHP Eligible Structures

Approximate Location of Archaeological Site

- **Historic**
- **Pre-Contact**
- **Unknown**

Predicted Archaeological Soil Sensitivity

- **High**
- **Moderate**
- **Variable**
- **Low**
- **Poor**
- **Unknown**

N

May 2, 2024

USACE ENG FORM 4354, Pre-Construction Notification
Attachment F: Tribal Historic Preservation Office (THPO) Exemption

Applicant: Connecticut Department of Transportation
Project: State Project No. 0087-0148
Rehabilitation of Bridge No 06772
Naugatuck, Connecticut

Tribal Historic Preservation Office (THPO)

U.S. Department of Transportation
Federal Highway Administration

Connecticut Division

450 Main Street
Suite 612
Hartford, CT 06103
860-659-6703
860-659-6724
Connecticut.FHWA@dot.gov

June 12, 2024

In Reply Refer To:
HDA-CT

Dear CTDOT Cultural Resources Unit:

The Federal Highway Administration (FHWA) has conducted and concluded tribal consultation for transportation undertakings, as requested by your office. On May 10, 2024, FHWA electronically delivered information about applicable undertakings to those Federally recognized Indian tribes which have an identified area of interest including the project area.

Response was received, as indicated below, from The Mohegan Tribe and the Stockbridge-Munsee Community (SMC). Please see attached copies of this communication and note any requested further action from the THPO's

The following undertakings have undergone tribal consultation:

State Project Number	Description	Summary Comments Received from Tribe(s)
0022-0107	*Bridge #04600 Replacement Woodchuck Hill Rd over Little River (Canterbury, Windham County).* [FAP # 6022(004)]	Identification of Resources - Mohegan Tribe - THPO email on 6/10/2024 supports of recommendation for archaeological survey and request for copies of associated reports when available. No additional responses received. Further consultation will be required.
0022-0108	*Replacement of Bridge No. 05413 Tracy Road over Kitt Brook (Canterbury, Windham County).* [FAP # 6022(005)]	Identification of Resources - Mohegan Tribe - THPO email on 6/10/2024 in support of recommendation for archaeological survey and request for copies of associated reports when available. No additional responses received. Further consultation will be required.
0050-0223	*Computerized Traffic Signal System (CTSS) Replacement on US Route 1 (Fairfield, Fairfield County).* [FAP # 0001(368)]	No historic properties affected - Mohegan Tribe – email no concerns 6/10/2024. SMC – email no concerns 6/10/2024. No additional responses received. No further consultation anticipated for this project as proposed.
0060-0007	*Pine Brook Road Access (Haddam, Middlesex County).* [FAP # TBD]	NAE - Mohegan Tribe – email no concerns 6/10/2024. No additional responses received. No further consultation anticipated for this project as proposed.
0063-0731	*Rehabilitation of Bridge No. 05868 carrying I-84 EB TR 839 to I-91 NB over I-84/ I-91 Ramps and CSO Railroad (Hartford, Hartford County).* [FAP # TBD]	PA Exempt - Mohegan Tribe – email no concerns 6/10/2024. No additional responses received. No further consultation anticipated for this project as proposed.
0063-0734	*Rehabilitation of the Bulkeley Bridge (Bridge #00980A) Interstate 84 over the Connecticut River (Hartford & East Hartford, Hartford County).* [FAP # TBD]	PA Exempt - Mohegan Tribe – email no concerns 6/10/2024. No additional responses received. No further consultation anticipated for this project as proposed.
0068-0217	*Replacement of Bridge #02599 Route 101 (Hartford Pike) over the Alvia Chase Reservoir (Killingly, Windham County).* [FAP # TBD]	PA Exempt - Mohegan Tribe – email no concerns 6/10/2024. No additional responses received. No further consultation anticipated for this project as proposed.
0087-0148	*Rehabilitation of Bridge #06772 New Haven Road (Rt. 63) over Straitsville Brook (Naugatuck, New Haven County).* [FAP # TBD]	PA Exempt - Mohegan Tribe – email no concerns 6/10/2024. No additional responses received. No further consultation anticipated for this project as proposed.
0101-0119	*Route 201 Culvert Replacement (North Stonington, New London County).* [FAP # 0201(001)]	No historic properties affected - Mohegan Tribe – email no concerns 6/10/2024. No additional responses received. No further consultation anticipated for this project as proposed.

0131-0210	*Replacement of Existing Noise Barrier (Southington, Hartford County).* [FAP # TBD]	No effect - Mohegan Tribe – email no concerns 6/10/2024. No additional responses received. No further consultation anticipated for this project as proposed.

Additionally, FHWA has provided copies of the *FHWA/CTDOT MOU for Tribal Consultation Procedures* implementation reports for the 1st quarter of 2024 to the Tribes. The SMC THPO has requested additional time to complete a review of this document. Additional copies of the consultation materials were provided to SMC THPO on June 12, and any additional response will be forwarded to you. No additional comments or concerns relating to the report were received.

With this letter, the 30-day Tribal consultation period is concluded for the submitted documents related to undertakings identified herein. FHWA has continuing consultation responsibilities to respond to comments and requests for information received from the Tribes, as well as providing opportunities for Tribal review and comment on reports and documents relating to projects for which they are identified as consulting or concurring parties.

We look forward to working with your office to resolve any comments provided by Tribes. FHWA appreciates your continued cooperation in tracking Tribal consultation outcomes and your assistance in ensuring that commitments made to Tribes are met. If you have any questions, please contact me telephone at 860-494-7577 or by email at emilie.holland@dot.gov.

Sincerely,

M. Emilie Holland
Environmental Protection Specialist
FHWA Connecticut Division

Enclosures

From: James Quinn
To: Holland, Emilie (FHWA)
Subject: Re: May 2024 - FHWA CT - Consultation Follow Up (Mohegan Tribe)
Date: Wednesday, June 12, 2024 8:50:10 AM

CAUTION: This email originated from outside of the Department of Transportation (DOT). Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hi Emilie,
Thank you for following up. I support CTDOT's recommendation for archaeological surveys for SPN 22-0107 & SPN 22-0108. Please send along any associated reports once the surveys are completed.
I do not have any concerns with any of the other projects in the May consultation package.
Best,
James

From: Holland, Emilie (FHWA) <emilie.holland@dot.gov>
Sent: Monday, June 10, 2024 2:09 PM
To: James Quinn <jquinn@moheganmail.com>
Subject: May 2024 - FHWA CT - Consultation Follow Up (Mohegan Tribe)

WARNING: External email. Please verify sender before opening attachments or clicking on links.

Good Afternoon,

I am sending this message as a follow up to the Federal Highway Administration's invitation to enter into project level consultation, sent on May 10, 2024, for the following 10 projects:

SPN 0022-0107 Bridge #04600 Replacement Woodchuck Hill Rd over Little River (Canterbury, Windham County). [FAP # 6022(004)]

SPN 0022-0108 Replacement of Bridge No. 05413 Tracy Road over Kitt Brook (Canterbury, Windham County). [FAP # 6022(005)]

SPN 0050-0223 Computerized Traffic Signal System (CTSS) Replacement on US Route 1 (Fairfield, Fairfield County). [FAP # 0001(368)]

SPN PP0060-0007 Pine Brook Road Access (Haddam, Middlesex County). [FAP # TBD]

SPN 0063-0731- Rehabilitation of Bridge No. 05868 carrying I-84 EB TR 839 to I-91 NB over I-84/ I-91 Ramps and CSO Railroad (Hartford, Hartford County). [FAP # TBD]

SPN 0063-0734 – Rehabilitation of the Bulkeley Bridge (Bridge #00980A) Interstate 84 over the Connecticut River (Hartford & East Hartford, Hartford County). [FAP # TBD]

SPN 0068-0217 Replacement of Bridge #02599 Route 101 (Hartford Pike) over the Alvia Chase Reservoir (Killingly, Windham County). [FAP # TBD]

SPN 0087-0148 Rehabilitation of Bridge #06772 New Haven Road (Rt. 63) over Straitsville Brook (Naugatuck, New Haven County). [FAP # TBD]

SPN 0101-0119 Route 201 Culvert Replacement (North Stonington, New London County). [FAP # 0201(001)].

SPN 0131-0210 Replacement of Existing Noise Barrier (Southington, Hartford County). [FAP # TBD]

In addition, the materials sent for review in May included the first 2024 Quarterly Report for CTDOT's utilization of the FHWA/CTDOT Tribal Consultation MOU.

If you are actively reviewing these materials, and will require additional time to complete your review, please let me know before close of business on June 11, 2024. If FHWA does not receive a response regarding these projects, consultation will be considered concluded at that time for projects where no adverse effect is anticipated.

Thanks as always for your time & consideration.

Kind Regards,

-Emilie

M. Emilie Holland | emilie.holland@dot.gov | 860-494-7577
Environmental Protection Specialist | Federal Highway Administration
Connecticut Division | 450 Main Street - Suite 612, Hartford, CT 06103

From: thpo
To: Holland, Emilie (FHWA)
Subject: RE: May 2024 - FHWA CT - Consultation Follow Up (SMC)
Date: Monday, June 10, 2024 3:03:01 PM

CAUTION: This email originated from outside of the Department of Transportation (DOT). Do not click on links or open attachments unless you recognize the sender and know the content is safe.

Hi Emilie,

I became locked out of my SLFTS account last month. After trying unsuccessfully to have it unlocked for about a week, I gave up.

Was finally able to successfully change my password this morning but I see May's files have expired. As I have said many times before, this method of communication had been very frustrating, is unique among our partner agencies including other FHWA offices, and does not fit well with our process.

Regards,
Jeff

PS. Yes, I will need extra time to review first 2024 Quarterly Report for CTDOT's utilization of the FHWA/CTDOT Tribal Consultation MOU if I can get access to May's files.

Jeffrey C Bendremer Ph.D., RPA
Tribal Historic Preservation Officer
Stockbridge-Munsee Community
Tribal Historic Preservation Extension Office
86 Spring St.
Williamstown, MA 01267
413-884-6029 (o)
715-881-2254 (c)

www.mohican.com

From: Holland, Emilie (FHWA) <emilie.holland@dot.gov>
Sent: Monday, June 10, 2024 2:16 PM
To: thpo <thpo@mohican-nsn.gov>
Subject: May 2024 - FHWA CT - Consultation Follow Up (SMC)

CAUTION: This email originated from outside the organization.
Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good Afternoon,

I am sending this message as a follow up to the Federal Highway Administration's invitation to enter into project level consultation, sent on May 10, 2024, for the following project:

SPN 0050-0223 Computerized Traffic Signal System (CTSS) Replacement on US Route 1 (Fairfield, Fairfield County). [FAP # 0001(368)]

In addition, the materials sent for review in May included the first 2024 Quarterly Report for CTDOT's utilization of the FHWA/CTDOT Tribal Consultation MOU.

If you are actively reviewing these materials, and will require additional time to complete your review, please let me know before close of business on June 11, 2024. If FHWA does not receive a response regarding these projects, consultation will be considered concluded at that time for projects where no adverse effect is anticipated.

Thanks as always for your time & consideration.

Kind Regards,

-Emilie

M. Emilie Holland | emilie.holland@dot.gov | 860-494-7577
Environmental Protection Specialist | Federal Highway Administration
Connecticut Division | 450 Main Street - Suite 612, Hartford, CT 06103

Pre-Construction Notification & Inland Wetlands and Watercourses Permit

Applicant: State of Connecticut, Department of Transportation
Project No. 0087-0148
Rehabilitation of Bridge No. 06772
Town of Naugatuck

Attachment 30: Copy of Interagency Coordination Meeting notes:

- December 16th, 2021
- January 20th, 2022
- March 21st, 2024

Interagency Coordination Meeting Notes

December 16, 2021

MS Teams Meeting

November 18, 2021 Interagency Meeting Notes:

DEEP and USACE requested that the language in the notes for Project 95-257's Action Items that described the outcome of the follow-up meeting held on 12/6/21 be revised to indicate that the regulators agreed that the project is eligible for the FM MOU, USACE SV GP-19, DEEP IWGP (rather than stating that the SV criteria had been met) and that the eligibility is contingent on completion of DEEP NDDB coordination. There were no other comments on November Interagency meeting notes. With the revision to be made with respect to 95-257, the notes are considered accepted.

Project 32-150 Replacement of Bridge No.04446 Hop River Road over Hop River in Coventry and Columbia

Project 32-150 was presented at the November 18, 2021 ICM. At Army Corps' request, the previous permit determinations were revisited.

Bridge No. 04446 supports Hop River Road over Hop River in Coventry and Columbia and is immediately upstream of the Hop River Dam. The existing structure is a two-span structure comprised of steel beams and concrete deck supported by stone masonry abutments and central pier. Twin 60-inch Corrugated Metal Pipes (CMPs) are located immediately south of the existing bridge and carry Hop River Road over the tailrace associated with the Hop River Dam. The preferred replacement structure type is a wider, two-span superstructure on pile supported cast-in-place abutments and modified central pier. The existing pier will have minor masonry repairs and the concrete cap will be replaced with a new cap to accommodate the wider superstructure. The existing tailrace CMPs will be replaced with a new 8-foot wide by 6-foot tall precast concrete box culvert and reinforced concrete headwalls.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	75	3,775	940
Temporary	110	830	3,850
Total	185	4,605	4,790

Floodplain Impacts	
Cut (CY)	Fill (CY)
1,645	1,645

Agency Comments: The agencies acknowledged that the bank full width (BFW) language included USACE General Permit's Stream Crossing Best Management Practices (BMPs) has a footnote that indicates "The use of bridge piers or similar supports, where necessary, does not prevent a structure from being considered as a span." As such, the proposed bridge meets the 1.2xBFW BMP and the regulatory agencies agreed the project was eligible for SV GP-19 with an exemption from GP-19's freeboard SV-eligibility criterion.

Project 32-150 (continued)

The freeboard exemption is granted based on the following:

1. The exemption is based on this specific site's conditions.
2. The structure has 1.7' of freeboard, which nearly meets the 2.0' criterion.
3. The Hop River Dam immediately downstream of the bridge serves as a controlling feature.

The permitting determination is contingent on completion of DEEP NDDB coordination.

USACE #: NAE-2021-2986

Permitting Requirements: DOT FM MOU, USACE GP-19, Local inland wetlands

Action Items: Prepare permit plans and permit applications for submission to the respective regulatory agencies.

Project 87-148 Rehabilitation of Bridge No.06772 Route 63 over Straitsville Brook in the Town of Naugatuck

Bridge No. 06772 is a 10-foot span asphalt-coated corrugated metal pipe arch culvert supporting Route 63 (New Haven Road) over Straitsville Brook in the town of Naugatuck. Average Daily Traffic (ADT) is 11,100. The overall structure length is 75 feet. The structure is in poor condition (rating 4) due to complete loss of asphalt coating with heavy rust and perforations in the invert. The project is not located within a FEMA floodplain (i.e., no floodplain impacts). The drainage area is 0.69 sq.mi.

The proposed rehabilitation is to reline the existing pipe with a 5-foot diameter pipe of similar length and grout the annular space. The outlet has a 2-foot drop off to the existing streambed and Fisheries has advised this is a barrier to fish passage. Several underground utilities including potable water, a raw water transmission main, and gas service beneath the project area present practicality challenges to constructing a new replacement culvert at the depth and pitch that would be needed to overcome the perched nature of the existing culvert.

Downstream step pools were investigated as a means of remedying the lack of fish passage at the culvert outlet. Due to the amount of drop off at the culvert outlet and the steepness of the downstream channel, a step pool system would extend and disturb 300' of watercourse downstream and require up to 6' depth of fill/riprap which was considered as unfeasible.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	810	810
Temporary	0	1,940	1,940
Total	0	2,750	2,750

Project 87-148 (continued)

Agency Comments:

- DEEP Fisheries stated that water quality has significantly improved in this watercourse, Brook and Brown Trout are present in the watercourse up to the culvert and they would like to find a way to get passage through the culvert. Providing passage would immediately restore ½ mile of habitat. DEEP Fisheries also stated that the upstream dam may be passable which would open significantly more habitat further upstream. DEEP Fisheries agreed step pools would not be feasible at the project location and asked if other options, such as installation of an engineered fishway, were investigated.
    - DOT H&D & EPC confirmed a fishway was investigated and using a max 15% slope, a 150-foot long fishway would be required at the site.
    - USACE also identified concerns about the fish/aquatic life passage at the project site with respect to General Conditions 20 and 21 of the General Permit.
    - DEEP Fisheries stated that a field meeting is needed to discuss fish passage at the site. OEP will schedule a meeting. DEEP LWRD, EPA and USACE requested to be invited to the meeting as well.
- DEEP LWRD asked if the proposed slip lining will result in velocity increases downstream. DOT H&D stated there will be approximately 10% increase in downstream velocity, that with the boney channel bottom there is no concern of scour downstream, and that the downstream embankments will be protected with the proposed wingwalls.
- DEEP LWRD asked if there will be loss of flow downstream while water handling is switched from stage 1 (installation of the liner pipe) to stage 2 (grouting the annular space, including the initial bypass pipe). DOT designers responded by indicating that downstream flow would be maintained by installing a second temporary bypass pipe within the lined pipe before the grouting stage begins.
- DEEP LWRD asked about using Beacon Valley Road as a detour to complete work during a complete roadway shutdown. DOT designers stated that the turn radius from Rt 63 to Beacon Valley Road is too small for large trucks, as well is a heavy residential area, has roadway incline, and trees overhead.
- DEEP LWRD asked how the proposed size of the pipe liner was chosen and if the lined culvert would be hydraulically adequate. DOT Bridge stated that the pipe size and shape were chosen to account for irregularities inside the existing culvert and that culvert is hydraulically adequate in the existing and proposed condition.
- DEEP LWRD asked if the proposed water handling bypass pipe would be extended all the way to the upstream cofferdam since it was unclear from the presentation's depiction. DOT Bridge designers confirmed that would be the case.
- USACE asked if other replacement alternatives such as boring and jacking have been investigated to adjust the skew of the culvert to provide a more natural alignment to the watercourse. USACE also asked if correcting the perched condition by evaluating matching into the slope of the watercourse upstream and downstream.
    - DOT H&D indicated that the original highway construction had adjusted the watercourse from its original location. H&D confirmed that matching the slope had been looked at but would require a structure replacement. In addition, H&D noted that a total stream reconstruction in the area would still yield a stream slope of 10-15%.

Project 87-148 (continued)

- DOT designers indicated that the presence of the underground utilities for the length of roadway on either side of the culvert presented practicality challenges to any replacement options. DOT EPC elaborated on the various utility concerns at the site. The raw water transmission main does not have any shutoff valves (i.e., the water utility would have to cut off the flow of water from its source while a bypass was constructed). Additionally, jacking a large culvert between utilities would raise significant concern for damaging (especially the raw water line) through direct conflict or vibration.
- DOT Construction stated that due to the utility conflicts and rocky substrate, jacking at this site is also not feasible.
- DOT EPC also noted that the cost estimate provided for a standard replacement option included utility reconstruction but the estimate was too low because it did not include right-of-way costs which would be required for the project.
- The watercourse skew, the perched condition, the slope of the channel downstream and upstream of the culvert, and the underground utilities, to the extent possible, will be examined during the field visit.

- USACE stated that a thorough alternatives analysis will be needed for the project and that USACE plans to provide formal written comments on the project at a later date.
- DEEP LWRD stated that the existing downstream stormwater outlet is possibly making scour condition worse. DOT designers indicated that stormwater outlet will be reviewed more closely as design progresses and will be relocated as needed if corrected measures are warranted.
- DEEP asked if the area of the structure was included in the impact area calculations. The designer confirmed that was the case.

Permitting Requirements: The agencies agreed the project would not be SV-eligible. A final permit determination was not made. The agencies will further consider the permitting requirements following the site visit.

Action Items: CT DOT OEP will setup a field meeting with USACE, EPA, DEEP LWRD & Fisheries. USACE to provide written comments to DOT OEP on the proposed project.

Subsequent to the meeting USACE emailed the following comments:

- Questions remain on how the proposed project comports with the CT GP's General Conditions 20 & 21 with respect fish passage and the management of expected high flows.
- USACE would like to see an evaluation of the practicability of alternatives relating to boring or culvert jacking with respect to the CT GP's avoidance and minimization requirements.
- If there is an alternative to the concrete fish ladder structure DEEP fisheries suggests, that would also provide fish passage, USACE encourages that over an in-channel concrete structure.

Subsequent to the meeting, a site visit was held on January 10, 2022. DOT Bridge Design, DOT OOC, DOT EPC, DOT OEP, DOT H&D, DEEP LWRD, and DEEP Fisheries were in attendance. A full Report of Meeting will be made available.

- DEEP Fisheries staff informed that natural barriers to fish passage are approximately 1100 feet upstream of the culvert and expressed that the amount of channel disturbance that would have to occur downstream to make the culvert passable would not be beneficial considering the small amount of upstream reach that would be gained.
- DEEP LWRD indicated a follow-up discussion with EPA and USACE to determine permit requirements is warranted.

Project 35-198 Rehabilitation of Bridge No.06821 - Interstate 95 & Exit 10 Ramps over Drainage Conveyance in the Town of Darien

Bridge No. 06821 supports Interstate-95 (I-95) and the Exit 10 ramps over a drainage culvert in Darien, Connecticut. The existing culvert consists of a 276' - 72" x 44" asphalt coated multi plate corrugated pipe arch. The existing culvert is in fair condition (Rating = 5), which is primarily due to vertical joint misalignment, section loss of the culvert floor, deformation of the pipe, and moderate to severe corrosion at the joints. ADT of I-95 is approximately 138,700; ADT of the Exit 10 SB and NB ramps are approximately 3,700 and 3,000, respectively.

The outlet of the structure is located immediately south of the I-95 NB Exit 10-off ramp. Reinforced concrete headwalls and wingwalls are present at the outlet of the structure. A concrete surface extends from the pipe outlet to the limits of the wingwall. The area downstream of the concrete surface has been identified as wetlands.

The project consists of relining the existing structure with a glass reinforced plastic (GRP) lining. Due to the increased drainage discharge velocities, a preformed scour hole consisting of standard riprap will be constructed at the outlet. The design team presented information from various mapping (USGS, FEMA, historical plans, and surrounding site plans) showing that the areas upstream of the existing pipe outlet did not appear to be a watercourse.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	1,000	1,000
Temporary	0	0	0
Total	0	1,000	1,000

Agency Comments:

- DEEP LWRD asked about existing conditions of pipe outlet scour hole and riprap. The designer responded there is a 6-inch concrete pad that extends to limits of wingwall, riprap is not present.
- The agencies discussed regulatory jurisdiction upstream and downstream of the culvert outlet. USACE indicated that in order for there to be federal jurisdiction, Waters of the United States need to be present, and an indication of Ordinary High Water (OHW) would need to be present. An OHW mark can be seen downstream of pipe outlet. As such the channel downstream of the outlet is federally-regulated. Upstream of outlet consists of a piped network stormwater drainage.
- The regulated activities and impacts downstream of the culvert qualify for permitting under SV/IWGP. No state or federal permitting is required for the proposed activities upstream of outlet.
- Based on the discussion, slip lining activities for this project would not be within the USACE jurisdiction.

Permitting Requirements: USACE SV (GP-19), DEEP IWGP

Action Items: Prepare permit plans and permit applications for submission to the respective regulatory agencies.

Project 148-213 Rehabilitation of Bridge 0793A – Route 15 Northbound Over Quinnipiac River in the Town of Wallingford

The project consists of a proposed superstructure replacement, a substructure rehabilitation, and scour countermeasures in the channel beneath Br. 0793A and its sister bridge, 0793B Route 15 Southbound over the Quinnipiac River.

Bridge No. 0793A is comprised of two simply supported spans with a reinforced concrete deck supported by rolled steel beams resting on reinforced concrete abutments and a reinforced concrete pier wall. The existing substructure is founded on timber piles. The average daily traffic (ADT) is approximately 29,600. The existing structure has a maximum span of 51 feet. The deck is in poor condition, rated a 4. Br. 0793A's and Br. 0793B's scour critical is in serious condition, rated as a 3.The project proposes to replace Br. 0793A's superstructure with a pre-fabricated bridge unit (PBU). Br. 0793A's existing concrete substructure will be patched and ground anchors will be installed through abutments to alleviate pile loading. The drainage area is 106 square miles. The site is located within a FEMA Floodway. The structure is scour critical for the 100- and 500-year storm event

To address the scour critical serious rating, riprap overtopped with natural streambed material will replace the existing channel substrate beneath the structure and the structure's sister bridge, Br. #0793B. Upstream and downstream of the bridge, material has deposited over time to create isolated sediment bars in the watercourse. The project proposes to remove these sediment bars to restore the channel to as it was when the bridge was constructed. The elevation of the sediment bars' surfaces does not exceed the respective Ordinary High Water elevation.

Initial DEEP Fisheries comments received July 2019. Comments received during December 2021 follow-up discussion with DEEP Fisheries will be incorporated into project design.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	20,942	20,942
Temporary	0	3,636	3,636
Total	0	24,578	24,578

Floodplain Impacts	
Cut (CY)	**Fill (CY)**
TBD (net cut)	TBD (net cut)

Agency Comments:

- DOT Construction asked about use of concrete "A-Jacks" instead of riprap. DOT Hydraulics & Drainage responded that A-Jacks were considered but did not reduce the area requiring scour protection.
- DOT Construction asked about lighting restrictions during night work. The designer responded that night work will be required during the four weekends required to place the PBUs. DEEP Fisheries indicated light should not go onto the water and lighting baffles or screens could be used to minimize light disturbance during migratory time of year. In addition, DEEP Fisheries noted there will also be a 90db noise restriction (measured at the water).

Project 148-213 (continued)

- USACE asked about the extent of riprap and why smaller areas in the immediate vicinity of the structures were not proposed. H&D responded that spot treatments were investigated, but there is an overlap in the extent of riprap required around abutments and center pier, meaning the entire channel would be riprapped regardless. Analyzing riprap across the entire channel system, instead of analyzing the abutments and pier separately, allows the depth of riprap to be decreased. The designer presented a depiction of the extent of riprap that would have been needed for protection at each abutment and the pier. The designer agreed to share the depiction as an additional slide to be included in the final ICM presentation and the drawing of the overlapped riprap will be included with the permit application.
- DEEP LWRD and USACE asked about excavation of the sediment bars.
    - H&D responded that removal of sediment bars is required to reduce stream velocity and scour concerns, and also indicated that the upstream sediment bar is likely comprised of riprap that washed out from an upstream tributary. The sediment bars also cause the unwanted effect of directing flow more towards only one barrel.
    - USACE requested that removal of habitat associated with sediment bars be avoided, if possible. If removal of sediment bars is required due to hydraulic/scour concerns, USACE would like hydraulic information to be included with the permit application to support compliance with GP General Condition 3, minimization of adverse effects.
    - DEEP LWRD asked if sediment bars were being removed to balance cut/fill in floodplain. Designer noted that it is anticipated to still have a net cut in the floodplain even if the sediment bars were not removed. H&D responded that both upstream and downstream sediment bars have an impact on contraction scour in the north barrel of the structure. The project is attempting to reduce river velocity. DEEP LWRD asked if it's possible to preserve one of the sediment bars (possibly downstream). DOT agreed to minimize impact to sediment bars and/or document justification for removal.
- USACE asked if native streambed material will be stockpiled and used in the top dressing for the proposed riprap. The designer responded that native stream material will be reused in top dressing as long as the material is suitable. Given the depth of excavation, the project expects to have sufficient material to stockpile and reuse. Suitable supplemental streambed material would be brought from other locations if needed. If it is confirmed that the sediment bars are comprised of riprap, then that material would not be used for top dressing.
- DEEP Fisheries indicated there is a diadromous fish run present at this location. This bridge is between two fishways that are monitored by DEEP Fisheries. NOAA ESA consultation is not required, as sturgeon cannot pass the downstream fishway. NOAA EFH Consultation will be required, and the permitting agencies will be advised of the consultation's outcome.
- DEEP LWRD asked about NDDB coordination and critical habitat. OEP responded that DOT is aware of the species present (Blueback Herring) and coordination with DEEP Fisheries is ongoing. An application to DEEP NDDB Program will be submitted. DOT Bridge noted that there is no proposed tree clearing in the floodplain forest.
- DEEP LWRD asked about floodplain cut/fill volumes. The designer responded that final cut/fill volumes are not currently available and that a net cut is anticipated. Floodplain cut/fill volumes will be included with the permit applications.

Project 148-213 (continued)

Permitting Requirements: The following permit determination is contingent on the agencies receiving and concurring with follow-up hydraulic information demonstrating the need to remove of the upstream and downstream gravel bars: USACE PCN, DEEP PCN Concurrence of Eligibility, DEEP Individual FMC, DEEP IWGP

Action Items:

- OEP will prepare and submit a NDDB application to DEEP NDDB Program and an EFH programmatic consultation to NOAA NMFS under the (EFH Verification Form). OEP will coordinate lighting and noise restrictions with DEEP Fisheries.
- Design and H&D will investigate hydraulic/scour impact of keeping the sediment bars in place. If removal of sediment bars is required due to hydraulic/scour concerns, the hydraulic information will be included with permit applications.

Interagency Coordination Meeting Notes

January 20, 2022

MS Teams Meeting

December 16, 2021 Interagency Meeting Notes:

DEEP requested the following edits to the December 2021 meeting notes.

- For Project 32-150, the notes should indicate that the Hop River Dam is upstream of the project site, not downstream.
- For Project 148-213, the notes should indicate the drainage area (106 sq. mi.), that site is located within a FEMA Floodway, and that the structure is scour critical for the 100- and 500-year storm events. DEEP also noted that a final confirmation that the project was PCN eligible was not determined. The notes will indicate that the project's PCN determination is contingent on the agencies receiving and concurring with follow-up hydraulic information regarding the removal of the upstream and downstream gravel bars.

With the revision to be made as requested by DEEP, the notes are considered accepted.

Project 87-148 - Rehabilitation of Bridge No. 06772, Route 63 over Straitsville Brook in Naugatuck

Project 87-148 was presented at the December 16, 2021 ICM without a final permit determination. Subsequent to the December 2021 meeting, USACE provided follow-up written comments regarding: the practicality of alternates relating to boring or pipe jacking; alternatives for fish passage other than an in-channel concrete fish ladder; and General Conditions 20 and 21 of the CT General Permit . A site visit with DEEP LWRD, DEEP Fisheries and DOT was conducted on January 10, 2022.

No formal presentation was provided. Written responses to USACE's comments were provided in advance of the ICM meeting. USACE's follow-up comments and the site visit were discussed.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	810	810
Temporary	0	1,940	1,940
Total	0	2,750	2,750

The project is not located within a FEMA floodplain (i.e., no floodplain impacts).

Agency Comments:

- USACE indicated that the written responses to the follow-up questions were satisfactory. DEEP LWRD and USACE concurred with the DEEP Fisheries conclusion that natural obstructions decrease the potential value of getting fish passage at this site and is not feasible at this location at this time.

Project 87-148 (continued)

- DEEP LWRD noted that during the site visit there was an observed washout of a portion of the embankment between Route 63 and Straitsville Brook approximately 300 feet downstream of the subject culvert. DEEP LWRD stated their concerns over additional sediment loss in this area that could be caused by streamflow velocity increases from the sliplining project. EPA and USACE agreed with DEEP's concern regarding the washout and indicated that the culvert project may need to include slope stabilization to prevent the secondary impacts. Jute matting and live stakes were suggested.
- DOT designers, OOC, OEP, EPC will investigate means to stabilize the slope in coordination with DOT Highway Operations and Rights-of-Way. The area of the failed slope is beyond the CT DOT right of way., DOT would typically address this type of condition only if it caused the supporting roadway slope to exceed 2:1, which is not the case at this location.
- DOT H&D indicated that the proposed velocity increase associated with the sliplining is limited to the immediate area of the culvert outlet. The velocity increase is expected to dissipate due to the large boulders present within the watercourse and there will be no velocity increases downstream in this area.
- DEEP LWRD indicated that H&D's statements regarding the limited extent of the velocity increases addressed their concern whether Project 87-148 would be any cause of additional erosion. DEEP LWRD maintained their request that the area be reviewed by DOT to determine if anything can be done.

USACE #: NAE-2022-196
Permitting Requirements: USACE PCN (GP19), DEEP PCN Concurrence of Eligibility, DEEP Individual Inland Wetlands and Watercourses Permit
Action Items: Prepare permit plans and permit applications for submission to the respective regulatory agencies. DOT designers, OOC, OEP, EPC will meet with Highway Operations and Rights of Way to investigate stabilization of the existing washout.

Project 46-127 - Replacement of Bridge No.01524, Route 191 over Scantic River in East Windsor

Bridge No. 01524 supports State Route 191 over the Scantic River in East Windsor. The existing structure is a single span with span length of 76 feet and an out-to-out width of 32.4 feet. ADT is 1500 vehicles. The structure was rated to be in serious condition (3) due to steel deterioration; it is posted for 11 tons/emergency vehicles. The existing structure is hydraulically inadequate and is within a FEMA 100-year floodplain. The drainage area is 97.6 sq. miles.

The preferred replacement structure type is a single span steel plate girder superstructure on reinforced concrete abutments with a clear span of 120 feet and an out-to-out width of 33 feet. The proposed structure will meet the 1.2xBFW criterion and will be hydraulically adequate.

An existing sewer main located below the Scantic River conflicts with the proposed structure and will be relocated to a permanent subaqueous location farther south of its existing location. Alternative bridge locations to avoid the sewer conflict resulted in either poor roadway geometry or would require acquisition and change of use to public water supply company lands. Directional drilling the new sewer line was impractical due to the $7.5M cost. A permanent sewer line attached the bridge structure would require a new pump station, which was rejected by the local sewer authority.

Project 46-127 (continued)

The project area is habitat for state-listed mussels (5 species – NDDB approved relocation) Impact minimization also included DEEP Fisheries recommendations in consideration of diadromous fish runs for turbidity, light and sound, time of year, doing one-half the sewer installation at a time, and abandonment of the existing sewer line after the new main is in service.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	1,068	1,068
Temporary	260	3,009	3,269
Total	260	3,817	4,337

Floodplain Impacts	
Cut (CY)	Fill (CY)
250	80

Agency Comments:

- DEEP Fisheries clarified the time-of-year (TOY) restriction restricts any unconfined instream work within the Scantic River to the period from July 1 to September 30, inclusive. Construction noise limits of 90 dB should be measured at the water surface.
- DEEP LWRD asked for clarification regarding under-clearance of the proposed bridge. The designer confirmed the project meets the Hydraulic Manual's freeboard requirement for a drainage area greater than 10 square miles. There is more than 2-feet of freeboard between the 100-yr WSEL and the overlying road.
- USACE stated that the existing sewer should be removed from waterway after it is abandoned in accordance with Corps policy and General Condition 36 of the CT GP. DOT indicated that the impacts associated with removing are expected to result in total wetland/watercourse impact greater than 5,000 sf. USACE indicated that GP-19 of the new General Permit for CT includes an exception that allows regulators to permit projects under Self-Verification (SV) that do not meet numeric limits but have compelling reasons to qualify for SV.
- USACE asked about the DOT's methodology for determining scour depths, and whether there was potential for the sewer pipes to be exposed over time. DOT H&D responded that scour depth was analyzed using HEC-RAS and HEC-18 methodology and considered the size of the bedload in its modeling. The existing sewer pipe is approximately two feet below the riverbed, and this depth can be compared to available scour depth of the bridge abutments. The proposed sewer pipe depth was determined based on the elevation of the gravity main on either side of the river.
- USACE indicated the scour and sewer depth information will be required and requested a follow-up meeting to further discuss the issue.

USACE #: NAE-2022-197

Permitting Requirements: A final permit determination was not made. The agencies will further consider the permitting requirements during a follow-up meeting.

Action Items: DOT to schedule a follow-up meeting with regulators to discuss the existing sewer pipe, scour depths and project permitting.

Project No. 13-89 - Rehabilitation of Bridge No. 06847, Route 2 over Polly Brook in Bozrah

Bridge No. 06847 carries Route 2 over Polly Brook in Bozrah. The existing structure is a single, round asphalt-coated corrugated metal pipe (ACCMP) culvert that is 290-foot long with a diameter of 7 feet. ADT is 26,200 vehicles. The structure was rated in serious (3) condition due to heavy laminar rust, section loss, perforations, active leakage and backfill material spilling through the pipe at several locations. The existing structure is hydraulically adequate. The drainage area is 0.33 sq. miles. The project site is not mapped within an NDDB area.

The proposed rehabilitation work mainly consists of slip-lining the existing pipe with a 72" Hydraulically Smooth Interior Aluminum pipe with the installation of new cutoff walls and permanent access roads.

The permanent/temporary impacts presented will be reduced. The presentation accounted for permanent impacts associated with riprap outlet protection, which is no longer required. This will also reduce temporary impacts since the water handling cofferdams will be moved closer to the structure.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	3,000	3,000
Temporary	700	1,300	2,000
Total	700	4,300	5,000

The project is not located within a FEMA floodplain (i.e., no floodplain impacts).Agency Comments:

- DEEP LWRD asked what the composition of the supplemental natural streambed material will be. DOT EPU and EPC responded that DOT's specification for supplemental streambed material calls for matching existing streambed material through a process that requires field coordination with DEEP Fisheries. DEEP Fisheries confirmed the process of approval of natural streambed material.
- LWRD asked about the selection of the pipe liner material. The consultant and DOT H&D explained that the Ultraflow pipe lowered upstream inundation compared to the alternatives considered. H&D also stated that the expected velocity increases are not a concern at the outlet or downstream.
- LWRD asked why the scour hole at the outlet is being removed from the project. The consultant stated that coordination with DOT Soils and Foundations and H&D determined that there was no concern for undermining at the structure outlet. Therefore, cutoff walls are not needed, and the scour hole would only be required if cutoff walls were to be installed.
- DOT District Construction asked that the proposed access roads be reviewed for slope and erosion considerations. The designer stated that water bars and a riprap swale have been included and the access roads will be sloped towards the embankment to address these concerns.

USACE #: NAE-2022-199

Permitting Requirements: USACE PCN GP-19, DEEP PCN Concurrence of Eligibility, CT DEEP Individual Inland Wetlands and Watercourses Permit

Action Items: Prepare permit plans and permit applications for submission to the respective regulatory agencies.

Project No. 57-122 - Replacement of Bridge No. 07036 Route 138 over Unnamed Intermittent Brook in Griswold

Bridge No. 07036 carries Route 138 (Voluntown Road) over an unnamed, intermittent brook in Griswold, Connecticut. The existing structure is an asphalt-coated corrugated metal pipe (ACCMP) culvert that is 72 feet long with a diameter of 6 feet. ADT is 7,500 vehicles. The structure was rated in poor (4) condition due to heavy laminar rust, areas of missing asphalt coating, undermining at the inlet, scour hole at the outlet, and voids/ perforations within the pipe. The existing structure is hydraulically inadequate and is not located within a FEMA 100-year floodplain. The drainage area is 0.6 sq. miles. The project site is not mapped within an NDDB area.

The proposed replacement work consists of realigning the brook approximately 35 feet west of the existing ACCMP culvert. The proposed structure will consist of a 76-foot long precast concrete box culvert with a height of 8 feet and a width of 9 feet, with 1 foot of natural streambed material throughout, wingwalls, and cutoff walls at the inlet and outlet. Permanent access roads will be installed from Route 138 to the inlet and outlet.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	1,765	2,460	4,225
Temporary	545	55	600
Total	2,310	2,515	4,825

Agency Comments:

- USACE indicated concern about the proposed channel realignment and that the realignment could result in impacts without a corresponding benefit. The designer indicated that the wetlands in the project area are expected to be unaffected by the realignment since the proposed culvert invert is intended to tie into the elevation of watercourse.
- USACE asked if this stream has consistent flow or if a ponded situation was typically present. The designer presented additional photographs of the upstream and downstream areas, which depicted either dry conditions or still or slow-moving water during wet conditions.
- USACE asked about the need to off-set the culvert from its existing location. The designer explained that the proposal to off-set the culvert from its current location was to accelerate construction and limit the duration of the detour by being able to use the existing pipe for water handling. The off-set distance was due to the workspace needed to set the wingwalls in the roadway slopes.
- USACE asked for confirmation that there were no fish present. DEEP Fisheries had provided their assessment that this watercourse does not have any significant fisheries resources.
- DEEP LWRD requested additional information regarding how the realigned channel will be shaped to determine impact of realignment. The designer indicated the existing conditions are hummocky and the proposed channel will tie into the existing channel at the same invert elevation.
- USACE asked if work could be done during a time of year that would eliminate need for water handling. The designer indicated that dry weather is preferred but the design must be prepared to handle water during wet weather conditions.
- USEPA indicated there was not a great concern about overall adverse and long-term impacts to this low gradient stream and an SV permit determination would be acceptable.

Project No. 57-122 (continued)

- DEEP LWRD indicated permitting under SV may be acceptable but requested a site visit for confirmation. DOT agreed to schedule a site visit within next two weeks with DEEP LWRD.

USACE #: NAE-2022-200

Permitting Requirements: DEEP LWRD and USEPA agreed the project may be SV-eligible pending a site visit to determine impact of the proposed channel realignment. Based on regulatory feedback provided after the site visit (see below), the permitting requirements would be USACE PCN, DEEP PCN Concurrence of Eligibility, and DEEP IWGP.

Action Items: DEEP LWRD and DOT will conduct a site visit to determine SV-eligibility.

Subsequent to the meeting a site visit was held on January 26, 2022 with DEEP LWRD and DOT OEP. DEEP LWRD requested that the designer provide a map depicting the proposed and existing upstream inundation associated with a 2-yr storm event. On February 3, 2022, DEEP sent a follow-up email summarizing the 1-26-22 field visit. The email concluded that the project would be creating a streambed in a location that was distinctly separate from the existing channel and therefore would be a stream relocation not eligible under an SV and should be processed under a PCN application. Additionally, DEEP LWRD requested outlet cross-sections and details be included in the permit application.

Project 121-136 - Rehabilitation of Bridge No.05200 Salmon Kill Road over Salmon Creek in Salisbury

Bridge No. 05200 supports Salmon Kill Road over Salmon Creek in Salisbury. The existing structure is a precast concrete deck superstructure supported on reinforced concrete abutments and wingwalls with a span length of 51 feet and an out-to-out width of 29 feet 2 inches. ADT is 538 vehicles per day. The structure was rated in Serious condition (3) due to early deterioration of the eastern abutment. The existing structure is hydraulically adequate and is within a FEMA 100-year floodplain.

The proposed structure rehabilitation work consists of replacing the existing superstructure with new precast prestressed concrete deck units. The existing eastern substructure will be replaced in-kind and supported by micropiles. The western abutment will have concrete repairs made to support the new superstructure. The total structure length will remain at 51 feet and will provide approximately a 44.5-foot clear span.

NDDB species have been mapped in the project area. Surveys will be conducted by qualified scientists and a final determination request will be provided to DEEP NDDB with appropriate best management practices and project specifications.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	0	0
Temporary	0	350	350
Total	0	350	350

Floodplain Impacts	
Cut (CY)	Fill (CY)
60	60

Project 121-136 (continued)

Agency Comments: The agencies agreed that the replacement-in-kind met the requirements for SV under GP2.
USACE #: NAE-2022-201
Permitting Requirements: DOT H&D FM MOU, USACE SV (GP-2), local inland wetlands
Action Items: Prepare permit plans and permit applications for submission to the respective regulatory agencies.

INTERAGENCY COORDINATION MEETING AGENDA

DOT/DEEP/ACOE/EPA

March 21, 2024

MS Teams meeting

Discussion of February 2024 meeting notes

- Project No. 0300-0196 (Darien):
  - Agency Comments, Bullet 9, change from USACE to DEEP LWRD comment.
  - Permitting Requirements: Change IWGP to IW Permit determination pending mitigation discussion.
- Project No. 0300-0196 (Wilton): Add the minimum hydraulic opening to be maintained in the project description.
- Project No.00 83-0270:
  - Wetland/Watercourse Impact Table needs to remove "(Shown as coincident for both state and federal)" since there are state only wetland impacts.
  - Add in the project description that the project is within an NDDB area and an NDDB Determination Letter has been received.
  - Add to the project description that the construction duration is anticipated to be one season.
- Project No. 0040-0148:
  - Wetland/Watercourse Impact Table needs to remove "(Shown as coincident for both state and federal)" since there are state only wetland impacts.
  - Agency comments, Bullet 3, add species present (Eastern Box Turtle and Wood Turtle).

1. Project 0092-0687 Rehabilitation of Bridge No.00037 U.S. Route 1 (Forbes Ave.) over Quinnipiac River in New Haven, Connecticut

Bridge No. 00337 supports U.S. Route 1 (Forbes Avenue) and the P&W Railroad over the Quinnipiac River in New Haven, Connecticut. The existing structure is a steel moveable - lift bridge (270 feet), with total length of 936 feet and an out-to-out width of 89 feet. Average Daily Traffic (ADT) is 12,400 vehicles (2018) with approximately 3 trains per day. The structure currently has a structural evaluation of 6 (satisfactory condition). The main deficiencies to be addressed are steel repairs to railroad girders, new membrane waterproofing and bituminous overlay, clean scuppers and extend weep pipes (not to extend below the low chord over navigational channel), clean and spot paint steel, replacement of bridge joints, repair bridge bearings on approach and lift spans, replace mechanical components of the lift span, generator installation southwest of the bridge, installation of new aerial communication cables within the existing horizontal limits of the bridge and abandonment of existing submarine communication cables in place. The project will utilize barges for delivery of materials. The existing structure is hydraulically adequate and is within a FEMA 100-year floodplain (Zones VE & AE) and located over a federal navigation channel. The lift span operates approximately 3000-4000 times a year to accommodate passage of commercial and recreational marine traffic. The project is located within an NDDB area and requires coordination with USFWS for NLEB, Red Knot and Roseate Tern as well as coordination with NMFS ESA and EFH.

Project Impacts:

No wetland/watercourse impacts are anticipated within the project area.

Floodplain Impacts:

Negligible fill (<1 CY) within FEMA Flood Zone due to structural repairs.

Agency Comments:

- CTDEEP LWRD asked if CTDEEP Boating had been coordinated with. The consultant noted this coordination is needed and will be initiated in the future.
- USACE 408 asked when the permit application is anticipated to be submitted and whop the lead federal agency is for the project. The consultant stated the preliminary permit plans are anticipated to be done July 2024 and that FHWA is the lead federal agency.
- USCG noted that there are no concerns at this time with the proposed work and deviations required as long as there are no impacts to channel clearances and the proposed cables are within the existing footprint of the bridge. Deviation requests will need to be submitted at least 90 days prior to scheduled deviations and requests will need to include coordination with mariners and the harbor master. CTDOT OEP asked what was needed in regard to mariner coordination. USCG clarified that email notifications and social media posts on proposed deviations would be sufficient and USCG staff can be copied on correspondence.
- USCG asked if the proposed aerial communication cable placement will impact the vertical clearance of the bridge. The consultant confirmed the cables will not impact the vertical clearance.
- CTDEEP LWRD stated there are no concerns with the aerial cable placement so long as it remains within the existing footprint of the structure.
- CTDOT District 3 Construction asked to be provided with the timelines for procurement for long lead items such as the cables and mechanical components to avoid construction delays.
- CTDEEP LWRD asked the consultant to elaborate on the existing upstream water dependent usage. The consultant stated there are recreational mariners upstream with most industrial usage located downstream of the bridge and that several of the proposed closures will be with the bridge in the open position allowing for marine traffic to pass through the project area.
- CTDEEP LWRD asked if there are any aquaculture or fisheries businesses upstream. CTDEEP Fisheries stated there are a significant number of commercial shell fishing operations upstream which will need to be coordinated with.
- The consultant asked USACE 408 if there was any information on proposed dredging operations within the project area, specifically if there is a schedule for the proposed operation. USACE 408 will follow up after internal coordination on schedule of proposed dredging.
- The consultant asked is USACE Regulatory or USCG will be taking lead jurisdiction of the proposed work. Discussion concluded USCG will take jurisdiction under Section 9 (Construction & Deviation Letters) and no Section 10 permit is required from USACE Regulatory.
- USACE 408 noted they will need to prepare a public notice for the project which will be coordinated with USCG and will need an agreement with FHWA on the project.
- CT DEEP LWRD asked if the barge launch location has been determined. The consultant stated this is still being finalized.
- CTDEEP Fisheries asked for confirmation that there is no proposed in-water work and if fisheries coordination had been initiated. The consultant confirmed there is no anticipated in-water work and CTDEEP fisheries coordination had not been initiated yet due to barge work being recently added to the project. CTDEEP Fisheries coordination will be initiated soon.
- CTDEEP Fisheries noted that there will be time-of-year restrictions for any proposed night work.
- CTDOT OEP asked how many barges were anticipated to be utilized at any given time on the project. The consultant anticipated three barges will be used.
- CTDEEP LWRD asked if the existing pier east of the lift span is a public access fishing pier. CTDEEP Fisheries confirmed this is a public access fishing pier and any closure of the pier, closures, if needed, would be acceptable and will need to be coordinated with CTDEEP Fisheries in order to provide notice to the public. Most activity at the pier is during the summer months. The consultant stated that there is currently no plan to close the pier during construction, but any impacts to use will be coordinated with CTDEEP Fisheries.
- CTDEEP LWRD asked if the proposed staging areas below the bridge are owned by CTDOT. The consultant confirmed this is CTDOT property.

- CTDEEP LWRD noted that the COP application will need to include documentation on coordination with mariners, harbor master meeting notes, CTDEEP Boating coordination and identify navigational impacts.
- The consultant asked if CTDEEP Boating should be notified when the project will be discussed at the Harbor Management Commission meeting. This can be coordinated through CTDOT OEP.
- CTDEEP Fisheries noted that the Bureau of Aquaculture (BOA) needs to be coordinated with regarding proposed changes in bridge operation during construction.

USACE #: NAE-2022-xxxx
Permitting Requirements: USACE Section 408 Authorization (404 not required as no fill is anticipated), CTDOT Flood Management General Certification, USCG Coordination (Construction Letter and anticipated 2 Deviation Letters), CTDEEP Certificate of Permission, CTDEEP Boating Regulatory Marker Permit
Action Items:

- Consultant to prepare and submit packages to OEP for coordination with DEEP Fisheries, DEEP Boating, Harbor Commission, BOA, NDDB.
- USACE 408 to provide CT DOT with information on the proposed dredging project within the project area.

2. Project 0053-0199 Rehabilitation of Bridge No.00417 Putnam Bridge, State Route 3 over the Connecticut River in the Towns of Wethersfield and Glastonbury

Bridge No. 00417 supports State Route 3 over the Connecticut River and Great Meadow Road in the Towns of Wethersfield and Glastonbury. The existing structure is a fourteen-span structure, 2393 feet in total length, with a federal navigation channel below Span 7. The structural system consists of a main girder-floorbeam-stringer system with two main girders supporting the entire cross section. Average Daily Traffic (ADT) is 55,100 for both NB and SB. The structure was rated in fair condition due to numerous spalls throughout the deck, active leakage, exposed rebar, heavy rust and laminated rust at multiple locations, section losses of the steel superstructure, among others. The existing structure is hydraulically adequate and is within a FEMA 100-year floodplain. The proposed structure rehabilitation work consists of installing girder bracing and cover plate extensions to the main girders to improve load ratings, bridge painting, repairs to the existing deck slab with strip, patch, membrane, and overlay (SPMO). Expansion joint replacement as well as other miscellaneous repairs to the steel stringers, existing abutments and piers. Anticipated access is from temporary haul roads beneath the bridge on both side as well as barge access from the waterway. SHPO and THPO coordination are being resubmitted.

The initial NDDB Review found the following State listed species may be within the project area: Yellow lampmussel, Davis' sedge, blueback herring, Northern leopard frog, mudpuppy, Eastern pondmussel, Tidewater mucket, Wiegan's wild rye, and cattail sedge. The NDDB Review found the following federally listed species may be within the project area: Atlantic Sturgeon and Shortnose sturgeon

Project Impacts:
Wetland/Watercourse Impacts:

	State- Only Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	0	0
Temporary	12, 542	0	12, 542
Total	12, 542	0	12, 542

Floodplain Impacts:

Cut (CY)	721

Fill (CY)	721
Net (CY)	0

Agency Comments:

- USACE stated that permit determination for this project will be dependent on if the wetland delineation of the project area determines the wetland impacts to be to be State-Only or State and Federal Wetlands. USACE added that the project would be authorized under USACE Section 408 and Section 9 if impacts are only anticipated for State-Only wetlands, but a Self-Verification (SV) cannot be authorized if there are impacts to State and Federal wetlands.
- CTDEEP LWRD asked why a Certificate of Permission (COP) or a Coastal Maintenance General Permit was not included in the list of anticipated permits. OEP responded that these permits were overlooked and should be included.
- DEEP LWRD asked if the proposed bracing is permanent. The Designer confirmed. CTDEEP LWRD asked if low chord would be impacted. The Designer responded that the low chord is not impacted.
- OEP asked which permit is anticipated between a COP and a Coastal Maintenance General Permit. CTDEEP LWRD responded that this determination is dependent on further design choices including if barges are proposed in navigation channel. CT DEEP LWRD added that COP is most anticipated.
- CTDEEP LWRD asked if construction of the access roads will result in impacts to NDDB plant species within the project area. The Designer responded that the vegetation is assumed to be near the rivers edge and impacts to the plant species are unknown at this time. CTDEEP LWRD asked that the Designer reinitiate NDDB coordination to ensure the access roads do not interfere.
- CTDEEP LWRD asked if work on the superstructure will require artificial lighting. The Designer stated that construction is anticipated to be done during daylight hours and painting will be done in an enclosed area where artificial lighting wouldn't be a concern for impacting the project area.
- CTDEEP LWRD asked what duration that access roads will be in place. The Designer stated that it is possible to do it in one season. OEP added an explanation that this is an assumption that may change as the design progresses.
- CTDEEP LWRD stated the importance of confirming if the wetlands within the project area are State-Only when making permit and mitigation determinations. CTDOT OEP stated that this is a very disturbed area with invasive species including Mugwort.
- CTDEEP LWRD asked the Designer if construction is anticipated to affect the existing public-use trail. The Designer responded that the trail will need to be crossed over and they are still investigating how this will be achieved. CTDOT OEP stated that an example project can be provided to the Designer that had similar concerns. CTDEEP LWRD recommended that impacts to the trail be avoided when possible.
- CTDOT OEP asked what coordination should be expected if barges are used in the navigation channel. USACE 408 responded that there are few concerns, but an anticipated schedule of work would need to be provided.
- CTDOT OEP asked what needs to be submitted for Section 408 coordination. USACE 408 responded that an informal meeting with OEP can take place to decide on what submissions are needed.
- CTDEEP LWRD and USACE accepted the anticipated permits provided that a COP is added and with the understanding that an SV cannot be used if wetlands are determined to be State and Federally owned.
- USACE added that a corps permit was issued at this location for previous freshwater wetlands impact for a temporary access road at the same location

USACE #: NAE-2012-00484
Permitting Requirements: USACE Section 408 authorization, USACE Pre-Construction Notification (SV) (under GP-19), CTDEEP Certificate of Permission (COP), CTDEEP General Water Resource Construction Activities, CTDEEP Individual Inland Wetland and Watercourses Permit, USCG Construction Letter
Action Items: N/A

3. Project 0068-0217, Replacement of Bridge No. 02599, Route 101 (Hartford Pike) over Chestnut Hill Reservoir in the Town of Killingly

Bridge No. 02599 supports Route 101 (Hartford Pike) as a causeway over Alvia Chase Reservoir (Chestnut Hill Reservoir) in the Town of Killingly. The existing structure is a 12-foot wide, single-span concrete slab deck supported by reinforced concrete abutments and wingwalls. Average Daily Traffic (ADT) is 5,300. The structure was rated in poor condition (Rating = 4) due to the condition of the concrete deck and superstructure. The slab underside exhibits efflorescence, rust, leakage stains, and cracking and spalling with exposed rebar with up to 95% section loss. The bituminous concrete overlay exhibits signs of wear and raveling with spalls in pavement seams extending into the approaches. The existing substructure is in satisfactory condition (Rating = 6). Embankment erosion exists on the northern channel embankment with aggradation at the northern (downstream) abutments with a significant accumulation of debris and vegetation. The existing structure is hydraulically inadequate as it is under pressure flow and is within the FEMA 100-year floodplain (Zone A).

The preferred replacement structure type is a 12-ft wide X 9-ft high concrete box culvert with a clear span of 12 feet and out-to-out width of 37 feet. The proposed structure will be hydraulically adequate and will pass the 50-year storm continuously. Natural streambed material (2.5 ft depth) will cover the bottom of the concrete box culvert. New in-line reinforced concrete wingwalls supported by concrete footings will be constructed and the structure will be topped with waterproofing membrane and a bituminous concrete wearing surface. NDDB Coordination was completed on June 14, 2022 and identified state-listed species of concern including pine barrens bluet, Scarlet bluet, Little bluet, and Attenuated bluet. The Designer will develop an Odonate Management Plan, and species sensitive areas will be delineated and protected from disturbance. DEEP Fisheries requested that the future design provides unrestricted fish passage and unconfined in-water is restricted to June 1 to September 30, inclusive.

Project Impacts:
Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	1250	1250
Temporary	0	840	840
Total	0	2,090	2,090

Floodplain Impacts	
Cut (CY)	**Fill (CY)**
12	6

Agency Comments:

- CTDEEP LWRD asked about coordinating with Rhode Island for the road closure detour. The Designer confirmed that the detour uses Rhode Island state roads and will last 2-4 weeks.
- USACE asked about temporary floodplain impacts from the utility pole relocation. The Designer confirmed that they will be temporarily moving the utility pole into the OHW. OEP added that a cofferdam will be used.
- CTDEEP LWRD asked if state-listed damselfly species are linked to habitat or substrate. OEP added that damselfly protected areas are identified as habitat for both the adult and aquatic stages. OEP confirmed that the Designer will field locate NDDB species. The Designer added that the damselfly habitat is west of the bridge. CTDEEP LWRD noted to include habitat areas within application materials and to avoid relocating the utility pole within damselfly protected areas.
- CTDEEP LWRD asked if supplemental streambed material will be needed. The Designer anticipates using supplemental streambed material to meet the 2.5 feet of natural streambed material proposed in the culvert. OEP added that the standard specification calls for matching existing material size.
- CTDEEP LWRD added that the Designer must develop an odonate management plan and demonstrate that they are following it to be eligible for an SV or PCN, noting that any adverse impacts to protected species will not be considered under the general permit. USACE added that this also applies to adverse impacts found in SHPO/THPO coordination.
- CTDEEP LWRD commented that for this site specifically, meeting the bankfull width requirement is not required, and concurs with a self-verification determination.
- USACE also concurs with the SV determination. USACE added that a self-verification is not allowed to condition a permit, so all odonate notes must be on permit plans. LWRD added that having an expert on site or other specifications of the odonate management plan will be required in permit plans.
- CTDEEP Fisheries has no comments in addition to their original comments.
- District 2 added that dewatering at this site will be a challenge, noting that a fully enclosed cofferdam is needed. The Designer noted that the limited construction duration may not require pumping but will have the option for pumping in place if needed. The Designer noted that an eastern relief pipe will carry flow if water levels reach a certain height.

Permitting Requirements:

- USACE Self-Verification – GP 19
- CT DEEP Inland Wetland General Permit
- CT DEEP Flood Management Certification

USACE #: NAE-2022-xxxx

4. Project 0138-0252, Rehabilitation of Bridge No. 02150, Route 15 (Merritt Parkway) over Freeman Brook in the Town of Stratford

Bridge No. 02150 supports Route 15 (Merritt Parkway) over Freeman Brook in the Town of Stratford. The existing structure is a 200-foot long, 10-foot wide by 8-foot-tall concrete box culvert with reinforced concrete headwalls and

wingwalls. The structure is under approximately 25 feet of fill with sloped embankments. The Average Daily Traffic (ADT) is 85,600. The structure is in overall Poor Condition (Rating = 4) due to the condition of the concrete box culvert. The walls exhibit numerous spalls with exposed rebar, scale, and active leakage with sediment. The top slab shows longitudinal cracking with efflorescence. The invert exhibits areas of heavy to moderate scale. The outlet cutoff wall is exposed for the full length and undermined 4 feet by 10 inches high by 10 inches deep. The inlet cutoff wall is exposed 4 feet by 3 inches deep. Exposed portions of the cutoff walls have moderate scaling. The eastern outlet wingwall footing is also exposed for its full length and undermined up to 6 feet long by 2 feet high with 16 inches of penetration. The channel is also in poor condition, which is primarily due to the channel scour and embankment erosion at the outlet. The existing structure is hydraulically adequate and is within a FEMA 100-year floodplain (Zone A). The watershed area 0.4 square miles. A sewer main, encased in concrete, is located along the floor of the culvert through the crossing and continues beyond the outlet.

The proposed rehabilitation consists of repairing the existing culvert, headwalls and wingwalls at areas of noted deterioration with variable depth patching. The existing culvert will have approximately 5% of the walls repaired using variable depth patches. Repairs to areas of overhead spalling consist of removing all loose concrete, cleaning exposed rebar, and coating the exposed area with a zinc primer. Deteriorated areas at the weep holes will be repaired by removing loose concrete and applying a zinc primer to the weep pipe and concrete below to prevent further deterioration. The existing headwalls, cutoff walls and wingwalls at areas of noted deterioration will be repaired with variable depth patching. The undermining of the outlet wingwalls will be filled prior to the installation of a preformed scour hole and rock weir which will be used to prevent scour and improve the channel condition.

Variable depth concrete patching will be used to repair the concrete encasing of the sewer main within the limits of the culvert. Approximately 60 feet of the existing sewer main and concrete encasement that extends beyond the outlet of the culvert will be replaced as part of construction.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	**Watercourse (SF)**	**Total (SF)**
Permanent	3,000	1,630	4, 630
Temporary	0	2,170	2,170
Total	3,000	3,800	6,800

Floodplain Impacts:

Cut (CY)	840
Fill (CY)	1,210
Net (CY)	370

Additional notes:

- Access is proposed via Tanglewood Road due to residential developments and cultural resources in surrounding landscape. The proposed permanent access road is requested by the town and being reviewed by the state.
- The project area is located fully within the 100 year floodplain.
- There is approximately 25 feet of fill over the bridge and rehabilitation is the preferred alternative
- The outlet is in poor condition while the inlet does not require work
- Scour hole in channel during construction for water handling. Riprap removed after construction and channel restored

- Western drainage and a seep contribute hydrologically to the wetland. The design would reestablish the watercourse through the wetland and be conveyed under the access road via 24" CMP. Will reassess the volume of access road fill if designed as permanent. If possible, will pull access road out of wetland and leave road in upland only.
- The proposed scour hole is in compliance with DOT drainage manual (bigger than originally designed). 55' long x45' wide, 3:1 side slopes
- Existing and proposed conditions are hydraulically adequate
- DEEP requested roughness within the bridge. The Designer expressed concern the roughness would add turbulence and erosive nature of flow

Agency Comments:

- CTDEEP Fisheries asked the proposed depth of the scour hole. The Designer responded 4' from edge between elevations 86 to 82.
- CTDEEP LWRD asked if the scour hole was bermed over the OHW elevation. The Designer replied that the berm is set to match existing grades of the channel.
- USACE asked if a wetland report had been prepared. The Designer responded a wetland report was not available at this time but will be included in the permit application.
- CTDEEP LWRD asked if the impacted wetland could be described. The Designer's wetland scientist described the wetland as receiving ground water via a seep, the presence of skunk cabbage, and located in a low -ying area.
- CTDEEP LWRD asked for clarification why access via the exit ramp was not selected, why the town is proposing permanent access, and the need for the state review of the permanent access road. The Designer replied that the access road off of Tanglewood was selected due to the discovery of cultural resources at the exit ramp that were best not to be disturbed. The Town would like to be able to access the sewer main beyond the existing easement as the sewer main installed in '70s and nearing end of life. The State is reviewing the permanent access road due to the extent of natural resource impacts.
- CTDEEP LWRD asked if a proposed channel would be created for outflow at the 24" CMP under the access road, and to clarify hydrologic input from the existing pipe under the Merritt and resulting channel flow. The Designer responded that the channel flow, classified as a watercourse, is fed through an end wall from the Merritt's storm drainage system. The flow appears to be continuous. Additionally, records show a "spring" and a 6" pipe under the Merritt. DOT asked to clarify if it's similar to an underdrain, which the Designer replied yes. The flows converge at the wetland boundary causing erosion. The design needs to converge the spring flow with the watercourse and will investigate further how best to stabilize the area.
- CTDEEP LWRD asked if a drainage swale was present on the inlet side of the proposed 24" CMP. If the watercourse enters the wetland and disperses into the broad low-lying area, will the concentrating flow have a secondary impact. The Designer replied that there will be no secondary impacts to the wetland. Once the watercourse enters the wetland, the water converges with Freeman Brook and the change of flow would not the impact wetland. CTDEEP LWRD asked to clarify that the proposed pathway would follow existing drainage. The Designer replied that the existing drainage would be followed. DOT commented that during the initial project review a defined pathway to get the water to final destination was suggested. CTDEEP LWRD stated concern the outlet side will likely have secondary impact due to concentrated flow as it would no longer be diffuse.

- District 3 commented that maintaining a permanent access road would be helpful with inspection and culvert maintenance. In addition, potential future erosion and vegetation maintenance could be addressed.
- District 3 asked to clarify the need for access at the inlet. The Designer responded access for construction was not required at the inlet. Sandbag and water handling would be conducted manually through the bridge.
- CTDEEP LWRD asked if scour protection alternatives, such as the size of scour hole, were considered. The Designer replied nothing beyond riprap protection was considered. The design proposes stabilizing the outlet wall by driving it deeper and filling in voids. Downstream no artificial methods or products to provide grade control were reviewed. The design alternatives focused on stone and stone size in response to various design standards (I.e., HECs) as there was a concern about large stone stability due to void space. The design is in accordance with the standard drainage manual design area.
- CTDEEP LWRD asked if standing water would be present in the scour hole under normal flow conditions. The Designer replied there will be a continuous flow except for dry months when water does not meet the top of rock weir. If the drainage from the west is redirected to the scour hole, continuous flow would most likely be achieved.
- CTDEEP LWRD asked to have wetland boundaries extended if the 24” CMP is to be installed permanently.
- CTDEEP LWRD asked which storm event would be conveyed via the 36” bridge. The Designer responded the 2 yr storm.
- CTDEEP LWRD stated that the project presented several different design scenarios and asked if the project would return to ICM. DOT responded that continued coordination with the Town depends on the outcome of the ICM. LWRD was concerned about reviewing impacts and permit determination at this time. CTDOT responded the project could return to ICM pending design.
- CTDEEP LWRD stated a field visit may be needed to clarify wetland hydrology. The Designer displayed photographs of the site taken approximately a week earlier. USACE asked to clarify the presence of a defined channel within the wetland. The Designer replied it was more drainage than a defined channel. DOT noted drainage within the wetland isn’t shown on topographic maps.
- CTDEEP LWRD requested SCS, cross sections of access road, and CMP designs be included in permit plans.
- CTDEEP LWRD asked to clarify that an access road to the inlet is not required due to the adequate state of the inlet and sewer. The Designer replied that the inlet and sewer did not require work as they are in good condition.
- CTDEEP LWRD asked how sandbags would be installed and transported to the inlet. The Designer replied by hand through the bridge.
- USACE inquired who were adjacent property owners and if access for a site visit was possible. DOT will coordinate a field visit or have the project return to ICM to present the watercourse.
- CTDEEP LWRD commented permitting needs will not be determined at this time due to potential impact changes and GP expiration (April 2024) and updates. Permitting will be confirmed at next ICM meeting. In addition, if the project is to be eligible for a PCN, the minimization of riprap to the greatest extent possible would need to be discussed in the application.
- USACE commented bankfull width would need to be included in the permit application.
-

USACE #: NAE-2024-0097
Permitting Requirements: To Be Determined
FMC not required due to less than 1 sm drainage basin

Action Items:

- T. Beckman to provide CTDOT with photos of existing conditions within culvert
- BL to provide photographs of the existing wetland. CTDOT will add the photographs to the ICM presentation and redistribute.
- CTDOT to coordinate a field visit with regulators

5. Project 0087-0148 Replacement/Rehabilitation of Bridge No. 06772 Route 63 over Straitsville Brook in the Town of Naugatuck

Bridge No. 06772 supports Route 63 over Straitsville Brook in the Town of Naugatuck. The existing structure is a 6'-5" rise by 9'-6" span corrugated steel pipe arch with a barrel length of 75-feet. Average Daily Traffic (ADT) of Route 63 is 11,600. The structure was rated in poor condition due to a large dent along the top, a deteriorated invert, loss of asphalt coating, and debris buildup. The existing structure is hydraulically adequate and is not within a FEMA 100-year floodplain or floodway. The project scope will not result in wetland impacts.

The proposed rehabilitation method is to line the existing structure with a 5'-6" rise by 8'-0" span tunnel liner plate pipe arch. There are two existing water mains which will be abandoned by the utility company prior to project construction. These water mains cross below the watercourse upstream of the culvert. If encountered during construction, the abandoned water mains will be removed within the limits of the watercourse and the watercourse will be restored with natural streambed material. As a result of the discussion during the 01/20/2022 Interagency Meeting, the project scope has been revised to address an eroded embankment downstream by installing a 140-foot long riprap revetment and slope regrading and replanting. Natural streambed material will be washed into the proposed riprap up to the 2-year water surface elevation. A temporary access road from Beacon Valley Road will be required to obtain the necessary construction access to the downstream embankment for installation of the proposed revetment. Access and water handling will be comprised of sandbag cofferdams with a bypass pipe or pump & hose through the project area. Concrete blocks will be placed within the watercourse and crane mats will be placed on top to provide a work platform for constructing the proposed revetment while allowing water handling to be placed below the platform.

Project Impacts:

Wetland/Watercourse Impacts (shown as coincident for both state and federal):

	Wetlands (SF)	Watercourse (SF)	Total (SF)
Permanent	0	5, 025	5, 025
Temporary	0	1, 890	1, 890
Total	0	6, 915	6, 915

Agency Comments:

- USACE requested that discussion of how impacts were minimized be included in the application narratives.
- CTDEEP LWRD asked what species and if trees/shrubs would be planted in the disturbed areas. CTDOT OEP confirmed a native planting plan is being finalized with trees and shrubs and coordinated with CTDOT Landscape Design for species around the proposed revetment for stabilization. CTDOT OEP notes that due to access, trees may not be planted above the revetment.
- CTDEEP LWRD asked what storm frequency has been utilized for the proposed water handling. The Designer stated 3x average spring flow (ASF) is being used for the water handling at both the revetment and the culvert sliplining locations.

- CTDEEP asked what the proposed construction duration is for in-water work. The Designer stated it is anticipated to take several weeks to a month to complete the proposed in-water work. It will be up to the contractor on whether the culvert work and revetment are completed simultaneously or separately. CTDOT Hydraulics & Drainage (CTDOT H&D) stated they assumed one construction season for purposes of designing the proposed water handling.
- CTDEEP LWRD asked if there was additional risk associated with having two water handling systems in place at once. CTDOT H&D stated there was no additional risk.
- CTDEEP LWRD asked for an explanation of the proposed impacts, water handling and water main removal upstream of the proposed culvert sliplining. The Designer stated the water handling limits and permanent impacts are based on the assumption the contractor will encounter the abandoned water mains during construction and need to remove them and restore the watercourse.
- CTDEEP LWRD asked if the water main locations will be known prior to project construction. The Designer stated the exact locations will likely be unknown prior to construction.
- CTDEEP LWRD asked for confirmation that there will be no increase in velocity at the downstream revetment as a result of the proposed sliplining, as indicated in the January 20, 2022 Meeting Notes. CTDOT H&D confirmed that sliplining will not result in velocity increases at the location of the proposed revetment. The revetment installation will result in minor localized increases due to restoration of the eroded slope.
- CTDEEP LWRD noted the preference for tree species to be planted along the riparian areas.
- USACE provided the DA # of NAE-2022-00196 for CTDOT Records and asked this number be included on the USACE application.

USACE #: NAE-2022-00196
Permitting Requirements: CTDEEP PCN, General Permits for CT – GP 19, USACE Pre-Construction Notification, DEEP Individual Inland Wetlands and Watercourses Permit

USACE ENG FORM 4354, Pre-Construction Notification
Attachment H: USFWS Coordination

Applicant: Connecticut Department of Transportation
Project: State Project No. 0087-0148
Rehabilitation of Bridge No 06772
Naugatuck, Connecticut

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: February 20, 2024
Project code: 2022-0083347
Project Name: Project 87-148, Route 63 over Straitsville Brook, Naugatuck CT.

Subject: Consistency letter for the 'Project 87-148, Route 63 over Straitsville Brook, Naugatuck CT.' 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 February 20, 2024 to verify that the **Project 87-148, Route 63 over Straitsville Brook, Naugatuck CT.** (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

PROJECT DESCRIPTION

The following project name and description was collected in IPaC as part of the endangered species review process.

NAME

Project 87-148, Route 63 over Straitsville Brook, Naugatuck CT.

DESCRIPTION

Metal culvert relign, new wingwall construction and construction access road.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.46846135,-73.02455687948223,14z



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: Connecticut Department of Transportation
Name: Andrew Davis
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City: Newington
State: CT
Zip: 06131
Email andrew.h.davis@ct.gov
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LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Highway Administration

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: February 20, 2024
Project Code: 2022-0083347
Project Name: Project 87-148, Route 63 over Straitsville Brook, Naugatuck CT.

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through IPaC by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see Migratory Bird Permit | What We Do | U.S. Fish & Wildlife Service (fws.gov).

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

PROJECT SUMMARY

Project Code: 2022-0083347
Project Name: Project 87-148, Route 63 over Straitsville Brook, Naugatuck CT.
Project Type: Bridge - Maintenance
Project Description: Metal culvert relign, new wingwall construction and construction access road.
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.46846135,-73.02455687948223,14z



Counties: New Haven County, Connecticut

ENDANGERED SPECIES ACT SPECIES

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Connecticut Department of Transportation
Name: Andrew Davis
Address: 2800 Berlin Turnpike
City: Newington
State: CT
Zip: 06131
Email andrew.h.davis@ct.gov
Phone: 8605942157

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Highway Administration

Construction Contracts - Required Contract Provisions
(State Funded Only Contracts)

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1. Specific Equal Employment Opportunity Responsibilities

The Contractor shall comply with the Specific Equal Employment Opportunity requirements, as applicable, attached at Exhibit A and hereby made part of this Contract.

2. Contract Wage Rates

The Contractor shall comply with:

The State wage rate requirements indicated in Exhibit D hereof are hereby made part of this Contract.

Prevailing Wages for Work on State Highways; Annual Adjustments. With respect to contracts for work on state highways and bridges on state highways, the Contractor shall comply with the provisions of Section 31-54 and 31-55a of the Connecticut General Statutes, as revised.

As required by section 1.05.12 (Payrolls) of the State of Connecticut, Department of Transportation's Standard Specification for Roads, Bridges and Incidental Construction (FORM 818), as may be revised, every Contractor or subcontractor performing project work on a federal aid project is required to post the relevant prevailing wage rates as determined by the United States Secretary of Labor. The wage rate determinations shall be posted in prominent and easily accessible places at the work site.

3. Americans with Disabilities Act of 1990, as Amended

This provision applies to those Contractors who are or will be responsible for compliance with the terms of the Americans with Disabilities Act of 1990, as amended (42 U.S.C. 12101 et seq.), (Act), during the term of the Contract. The Contractor represents that it is familiar with the terms of this Act and that it is in compliance with the Act. Failure of the Contractor to satisfy this standard as the same applies to performance under this Contract, either now or during the term of the Contract as it may be amended, will render the Contract voidable at the option of the State upon notice to the contractor. The Contractor warrants that it will hold the State harmless and indemnify the State from any liability which may be imposed upon the State as a result of any failure of the Contractor to be in compliance with this Act, as the same applies to performance under this Contract.

4. Connecticut Statutory Labor Requirements

(a) Construction, Alteration or Repair of Public Works Projects; Wage Rates. The Contractor shall comply with Section 31-53 of the Connecticut General Statutes, as revised. The wages paid on an hourly basis to any person performing the work of any mechanic, laborer or worker on the work herein contracted to be done and the amount of payment or contribution paid or payable on behalf of each such person to

any employee welfare fund, as defined in subsection (i) of section 31-53 of the Connecticut General Statutes, shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the town in which such public works project is being constructed. Any contractor who is not obligated by agreement to make payment or contribution on behalf of such persons to any such employee welfare fund shall pay to each mechanic, laborer or worker as part of such person's wages the amount of payment or contribution for such person's classification on each pay day.

(b) Debarment List. Limitation on Awarding Contracts. The Contractor shall comply with Section 3l-53a of the Connecticut General Statutes, as revised.

(c) Construction Safety and Health Course. The Contractor shall comply with section 31-53b of the Connecticut General Statutes, as revised. The contractor shall furnish proof to the Labor Commissioner with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 of the Connecticut General Statutes, as revised, on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 48 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268.

Any employee required to complete a construction safety and health course as required that has not completed the course, shall have a maximum of fourteen (14) days to complete the course. If the employee has not been brought into compliance, they shall be removed from the project until such time as they have completed the required training.

Any costs associated with this notice shall be included in the general cost of the contract. In addition, there shall be no time granted to the contractor for compliance with this notice. The contractor's compliance with this notice and any associated regulations shall not be grounds for claims as outlined in Section 1.11 – "Claims".

(d) Awarding of Contracts to Occupational Safety and Health Law Violators Prohibited. The Contract is subject to Section 31-57b of the Connecticut General Statutes, as revised.

(e) Residents Preference in Work on Other Public Facilities. NOT APPLICABLE TO FEDERAL AID CONTRACTS. Pursuant to Section 31-52a of the Connecticut General Statutes, as revised, in the employment of mechanics, laborers or workmen to perform the work specified herein, preference shall be given to residents of the state who are, and continuously for at least six months prior to the date hereof have been, residents of this state, and if no such person is available, then to residents of other states.

5. Tax Liability - Contractor's Exempt Purchase Certificate (CERT – 141)

The Contractor shall comply with Chapter 219 of the Connecticut General Statutes pertaining to tangible personal property or services rendered that is/are subject to sales tax. The Contractor is responsible for determining its tax liability. If the Contractor purchases materials or supplies pursuant to the Connecticut Department of Revenue Services' "Contractor's Exempt Purchase Certificate (CERT-141)," as may be revised, the Contractor acknowledges and agrees that title to such materials and supplies installed or placed in the project will vest in the State simultaneously with passage of title from the retailers or vendors thereof, and the Contractor will have no property rights in the materials and supplies purchased.

Forms and instructions are available anytime by: Internet: Visit the DRS website at www.ct.gov/DRS to download and print Connecticut tax forms; or Telephone: Call 1-800-382- 9463 (Connecticut calls outside the Greater Hartford calling area only) and select Option 2 or call 860-297-4753 (from anywhere).

6. Executive Orders and Other Enactments

(a) All references in this Contract to any Federal, State, or local law, statute, public or special act, executive order, ordinance, regulation or code (collectively, "Enactments") shall mean Enactments that apply to the Contract at any time during its term, or that may be made applicable to the Contract during its term. This Contract shall always be read and interpreted in accordance with the latest applicable wording and requirements of the Enactments. Unless otherwise provided by Enactments, the Contractor is not relieved of its obligation to perform under this Contract if it chooses to contest the applicability of the Enactments or the Client Agency's authority to require compliance with the Enactments.

(b) This Contract is subject to the provisions of Executive Order No. Three of Governor Thomas J. Meskill, promulgated June 16, 1971, concerning labor employment practices, Executive Order No. Seventeen of Governor Thomas J. Meskill, promulgated February 15, 1973, concerning the listing of employment openings and Executive Order No. Sixteen of Governor John G. Rowland promulgated August 4, 1999, concerning violence in the workplace, all of which are incorporated into and are made a part of this Contract as if they had been fully set forth in it.

(c) This Contract may be subject to (1) Executive Order No. 14 of Governor M. Jodi Rell, promulgated April 17, 2006, concerning procurement of cleaning products and services; and (2) Executive Order No. 61 of Governor Dannel P. Malloy promulgated December 13, 2017, concerning the Policy for the Management of State Information Technology Projects, as issued by the Office of Policy and Management, Policy ID IT-SDLC-17-04. If any of the Executive Orders referenced in this subsection is applicable, it is deemed to be incorporated into and made a part of this Contract as if fully set forth in it.

7. Non-Discrimination

(a) For purposes of this Section, the following terms are defined as follows:

i. "Commission" means the Commission on Human Rights and Opportunities;

ii. "Contract" and “contract” include any extension or modification of the Contract or contract;

iii. "Contractor" and “contractor” include any successors or assigns of the Contractor or contractor;

iv. "Gender identity or expression" means a person's gender-related identity, appearance or behavior, whether or not that gender-related identity, appearance or behavior is different from that traditionally associated with the person's physiology or assigned sex at birth, which gender-related identity can be shown by providing evidence including, but not limited to, medical history, care or treatment of the gender-related identity, consistent and uniform assertion of the gender-related identity or any other evidence that the gender- related identity is sincerely held, part of a person's core identity or not being asserted for an improper purpose;

v. “good faith" means that degree of diligence which a reasonable person would exercise in the performance of legal duties and obligations;

vi. "good faith efforts" shall include, but not be limited to, those reasonable initial efforts necessary to comply with statutory or regulatory requirements and additional or substituted efforts when it is determined that such initial efforts will not be sufficient to comply with such requirements;

vii. "marital status" means being single, married as recognized by the state of Connecticut, widowed, separated or divorced;

viii. "mental disability" means one or more mental disorders, as defined in the most recent edition of the American Psychiatric Association's "Diagnostic and Statistical Manual of Mental Disorders", or a record of or regarding a person as having one or more such disorders;

ix. "minority business enterprise" means any small contractor or supplier of materials fifty- one percent or more of the capital stock, if any, or assets of which is owned by a person or persons: (1) who are active in the daily affairs of the enterprise, (2) who have the power to direct the management and policies of the enterprise, and (3) who are members of a minority, as such term is defined in subsection (a) of Connecticut General Statutes § 32- 9n; and

x. "public works contract" means any agreement between any individual, firm or corporation and the State or any political subdivision of the State other than a municipality for construction, rehabilitation, conversion, extension, demolition or repair of a public building, highway or other changes or improvements in real property, or which is financed in whole or in part by the State, including, but not limited to, matching expenditures, grants, loans, insurance or guarantees.

For purposes of this Section, the terms “Contract” and “contract” do not include a contract where each contractor is (1) a political subdivision of the state, including, but not limited to, a municipality, unless the contract is a municipal public works contract or quasi-public agency project contract, (2) any other state, including but not limited to any federally

recognized Indian tribal governments, as defined in C.G.S. § 1-267, (3) the federal government, (4) a foreign government, or (5) an agency of a subdivision, state or government described in the immediately preceding enumerated items (1), (2), (3),or (4).

(b) (1) The Contractor agrees and warrants that in the performance of the Contract such Contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, status as a veteran, status as a victim of domestic violence, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by such Contractor that such disability prevents performance of the work involved, in any manner prohibited by the laws of the United States or of the State of Connecticut; and the Contractor further agrees to take affirmative action to ensure that applicants with job-related qualifications are employed and that employees are treated when employed without regard to their race, color, religious creed, age, marital status, national origin, ancestry, sex, gender identity or expression, status as a veteran, status as a victim of domestic violence, intellectual disability, mental disability or physical disability, including, but not limited to, blindness, unless it is shown by the Contractor that such disability prevents performance of the work involved;
(2) the Contractor agrees, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, to state that it is an "affirmative action-equal opportunity employer" in accordance with regulations adopted by the Commission; (3) the Contractor agrees to provide each labor union or representative of workers with which the Contractor has a collective bargaining Agreement or other contract or understanding and each vendor with which the Contractor has a contract or understanding, a notice to be provided by the Commission, advising the labor union or workers' representative of the Contractor's commitments under this section and to post copies of the notice in conspicuous places available to employees and applicants for employment; (4) the Contractor agrees to comply with each provision of this Section and Connecticut General Statutes §§ 46a-68e and 46a-68f and with each regulation or relevant order issued by said Commission pursuant to Connecticut General Statutes
§§ 46a-56, 46a-68e and 46a-68f; and (5) the Contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the Contractor as relate to the provisions of this Section and Connecticut General Statutes § 46a-56. If the contract is a public works contract, the Contractor agrees and warrants that he will make good faith efforts to employ minority business enterprises as subcontractors and suppliers of materials on such public works projects.

(c) Determination of the Contractor's good faith efforts shall include, but shall not be limited to, the following factors: The Contractor's employment and subcontracting policies, patterns and practices; affirmative advertising, recruitment and training; technical assistance activities and such other reasonable activities or efforts as the Commission may prescribe that are designed to ensure the participation of minority business enterprises in public works projects.

(d) The Contractor shall develop and maintain adequate documentation, in a manner

prescribed by the Commission, of its good faith efforts.

(e) The Contractor shall include the provisions of subsection (b) of this Section in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Contractor shall take such action with respect to any such subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with Connecticut General Statutes §46a-56; provided if such Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.

(f) The Contractor agrees to comply with the regulations referred to in this Section as they exist on the date of this Contract and as they may be adopted or amended from time to time during the term of this Contract and any amendments thereto.

(g) (1) The Contractor agrees and warrants that in the performance of the Contract such Contractor will not discriminate or permit discrimination against any person or group of persons on the grounds of sexual orientation, in any manner prohibited by the laws of the United States or the State of Connecticut, and that employees are treated when employed without regard to their sexual orientation; (2) the Contractor agrees to provide each labor union or representative of workers with which such Contractor has a collective bargaining Agreement or other contract or understanding and each vendor with which such Contractor has a contract or understanding, a notice to be provided by the Commission on Human Rights and Opportunities advising the labor union or workers' representative of the Contractor's commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment; (3) the Contractor agrees to comply with each provision of this section and with each regulation or relevant order issued by said Commission pursuant to Connecticut General Statutes § 46a-56; and (4) the Contractor agrees to provide the Commission on Human Rights and Opportunities with such information requested by the Commission, and permit access to pertinent books, records and accounts, concerning the employment practices and procedures of the Contractor which relate to the provisions of this Section and Connecticut General Statutes § 46a-56.

(h) The Contractor shall include the provisions of the foregoing paragraph in every subcontract or purchase order entered into in order to fulfill any obligation of a contract with the State and such provisions shall be binding on a subcontractor, vendor or manufacturer unless exempted by regulations or orders of the Commission. The Contractor shall take such action with respect to any such subcontract or purchase order as the Commission may direct as a means of enforcing such provisions including sanctions for noncompliance in accordance with Connecticut General Statutes § 46a-56; provided, if such Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Commission, the

Contractor may request the State of Connecticut to enter into any such litigation or negotiation prior thereto to protect the interests of the State and the State may so enter.

(i) Pursuant to subsection (c) of section 4a-60 and subsection (b) of section 4a-60a of the Connecticut General Statutes, the Contractor, for itself and its authorized signatory of this Contract, affirms that it understands the obligations of this section and that it will maintain a policy for the duration of the Contract to assure that the Contract will be performed in compliance with the nondiscrimination requirements of such sections. The Contractor and its authorized signatory of this Contract demonstrate their understanding of this obligation by (A) having provided an affirmative response in the required online bid or response to a proposal question which asks if the contractor understands its obligations under such sections, (B) signing this Contract, or (C) initialing this nondiscrimination affirmation in the following box: ☐

8. Whistleblower Provision

The following clause is applicable if the Contract has a value of Five Million Dollars ($5,000,000) or more.

Whistleblowing. This Contract may be subject to the provisions of Section 4-61dd of the Connecticut General Statutes. In accordance with this statute, if an officer, employee or appointing authority of the Contractor takes or threatens to take any personnel action against any employee of the Contractor in retaliation for such employee's disclosure of information to any employee of the contracting state or quasi-public agency or the Auditors of Public Accounts or the Attorney General under the provisions of subsection (a) of such statute, the Contractor shall be liable for a civil penalty of not more than five thousand dollars for each offense, up to a maximum of twenty per cent of the value of this Contract.
Each violation shall be a separate and distinct offense and in the case of a continuing violation, each calendar day's continuance of the violation shall be deemed to be a separate and distinct offense. The State may request that the Attorney General bring a civil action in the Superior Court for the Judicial District of Hartford to seek imposition and recovery of such civil penalty. In accordance with subsection (f) of such statute, each large state contractor, as defined in the statute, shall post a notice of the provisions of the statute relating to large state contractors in a conspicuous place which is readily available for viewing by the employees of the Contractor.

9. Connecticut Freedom of Information Act

(a) Disclosure of Records. This Contract may be subject to the provisions of section 1-218 of the Connecticut General Statutes. In accordance with this statute, each contract in excess of two million five hundred thousand dollars between a public agency and a person for the performance of a governmental function shall (a) provide that the public agency is entitled to receive a copy of records and files related to the performance of the governmental function, and (b) indicate that such records and files are subject to FOIA and may be disclosed by the public agency pursuant to FOIA. No request to inspect or copy such records or files shall be valid unless the request is made to the public agency in accordance with FOIA. Any complaint by a person who is denied the right to inspect or copy such records or files shall be brought to the Freedom of Information Commission in accordance with the provisions of sections 1-205 and 1-206 of the Connecticut General

Statutes.

(b) Confidential Information. The State will afford due regard to the Contractor's request for the protection of proprietary or confidential information which the State receives from the Contractor. However, all materials associated with the Contract are subject to the terms of the FOIA and all corresponding rules, regulations and interpretations. In making such a request, the Contractor may not merely state generally that the materials are proprietary or confidential in nature and not, therefore, subject to release to third parties. Those particular sentences, paragraphs, pages or sections that the Contractor believes are exempt from disclosure under the FOIA must be specifically identified as such. Convincing explanation and rationale sufficient to justify each exemption consistent with the FOIA must accompany the request. The rationale and explanation must be stated in terms of the prospective harm to the competitive position of the Contractor that would result if the identified material were to be released and the reasons why the materials are legally exempt from release pursuant to the FOIA. To the extent that any other provision or part of the Contract conflicts or is in any way inconsistent with this section, this section controls and shall apply, and the conflicting provision or part shall not be given effect. If the Contractor indicates that certain documentation is submitted in confidence, by specifically and clearly marking the documentation as "CONFIDENTIAL," DOT will first review the Contractor's claim for consistency with the FOIA (that is, review that the documentation is actually a trade secret or commercial or financial information and not required by statute), and if determined to be consistent, will endeavor to keep such information confidential to the extent permitted by law. See, *e.g.,* Conn. Gen. Stat. §1-210(b)(5) (A-B). The State, however, has no obligation to initiate, prosecute or defend any legal proceeding or to seek a protective order or other similar relief to prevent disclosure of any information that is sought pursuant to a FOIA request. Should the State withhold such documentation from a Freedom of Information requester and a complaint be brought to the Freedom of Information Commission, the Contractor shall have the burden of cooperating with DOT in defense of that action and in terms of establishing the availability of any FOIA exemption in any proceeding where it is an issue. In no event shall the State have any liability for the disclosure of any documents or information in its possession which the State believes are required to be disclosed pursuant to the FOIA or other law.

10. Service of Process

The Contractor, if not a resident of the State of Connecticut, or, in the case of a partnership, the partners, if not residents, hereby appoints the Secretary of State of the State of Connecticut, and his successors in office, as agent for service of process for any action arising out of or as a result of this Contract; such appointment to be in effect throughout the life of this Contract and six (6) years thereafter.

11. Substitution of Securities for Retainages on State Contracts and Subcontracts

This Contract is subject to the provisions of Section 3-ll2a of the General Statutes of the State

of Connecticut, as revised.

12. Health Insurance Portability and Accountability Act of 1996 (HIPAA)

The Contractor shall comply, if applicable, with the Health Insurance Portability and Accountability Act of 1996 and, pursuant thereto, the provisions attached at Exhibit B, and hereby made part of this Contract.

13. Forum and Choice of Law

Forum and Choice of Law. The parties deem the Contract to have been made in the City of Hartford, State of Connecticut. Both parties agree that it is fair and reasonable for the validity and construction of the Contract to be, and it shall be, governed by the laws and court decisions of the State of Connecticut, without giving effect to its principles of conflicts of laws. To the extent that any immunities provided by Federal law or the laws of the State of Connecticut do not bar an action against the State, and to the extent that these courts are courts of competent jurisdiction, for the purpose of venue, the complaint shall be made returnable to the Judicial District of Hartford only or shall be brought in the United States District Court for the District of Connecticut only, and shall not be transferred to any other court, provided, however, that nothing here constitutes a waiver or compromise of the sovereign immunity of the State of Connecticut. The Contractor waives any objection which it may now have or will have to the laying of venue of any Claims in any forum and further irrevocably submits to such jurisdiction in any suit, action or proceeding.

14. Summary of State Ethics Laws

Pursuant to the requirements of section 1-101qq of the Connecticut General Statutes (a) the State has provided to the Contractor the summary of State ethics laws developed by the State Ethics Commission pursuant to section 1-81b of the Connecticut General Statutes, which summary is incorporated by reference into and made a part of this Contract as if the summary had been fully set forth in this Contract; (b) the Contractor represents that the chief executive officer or authorized signatory of the Contract and all key employees of such officer or signatory have read and understood the summary and agree to comply with the provisions of state ethics law; (c) prior to entering into a contract with any subcontractors or consultants, the Contractor shall provide the summary to all subcontractors and consultants and each such contract entered into with a subcontractor or consultant on or after July 1, 2021, shall include a representation that each subcontractor or consultant and the key employees of such subcontractor or consultant have read and understood the summary and agree to comply with the provisions of state ethics law; (d) failure to include such representations in such contracts with subcontractors or consultants shall be cause for termination of the Contract; and (e) each contract with such contractor, subcontractor or consultant shall incorporate such summary by reference as a part of the contract terms.

15. Audit and Inspection of Plants, Places of Business and Records

(a) The State and its agents, including, but not limited to, the Connecticut Auditors of Public Accounts, Attorney General and State's Attorney and their respective agents, may, at reasonable hours, inspect and examine all of the parts of the Contractor's and

Contractor Parties' plants and places of business which, in any way, are related to, or involved in, the performance of this Contract. For the purposes of this Section, "Contractor Parties" means the Contractor's members, directors, officers, shareholders, partners, managers, principal officers, representatives, agents, servants, consultants, employees or any one of them or any other person or entity with whom the Contractor is in privity of oral or written contract and the Contractor intends for such other person or entity to Perform under the Contract in any capacity.

(b) The Contractor shall maintain and shall require each of the Contractor Parties to maintain, accurate and complete Records. The Contractor shall make all of its and the Contractor Parties' Records available at all reasonable hours for audit and inspection by the State and its agents.

(c) The State shall make all requests for any audit or inspection in writing and shall provide the Contractor with at least twenty-four (24) hours' notice prior to the requested audit and inspection date. If the State suspects fraud or other abuse, or in the event of an emergency, the State is not obligated to provide any prior notice.

(d) The Contractor shall keep and preserve or cause to be kept and preserved all of its and Contractor Parties' Records until three (3) years after the latter of (i) final payment under this Agreement, or (ii) the expiration or earlier termination of this Agreement, as the same may be modified for any reason. The State may request an audit or inspection at any time during this period. If any Claim or audit is started before the expiration of this period, the Contractor shall retain or cause to be retained all Records until all Claims or audit findings have been resolved.

(e) The Contractor shall cooperate fully with the State and its agents in connection with an audit or inspection. Following any audit or inspection, the State may conduct, and the Contractor shall cooperate with an exit conference.

(f) The Contractor shall incorporate this entire Section verbatim into any contract or other agreement that it enters into with any Contractor Party.

16. Campaign Contribution Restriction

For all State contracts, defined in section 9-612 of the Connecticut General Statutes as having a value in a calendar year of $50,000 or more, or a combination or series of such agreements or contracts having a value of $100,000 or more, the authorized signatory to this Contract represents that they have received the State Elections Enforcement Commission's notice advising state contractors of state campaign contribution and solicitation prohibitions, and will inform its principals of the contents of the notice.

17. Tangible Personal Property

(a) The Contractor on its behalf and on behalf of its Affiliates, as defined below, shall comply with the provisions of Conn. Gen. Stat. §12-411b, as follows:

(1) For the term of the Contract, the Contractor and its Affiliates shall collect and remit to the State of Connecticut, Department of Revenue Services, any Connecticut use tax due under the provisions of Chapter 219 of the Connecticut General Statutes for items of tangible personal property sold by the Contractor or by any of its Affiliates in the same manner as if the Contractor and such Affiliates were engaged in the business of selling tangible personal property for use in Connecticut and had sufficient nexus under the provisions of Chapter 219 to be required to collect Connecticut use tax;

(2) A customer's payment of a use tax to the Contractor or its Affiliates relieves the customer of liability for the use tax;

(3) The Contractor and its Affiliates shall remit all use taxes they collect from customers on or before the due date specified in the Contract, which may not be later than the last day of the month next succeeding the end of a calendar quarter or other tax collection period during which the tax was collected;
(4) The Contractor and its Affiliates are not liable for use tax billed by them but not paid to them by a customer; and
(5) Any Contractor or Affiliate who fails to remit use taxes collected on behalf of its customers by the due date specified in the Contract shall be subject to the interest and penalties provided for persons required to collect sales tax under chapter 219 of the general statutes.

(b) For purposes of this section of the Contract, the word "Affiliate" means any person, as defined in section 12-1 of the general statutes, that controls, is controlled by, or is under common control with another person. A person controls another person if the person owns, directly or indirectly, more than ten per cent of the voting securities of the other person. The word "voting security" means a security that confers upon the holder the right to vote for the election of members of the board of directors or similar governing body of the business, or that is convertible into, or entitles the holder to receive, upon its exercise, a security that confers such a right to vote. "Voting security" includes a general partnership interest.

(c) The Contractor represents and warrants that each of its Affiliates has vested in the Contractor plenary authority to so bind the Affiliates in any agreement with the State of Connecticut. The Contractor on its own behalf and on behalf of its Affiliates shall also provide, no later than 30 days after receiving a request by the State's contracting authority, such information as the State may require to ensure, in the State's sole determination, compliance with the provisions of Chapter 219 of the Connecticut General Statutes, including, but not limited to, §12-411b.

18. Bid Rigging and/or Fraud – Notice to Contractor

The Connecticut Department of Transportation is cooperating with the U.S. Department of Transportation and the Justice Department in their investigation into highway construction contract bid rigging and/or fraud.

A toll-free "HOT LINE" telephone number 800-424-9071 has been established to receive information from contractors, subcontractors, manufacturers, suppliers or anyone with knowledge of bid rigging and/or fraud, either past or current. The "HOT LINE" telephone number will be available during normal working hours (8:00 am – 5:00 pm EST). Information will be treated confidentially, and anonymity respected.

19. Consulting Agreement Representation

Pursuant to section 4a-81 of the Connecticut General Statutes, the person signing this Contract on behalf of the Contractor represents, to their best knowledge and belief and subject to the penalty of false statement as provided in section 53a-157b of the Connecticut General Statutes, that the Contractor has not entered into any consulting agreements in connection with this Contract, except for the agreements listed below or in an attachment to this Contract. "Consulting agreement" means any written or oral agreement to retain the services, for a fee, of a consultant for the purposes of (A) providing counsel to a contractor, vendor, consultant or other entity seeking to conduct, or conducting, business with the State, (B) contacting, whether in writing or orally, any executive, judicial, or administrative office

of the State, including any department, institution, bureau, board, commission, authority, official or employee for the purpose of solicitation, dispute resolution, introduction, requests for information, or (C) any other similar activity related to such contracts. "Consulting agreement" does not include any agreements entered into with a consultant who is registered under the provisions of chapter 10 of the Connecticut General Statutes as of the date such contract is executed in accordance with the provisions of section 4a-81 of the Connecticut General Statutes.

_____

Consultant's Name and Title Name of Firm (if applicable)

_____ _____ _____

Start Date End Date Cost

The basic terms of the consulting agreement are: _____

_____

_____

Description of Services Provided:

Is the consultant a former State employee or former public official? ☐ YES ☐ NO

If YES:_____ _____

Name of Former State Agency Termination Date of Employment

20. Sovereign Immunity

The parties acknowledge and agree that nothing in the Solicitation or the Contract shall be construed as a modification, compromise or waiver by the State of any rights or defenses of any immunities provided by Federal law or the laws of the State of Connecticut to the State or any of its officers and employees, which they may have had, now have or will have with respect to all matters arising out of the Contract. To the extent that this section conflicts with any other section, this section shall govern.

21. Large State Contract Representation for Contractor

Pursuant to section 4-252 of the Connecticut General Statutes and Acting Governor Susan Bysiewicz Executive Order No. 21-2, promulgated July 1, 2021, the Contractor, for itself and on behalf of all of its principals or key personnel who submitted a bid or proposal, represents:

(1) That no gifts were made by (A) the Contractor, (B) any principals and key personnel of the Contractor, who participate substantially in preparing bids, proposals or negotiating State contracts, or (C) any agent of the Contractor or

principals and key personnel, who participates substantially in preparing bids, proposals or negotiating State contracts, to (i) any public official or State employee of the State agency or quasi- public agency soliciting bids or proposals for State contracts, who participates substantially in the preparation of bid solicitations or requests for proposals for State contracts or the negotiation or award of State contracts, or (ii) any public official or State employee of any other State agency, who has supervisory or appointing authority over such State agency or quasi-public agency;

(2) That no such principals and key personnel of the Contractor, or agent of the Contractor or of such principals and key personnel, knows of any action by the Contractor to circumvent such prohibition on gifts by providing for any other principals and key personnel, official, employee or agent of the Contractor to provide a gift to any such public official or State employee; and

(3) That the Contractor is submitting bids or proposals without fraud or collusion with any person.

22. Large State Contract Representation for Official or Employee of State Agency

Pursuant to section 4-252 of the Connecticut General Statutes and Acting Governor Susan Bysiewicz Executive Order No. 21-2, promulgated July 1, 2021, the State agency official or employee represents that the selection of the person, firm or corporation was not the result of collusion, the giving of a gift or the promise of a gift, compensation, fraud or inappropriate influence from any person.

23. Iran Investment Energy Certification

(a) Pursuant to section 4-252a of the Connecticut General Statutes, the Contractor certifies that it has not made a direct investment of twenty million dollars or more in the energy sector of Iran on or after October 1, 2013, as described in Section 202 of the Comprehensive Iran Sanctions, Accountability and Divestment Act of 2010, and has not increased or renewed such investment on or after said date.

(b) If the Contractor makes a good faith effort to determine whether it has made an investment described in subsection (a) of this section, then the Contractor shall not be deemed to be in breach of the Contract or in violation of this section. A "good faith effort" for purposes of this subsection includes a determination that the Contractor is not on the list of persons who engage in certain investment activities in Iran created by the Department of General Services of the State of California pursuant to Division 2, Chapter 2.7 of the California Public Contract Code. Nothing in this subsection shall be construed to impair the ability of the State agency or quasi-public agency to pursue a breach of contract action for any violation of the provisions of the Contract.

24. Access to Contract and State Data

The Contractor shall provide to the Client Agency access to any data, as defined in Conn. Gen Stat. Sec. 4e-1, concerning the Contract and the Client Agency that are in the possession or control of the Contractor upon demand and shall provide the data to the Client Agency in a format prescribed by the Client Agency and the State Auditors of Public Accounts at no additional cost.

25. Affirmative Action Policy Statement

The Contractor shall comply with the Affirmative Action Policy Statement, as applicable, attached at Exhibit B and hereby made part of this Contract.

26. Compliance with Consumer Data Privacy and Online Monitoring

Pursuant to section 4e-72a of the Connecticut General Statutes, Contractor shall at all times comply with all applicable provisions of sections 42-515 to 42-525, inclusive, of the Connecticut General Statutes, as the same may be revised or modified.

EXHIBIT A

CONNECTICUT REQUIRED SPECIFIC EQUAL EMPLOYMENT OPPORTUNITY RESPONSIBILITIES October 2023

1. <u>General:</u>

a) Equal employment opportunity requirements not to discriminate and to take affirmative action to assure equal employment opportunity as required by Executive Order 11246, Executive Order 11375 are set forth in Required Contract Provisions (Form PR-1273 or 1316, as appropriate) and these Special Provisions which are imposed pursuant to Section 140 of Title 23 U.S.C., as established by Section 22 of the Federal-Aid Highway Act of 1968, 49 CFR
Part 21, 4a-60a and 46a-68c to46a-68f of the Connecticut General Statutes. The requirements set forth in these Special Provisions shall constitute the specific affirmative action requirements for project activities under this contract and supplement the equal employment opportunity requirements set forth in the Required Contract Provisions.

b) "Company" refers to any entity doing business with the Connecticut Department of Transportation and includes but is not limited to the following:

Contractors and Subcontractors
Consultants and Subconsultants
Suppliers of Materials and Vendors (where applicable)
Municipalities (where applicable)
Utilities (where applicable)

c) The Company will work with the Connecticut Department of Transportation (CTDOT) and the Federal Government in carrying out equal employment opportunity obligations and in their review of his/her activities under the contract.

d) The Company and all his/her subcontractors or subconsultants holding subcontracts not including material suppliers, of $10,000 or more, will comply with the following minimum specific requirement activities of equal employment opportunity: (The equal employment opportunity requirements of Executive Order 11246, as set forth in volume 60, Chapter 4, Section 1, subsection 1 of the Federal-Aid Highway Program Manual, are applicable to material suppliers as well as contractors and subcontractors.) The company will include these requirements in every subcontract of $10,000 or more with such modification of language as necessary to make them binding on the subcontractor or subconsultant.

e) CTDOT shall require each contractor with contracts of $10,000 or more or who have fifty or more employees and are awarded a public works contract, to comply with all existing procedures of CTDOT's Contract Compliance Program.

2. <u>Equal Employment Opportunity Policy:</u>

a) Companies with contracts, agreements or purchase orders valued at $10,000 or more or who have fifty or more employees are required to comply with the Affirmative Action contract requirements. By signing a contract with CTDOT the contractor's commits to complying with federal and state requirements to provide equal employment opportunity to all persons without regard to their race, color, religion, creed, sex, gender identity or expression, marital status, age, national origin, ancestry, status as a veteran, intellectual disability, mental disability, learning disability or physical disability, including but not limited to blindness, unless such disability prevents performance of the work involved and to promote the full realization of equal employment opportunity through a positive and continuous efforts.

3. <u>Project Workforce Utilization Goals:</u>

These goals are applicable to all construction projects performed in the covered area work (whether the project is federal or state funded). If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for the geographical area where the work is actually performed.

a. Appendix A establishes the goals for minority and female utilization in all crafts statewide on all State Funded construction projects.

b. Appendix B establishes the goals for minority and female utilization in all crafts statewide on Federally assisted or funded construction projects.

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 these specifications which contain the applicable goals for minority and female participation.

The goals for minority and female participation are expressed in percentage terms for the contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

State Utilization Goals See Appendix A
Federal Utilization Goals See Appendix B

4. Executive Order 11246

The Contractor's compliance with Executive Order 11246 and 41-CFR Part 60-4 shall be based on its implementation of the specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(A) and its efforts to meet the goals established for the geographical area where the contract is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hour performed.

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 Pan does not excuse any covered Contractor's of subcontractor's failure to take good faith efforts to achieve the plan goals and timetables.

The Contractor shall implement the specific affirmative action standards provided in a 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. Covered Construction contractors performing construction work in geographical areas where they do not have a federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal

Register in notice form and such notices may be obtained from any Office of Federal Contract Compliance Programs (OFCCP) Office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

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 Contractors obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant hereto.

In order for the nonworking training hours of apprentices and trainees to be counted in meeting the workforce utilization 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.

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 in 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 thereafter; along with whatever additional actions the Contractor may have taken.

d) Provide immediate written notification to CTDOT when the Union or Unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or women 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 that which expressly target 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 b 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. Review at least annually, the company EEO Policy and affirmative action obligations with all employees having any responsibility for hiring, assignments, layoffs, terminations, or other employment decisions, 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.

g) 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.

h) 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.

i) 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 project worksite and in other areas of the Contractor's workforce.

j) Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

k) 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 opportunities through appropriate training opportunities.

l) 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.

m) 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.

n) 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.

o) Conduct a review at least annually of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations:

Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (a 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 a 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 with 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 is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

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 Executive Order 11246 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 under-utilized).

The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

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.

The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps so as to achieve maximum results from its efforts to ensure equal

employment opportunity.

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 may be required by the Government and to 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.

Nothing herein provided shall be construed as a limitation upon the application of their 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). The Director of the Office of Federal Contract Compliance Programs, from time to time, shall issue goals and timetables for minority and female utilization which shall be based on appropriate work- force, demographic or other relevant data and which shall cover construction projects or construction contracts performed in specific geographical areas. The goals, which shall be applicable to each construction trade in a covered contractor's or timetables, shall be published as notices in the Federal Register, and shall be inserted by the Contracting officers and applicants, as applicable, in the Notice required by 41 CFR 60-4.2.

5. <u>Subcontracting:</u>

a. The Company will use his/her best efforts to solicit bids from and to utilize minority group subcontractors or subcontractors with meaningful minority group and female representation among their employees. Companies shall obtain lists of minority-owned construction firms from the Office of Equity.

b. The Company will use its best efforts to ensure subcontractor compliance with their equal employment opportunity obligations.

6. <u>Records and Reports:</u>

a. The Company will keep such records as are necessary to determine compliance with equal employment opportunity obligations. The records kept by the Company will be designed to indicate:

1. The number of minority and non-minority group members and women employed in each classification on the project.
2. The progress and efforts being made in cooperation with unions to increase employment opportunities for minorities and women; (applicable only to contractors who rely in whole or in part on unions as a source of their work force),
3. The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and
4. The progress and efforts being made in securing the services of minority group

subcontractors or subcontractors with meaningful minority and female representation among their employees.

5. Records of internal and external communication and outreach to document its affirmative efforts.

b. All such records must be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of CTDOT and/or the United States Department of Transportation.

c. **For Federal Highway Administration funded projects only:**
The Company will submit an annual report to CTDOT each July or as otherwise directed, for the duration of the project, indicating the number of minorities, 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 PR 1391. If on-the-job training is being required by "Training Special Provision", the Company will be required to furnish Form FHWA 1409 and 1415 as required by CTDOT.

STATE FUNDED PROJECTS (only)

APPENDIX A

(Labor Market Goals)

LABOR MARKET AREA GOAL ***Minority*** **Female**

Bridgeport			**22.7%**
1.4%			
Ansonia	Beacon Falls	Bridgeport	Derby
Easton	Fairfield	Milford	Monroe
Oxford	Seymour	Shelton	Stratford
Trumbull			

Danbury			**10.7%**
3.8%			
Bethel	Bridgewater	Brookfield	Danbury
Kent	New Fairfield	New Milford	Newtown
Redding	Ridgefield	Roxbury	Sherman
Washington			

Danielson			**4.3%**
1.8%			
Brooklyn	Eastford	Hampton	Killingly
Pomfret	Putnam	Scotland	Sterling
Thompson	Voluntown	Union	Woodstock

Hartford			**13.7%**
2.1%			
Andover	Ashford	Avon	Barkhamsted
Belin	Bloomfield	Bolton	Bristol
Burlington	Canton	Chaplin	Colchester
Columbia	Coventry	Cromwell	Durham
East Granby	East Haddam	East Hampton	East Hartford
East Windsor	Ellington	Enfield	Farmington
Glastonbury	Granby	Haddam	Hartford
Harwinton	Hebron	Lebanon	Manchester
Mansfield	Marlborough	Middlefield	Middletown
Newington	Plainville	Plymouth	Portland
Rocky Hill	Simsbury	Somers	South Windsor
Southington	Stafford	Suffield	Tolland
Vernon	West Hartford	Wethersfield	Willington
Winchester	Windham	Windsor	Windsor Locks

Lower River			**4.3%**
1.8%			
Chester	Deep River	Essex	Old Lyme
Westbrook			

LABOR MARKET AREA GOAL ***Minority***
Female

New Haven			**17.9%**
3.1%			
Bethany	Branford	Cheshire	Clinton
East Haven	Guilford	Hamden	Killingworth
Madison	Meriden	New Haven	North Branford
North Haven	Orange	Wallingford	West Haven
Woodbridge			

New London			**7.4%**
3.1%			
Bozrah	Canterbury	East Lyme	Franklin
Griswold	Groton	Ledyard	Lisbon
Montville	New London	North Stonington	Norwich
Old Lyme	Old Saybrook	Plainfield	Preston
Salem	Sprague	Stonington	Waterford
Hopkinton	RI – Westerly Rhode Island		

Stamford			**33.2%**
2.1%			
Darien	Greenwich	New Canaan	Norwalk
Stamford	Weston	Westport	Wilton

Torrington			**4.3%**
1.8%			
Canaan	Colebrook	Cornwall	Goshen
Hartland	Kent	Litchfield	Morris
Norfolk	North Canaan	Salisbury	Sharon
Torrington	Warren		

Waterbury			**12.4%**
1.6%			
Bethlehem	Middlebury	Naugatuck	Prospect
Southbury	Thomaston	Waterbury	Watertown
Wolcott	Woodbury		

EXHIBIT B

AFFIRMATIVE ACTION POLICY STATEMENT (October 2023)

It is the policy of this firm to assure that applicants are employed, and that employees are treated during employment, without regard to an individual's race, color, religion, creed, sex, gender identity or expression, marital status, national origin, age, ancestry, status as a veteran, intellectual disability, mental disability, learning disability or physical disability, including but not limited to blindness, unless such disability prevents performance of the work involved and to promote the full realization of equal employment opportunity through positive and continuous affirmative efforts. Such action shall include employment, promotion, demotion or transfer, recruitment or recruitment advertising, layoff or terminations, rates of pay or other forms of compensation, selection for training/apprenticeship, pre- apprenticeship opportunities, and on-the-job training opportunities.

This firm will implement, monitor, enforce and achieve full compliance with this Affirmative Action Policy Statement in conjunction with the applicable Federal and State laws, regulations, executive orders, and contract provisions, including but not limited to those listed below:

Dissemination of Policy:
All members of the firm who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, this firm's Equal Employment Opportunity (EEO) policy and contractual responsibilities to provide EEO in each grade and classification of employment. These actions shall include:

1. 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 firm's EEO policy and its implementation will be reviewed and explained. These meetings will be conducted by the EEO officer.
2. 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.
3. All personnel who are engaged in direct recruitment for the firm will be instructed by the EEO Officer of the contractor's procedures for locating and hiring minority group employees.
4. Notices and posters setting forth the firm's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
5. The firm'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.
6. Sexual Harassment Prevention Resources including training and remedies must be available to all employees. See Connecticut General Assembly Public Acts 19–16 and 19–93.

Recruitment:
When advertising for employees, the firm will include in all advertisements the notation; "An Affirmative Action/Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area where the workforce would normally be derived.

1. The firm will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority and female applicants. To meet this requirement, the firm will identify referral sources and establish procedures for recruitment to obtain the referral of minority and female applicants.
2. In the event the firm has a valid bargaining agreement providing for exclusive hiring referrals, he/she is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The United States Department of Labor has held that where implementation of such agreements has had the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.) The firm will encourage his/her present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.

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 an individual's race, color, religion, creed, sex, gender identity or expression, marital status, national origin, age, ancestry, status as a veteran, intellectual disability, mental disability, learning disability or physical disability, including but not limited to blindness, unless such disability prevents performance of the work involved. The following procedures shall be followed:

1. The firm will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of personnel.
2. The firm 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 correction action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
3. The firm shall periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
4. The firm will promptly investigate all complaints of alleged discrimination made to the firm 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 actions shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

Training and Promotion:
The firm will assist in locating, qualifying, and increasing the skills of minorities and women. The firm will utilize the following tools to identify training and promotional opportunities in the firm:

1. The firm will advise employees and applicants for employment of available training programs and the entrance requirements.
2. The firm will periodically review the training and promotion of minority group and female employees and will encourage eligible employees to apply for such training and promotion.

Unions:
If the firm relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the firm either directly or through a contractor's association acting as agent will include the procedures set forth below:

1. The firm will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.
2. The firm will use best efforts to incorporate an EEO clause into each union agreement to the extent that such union will be contractually bound to refer applicants without regard to their to an individual's race, color, religion, creed, sex, gender identity or expression, marital status, national origin, age, ancestry, status as a veteran, intellectual disability, mental disability,
   learning disability or physical disability, including but not limited to blindness, unless such disability prevents performance of the work involved.
3. The firm is to obtain information as to the referral practices and policies of the labor union except that to the extent that such information is within the exclusive possession of the labor union and such labor union refuses to furnish the information to the contractor, the contractor shall notify the Connecticut Department of Transportation (CTDOT) of the efforts made to obtain the information.
4. In the event the union is unable to provide the firm with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies. (The United States Department of Labor has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations under Executive Order 11246 as amended, and in compliance with 23 CFR Part 230, the firm will notify CTDOT.

Selection of Subcontractors:
The firm will not discriminate on the grounds race, color, religion, sex, sexual orientation, gender identity or expression, marital status, national origin, ancestry, age, intellectual

disability, learning disability, physical disability, including, but not limited to, blindness, or status as a veteran in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

1. The firm shall use his/her best efforts to ensure subcontractor/subconsultant compliance with Federal and State Equal Opportunity (EO) and EEO requirements.

Records and Reports:
The Contractor shall keep records as necessary to document compliance with EO/EEO requirements. Such reports shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of CTDOT and/or the United States Department of Transportation. The following records should be maintained:

6. The number of minority and non-minority group members and women employed in each work classification;
7. The progress and efforts being made in cooperation with unions, when applicable to increase the employment opportunities for minorities and women;
8. The documentation showing progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and
9. Complaints of Discrimination.

In implementing this policy and ensuring that affirmative action is being provided, each time a hiring opportunity occurs this firm will contact and request referrals from minority and female organizations, referral sources, and media sources. All advertising will emphasize that the firm is "An Affirmative Action/Equal Opportunity Employer."

In order to substantiate this firm's efforts and affirmative actions to provide equal opportunity, the firm will maintain and submit, as requested, documentation such as referral request correspondence, copies of advertisements utilized and follow-up documentation to substantiate that efforts were made in good faith. This firm will maintain the necessary internal audit procedures and record keeping systems to report the firm's affirmative action efforts.

It is understood by Owner/CEO/President of the firm and the firm's Equal Employment Opportunity Officer and supervisory and managerial personnel that failure to effectively implement, monitor and enforce this firm's affirmative action program and/or failure to adequately document and submit as required, the affirmative actions taken and efforts made to recruit and hire minority and female applicants in accordance with our affirmative action program in each instance of hire, will result in this firm being required to recommit itself to a modified and more stringent affirmative action program as a condition of approval. It is recognized that this policy is a contractual requirement and is a prerequisite for performing services for the contracting agency. This policy in addition to CTDOT's EO/EEO contract provisions and requirements, shall constitute the CTDOT Affirmative Program requirements.

The ultimate responsibility for the full implementation of this firm's Affirmative Action

Program rests with the Chief Executive Officer of this firm.

Rev. 4/24/2019

EXHIBIT C

Health Insurance Portability and Accountability Act of 1996 ("HIPAA").

(a) If the Contactor is a Business Associate under the requirements of the Health Insurance Portability and Accountability Act of 1996 ("HIPAA"), the Contractor must comply with all terms and conditions of this Section of the Contract. If the Contractor is not a Business Associate under HIPAA, this Section of the Contract does not apply to the Contractor for this Contract.

(b) The Contractor is required to safeguard the use, publication and disclosure of information on all applicants for, and all clients who receive, services under the Contract in accordance with all applicable federal and state law regarding confidentiality, which includes but is not limited to HIPAA, more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, and E; and

(c) The State of Connecticut Agency named on page 1 of this Contract (hereinafter the "Department") is a "covered entity" as that term is defined in 45 C.F.R. § 160.103; and

(d) The Contractor, on behalf of the Department, performs functions that involve the use or disclosure of "individually identifiable health information," as that term is defined in 45 C.F.R. § 160.103; and

(e) The Contractor is a "business associate" of the Department, as that term is defined in 45 C.F.R. § 160.103; and

(f) The Contractor and the Department agree to the following in order to secure compliance with the HIPAA, the requirements of Subtitle D of the Health Information Technology for Economic and Clinical Health Act (hereinafter the HITECH Act), (Pub. L. 111-5, sections13400 to 13423), and more specifically with the Privacy and Security Rules at 45 C.F.R. Part 160 and Part 164, subparts A, C, and E.

(g) Definitions

(1) "Breach shall have the same meaning as the term is defined in section 13400 of the HITECH Act (42 U.S.C. §17921(1))

(2) "Business Associate" shall mean the Contractor.

(3) "Covered Entity" shall mean the Department of the State of Connecticut named on page 1

of this Contract.

(4) "Designated Record Set" shall have the same meaning as the term "designated record set" in 45 C.F.R. § 164.501.

(5) "Electronic Health Record" shall have the same meaning as the term is defined in section 13400 of the HITECH Act (42 U.S.C. §17921(5))

(6) "Individual" shall have the same meaning as the term "individual"' in 45 C.F.R. § 160.103 and shall include a person who qualifies as a personal representative as defined in 45 C.F.R. § 164.502(g).

(7) "Privacy Rule" shall mean the Standards for Privacy of Individually Identifiable Health Information at 45 C.F.R. part 160 and parts 164, subparts A and E.

(8) "Protected Health Information" or "PHI" shall have the same meaning as the term "protected health information" in 45 C.F.R. § 160.103, limited to information created or received by the Business Associate from or on behalf of the Covered Entity.

(9) "Required by Law"' shall have the same meaning as the term "required by law" in 45 C.F.R. § 164.103.

(10) "Secretary" shall mean the Secretary of the Department of Health and Human Services or his designee.

(11) "More stringent" shall have the same meaning as the term "more stringent" in 45 C.F.R. § 160.202.

(12) "This Section of the Contract" refers to the HIPAA Provisions stated herein, in their entirety.

(13) "Security Incident" shall have the same meaning as the term "security incident" in 45 C.F.R.§ 164.304.

(14) "Security Rule" shall mean the Security Standards for the Protection of Electronic Protected Health Information at 45 C.F.R. part 160 and parts 164, subpart A and C.

(15) "Unsecured protected health information" shall have the same meaning as the term as defined in section 13402(h)(1)(A) of HITECH. Act. (42 U.S.C. §17932(h)(1)(A)).

(h) Obligations and Activities of Business Associates.

(1) Business Associate agrees not to use or disclose PHI other than as permitted or required by this Section of the Contract or as Required by Law.

(2) Business Associate agrees to use appropriate safeguards to prevent use or disclosure of PHI other than as provided for in this Section of the Contract.

(3) Business Associate agrees to use administrative, physical and technical safeguards that reasonably and appropriately protect the confidentiality, integrity, and availability of electronic protected health information that it creates, receives, maintains, or transmits on behalf of the Covered Entity.

(4) Business Associate agrees to mitigate, to the extent practicable, any harmful effect that is known to the Business Associate of a use or disclosure of PHI by Business Associate in violation of this Section of the Contract.

(5) Business Associate agrees to report to Covered Entity any use or disclosure of PHI not provided for by this Section of the Contract or any security incident of which it becomes aware.

(6) Business Associate agrees to ensure that any agent, including a subcontractor, to whom it provides PHI received from, or created or received by Business Associate, on behalf of the Covered Entity, agrees to the same restrictions and conditions that apply through this Section of the Contract to Business Associate with respect to such information.

(7) Business Associate agrees to provide access, at the request of the Covered Entity, and in the time and manner agreed to by the parties, to PHI in a Designated Record Set, to Covered Entity or, as directed by Covered Entity, to an Individual in order to meet the requirements under 45 C.F.R. § 164.524.

(8) Business Associate agrees to make any amendments to PHI in a Designated Record Set that the Covered Entity directs or agrees to pursuant to 45 C.F.R. § 164.526 at the request of the Covered Entity, and in the time and manner agreed to by the parties.

(9) Business Associate agrees to make internal practices, books, and records, including policies and procedures and PHI, relating to the use and disclosure of PHI received from, or created or received by, Business Associate on behalf of Covered Entity, available to Covered Entity or to the Secretary in a time and manner agreed to by the parties or designated by the Secretary, for purposes of the Secretary determining Covered Entity's compliance with the Privacy Rule.

(10) Business Associate agrees to document such disclosures of PHI and information related to such disclosures as would be required for Covered Entity to respond to a request by an Individual for an accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.

(11) Business Associate agrees to provide to Covered Entity, in a time and manner agreed to by the parties, information collected in accordance with clause h. (10) of this Section of the Contract, to permit Covered Entity to respond to a request by an Individual for an

accounting of disclosures of PHI in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder. Business Associate agrees at the Covered Entity's direction to provide an accounting of disclosures of PHI directly to an individual in accordance with 45 C.F.R. § 164.528 and section 13405 of the HITECH Act (42 U.S.C. § 17935) and any regulations promulgated thereunder.

(12)Business Associate agrees to comply with any state or federal law that is more stringent than the Privacy Rule.

(13) Business Associate agrees to comply with the requirements of the HITECH Act relating to privacy and security that are applicable to the Covered Entity and with the requirements of 45 C.F.R. sections 164.504(e), 164.308, 164.310, 164.312, and 164.316.

(14) In the event that an individual requests that the Business Associate (a) restrict disclosures of PHI; (b) provide an accounting of disclosures of the individual's PHI; or (c) provide a copy of the individual's PHI in an electronic health record, the Business Associate agrees to notify the covered entity, in writing, within two business days of the request.

(15) Business Associate agrees that it shall not, directly or indirectly, receive any remuneration in exchange for PHI of an individual without (1) the written approval of the covered entity, unless receipt of remuneration in exchange for PHI is expressly authorized by this Contract and (2) the valid authorization of the individual, except for the purposes provided under section 13405(d)(2) of the HITECH Act,(42 U.S.C. § 17935(d)(2)) and in any accompanying regulations

(16) Obligations in the Event of a Breach

A. The Business Associate agrees that, following the discovery of a breach of unsecured protected health information, it shall notify the Covered Entity of such breach in accordance with the requirements of section 13402 of HITECH (42 U.S.C. 17932(b) and the provisions of this Section of the Contract.
B. Such notification shall be provided by the Business Associate to the Covered Entity without unreasonable delay, and in no case later than 30 days after the breach is discovered by the Business Associate, except as otherwise instructed in writing by a law enforcement official pursuant to section 13402 (g) of HITECH (42 U.S.C. 17932(g)). A breach is considered discovered as of the first day on which it is, or reasonably should have been, known to the Business Associate. The notification shall include the identification and last known address, phone number and email address of each individual (or the next of kin of the individual if the individual is deceased) whose unsecured protected health information has been or is reasonably believed by the Business Associate to have been, accessed, acquired, or disclosed during such breach.
C. The Business Associate agrees to include in the notification to the Covered Entity at

least the following information:

1. A brief description of what happened, including the date of the breach and the date of the discovery of the breach, if known.

2. A description of the types of unsecured protected health information that were involved in the breach (such as full name, Social Security number, date of birth, home address, account number, or disability code).

3. The steps the Business Associate recommends that individuals take to protect themselves from potential harm resulting from the breach.

4. A detailed description of what the Business Associate is doing to investigate the breach, to mitigate losses, and to protect against any further breaches.

5. Whether a law enforcement official has advised either verbally or in writing the Business Associate that he or she has determined that notification or notice to individuals or the posting required under section 13402 of the HITECH Act would impede a criminal investigation or cause damage to national security and; if so, include contact information for said official.

D. Business Associate agrees to provide appropriate staffing and have established procedures to ensure that individuals informed by the Covered Entity of a breach by the Business Associate have the opportunity to ask questions and contact the Business Associate for additional information regarding the breach. Such procedures shall include a toll-free telephone number, an e-mail address, a posting on its Web site and a postal address. Business Associate agrees to include in the notification of a breach by the Business Associate to the Covered Entity, a written description of the procedures that have been established to meet these requirements. Costs of such contact procedures will be borne by the Contractor.

E. Business Associate agrees that, in the event of a breach, it has the burden to demonstrate that it has complied with all notification's requirements set forth above, including evidence demonstrating the necessity of a delay in notification to the Covered Entity.

(i) Permitted Uses and Disclosure by Business Associate.

(1) General Use and Disclosure Provisions Except as otherwise limited in this Section of the Contract, Business Associate may use or disclose PHI to perform functions, activities, or services for, or on behalf of, Covered Entity as specified in this Contract, provided that such use or disclosure would not violate the Privacy Rule if done by Covered Entity or the minimum necessary policies and procedures of the Covered Entity.

(2) Specific Use and Disclosure Provisions

(A) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI for the proper management and administration of Business Associate or to carry out the legal responsibilities of Business Associate.

(B) Except as otherwise limited in this Section of the Contract, Business Associate may disclose PHI for the proper management and administration of Business Associate, provided that disclosures are Required by Law, or Business Associate obtains reasonable assurances from the person to whom the information is disclosed that it will remain confidential and used or further disclosed only as Required by Law or for the purpose for which it was disclosed to the person, and the person notifies Business Associate of any instances of which it is aware in which the confidentiality of the information has been breached.

(C) Except as otherwise limited in this Section of the Contract, Business Associate may use PHI to provide Data Aggregation services to Covered Entity as permitted by 45 C.F.R. § 164.504(e)(2)(i)(B).

(j) Obligations of Covered Entity.

(1) Covered Entity shall notify Business Associate of any limitations in its notice of privacy practices of Covered Entity, in accordance with 45 C.F.R. § 164.520, or to the extent that such limitation may affect Business Associate's use or disclosure of PHI.

(2) Covered Entity shall notify Business Associate of any changes in, or revocation of, permission by Individual to use or disclose PHI, to the extent that such changes may affect Business Associate's use or disclosure of PHI.

(3) Covered Entity shall notify Business Associate of any restriction to the use or disclosure of PHI that Covered Entity has agreed to in accordance with 45 C.F.R. § 164.522, to the extent that such restriction may affect Business Associate's use or disclosure of PHI.

(k) Permissible Requests by Covered Entity. Covered Entity shall not request Business Associate to use or disclose PHI in any manner that would not be permissible under the Privacy Rule if done by the Covered Entity, except that Business Associate may use and disclose PHI for data aggregation, and management and administrative activities of Business Associate, as permitted under this Section of the Contract.

(l) Term and Termination.

(1) Term. The Term of this Section of the Contract shall be effective as of the date the Contract is effective and shall terminate when the information collected in accordance with clause h. (10) of this Section of the Contract is provided to the Covered Entity and all of the PHI provided by Covered Entity to Business Associate, or created or received by Business Associate on behalf of Covered Entity, is destroyed or returned to Covered Entity, or, if it is infeasible to return or destroy PHI, protections are extended to such

information, in accordance with the termination provisions in this Section. Termination for Cause Upon Covered Entity's knowledge of a material breach by Business Associate, Covered Entity shall either:

(A) Provide an opportunity for Business Associate to cure the breach or end the violation and terminate the Contract if Business Associate does not cure the breach or end the violation within the time specified by the Covered Entity; or

(B) Immediately terminate the Contract if Business Associate has breached a material term of this Section of the Contract and cure is not possible; or

(C) If neither termination nor cure is feasible, Covered Entity shall report the violation to the Secretary.

(2) Effect of Termination

(A) Except as provided in (l)(2) of this Section of the Contract, upon termination of this Contract, for any reason, Business Associate shall return or destroy all PHI received from Covered Entity or created or received by Business Associate on behalf of Covered Entity. Business Associate shall also provide the information collected in accordance with clause h. (10) of this Section of the Contract to the Covered Entity within ten business days of the notice of termination. This provision shall apply to PHI that is in the possession of subcontractors or agents of Business Associate. Business Associate shall retain no copies of the PHI.

(B) In the event that Business Associate determines that returning or destroying the PHI is infeasible, Business Associate shall provide to Covered Entity notification of the conditions that make return or destruction infeasible. Upon documentation by Business Associate that return or destruction of PHI is infeasible, Business Associate shall extend the protections of this Section of the Contract to such PHI and limit further uses and disclosures of PHI to those purposes that make return or destruction infeasible, for as long as Business Associate maintains such PHI. Infeasibility of the return or destruction of PHI includes, but is not limited to, requirements under state or federal law that the Business Associate maintains or preserves the PHI or copies thereof.

(m) Miscellaneous Provisions.

(1) Regulatory References. A reference in this Section of the Contract to a section in the Privacy Rule means the section as in effect or as amended.

(2) Amendment. The Parties agree to take such action as in necessary to amend this Section of the Contract from time to time as is necessary for Covered Entity to comply with requirements of the Privacy Rule and the Health Insurance Portability and Accountability Act of 1996, Pub. L. No. 104-191.

(3) Survival. The respective rights and obligations of Business Associate shall survive the termination of this Contract. Effect on Contract. Except as specifically required to implement the purposes of this Section of the Contract, all other terms of the Contract shall remain in force and effect.

(4) Construction. This Section of the Contract shall be construed as broadly as necessary to implement and comply with the Privacy Standard. Any ambiguity in this Section of the Contract shall be resolved in favor of a meaning that complies, and is consistent with, the Privacy Standard.

(5) Disclaimer. Covered Entity makes no warranty or representation that compliance with this Section of the Contract will be adequate or satisfactory for Business Associate's own purposes. Covered Entity shall not be liable to Business Associate for any claim, civil or criminal penalty, loss or damage related to or arising from the unauthorized use or disclosure of PHI by Business Associate or any of its officers, directors, employees, contractors or agents, or any third party to whom Business Associate has disclosed PHI contrary to the provisions of this Contract or applicable law. Business Associate is solely responsible for all decisions made, and actions taken, by Business Associate regarding the safeguarding, use and disclosure of PHI within its possession, custody or control.

(6) Indemnification. The Business Associate shall indemnify and hold the Covered Entity harmless from and against any and all claims, liabilities, judgments, fines, assessments, penalties, awards and any statutory damages that may be imposed or assessed pursuant to HIPAA, as amended or the HITECH Act, including, without limitation, attorney's fees, expert witness fees, costs of investigation, litigation or dispute resolution, and costs awarded thereunder, relating to or arising out of any violation by the Business Associate and its agents, including subcontractors, of any obligation of Business Associate and its agents, including subcontractors, under this section of the contract, under HIPAA, the HITECH Act, the Privacy Rule and the Security Rule.

EXHIBIT D

State Wages and Other Related Information

Please refer to the Department of Labor website for the latest updates, annual adjusted wage rate increases, certified payroll forms and applicable statutes.
http://www.ctdol.state.ct.us/wgwkstnd/prevailwage.htm

Prevailing Wage Law Poster Language

THIS IS A PUBLIC WORKS PROJECT Covered by the PREVAILING WAGE LAW CT General Statutes Section 31-53

If you have QUESTIONS regarding your wages CALL (860) 263-6790

Section 31-55 of the CT State Statutes requires every contractor or

subcontractor
performing work for the state to post in a prominent place the prevailing wages as determined by the Labor Commissioner.

Informational Bulletin

THE 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE
(applicable to
public building contracts entered into on or after July 1, 2007, where the total cost of all work to be performed is at least $100,000)

(1) This requirement was created by Public Act No. 06-175, which is codified in Section 31-53b of the Connecticut General Statutes (pertaining to the prevailing wage statutes);

(2) The course is required for public building construction contracts (projects funded in whole or in part by the state or any political subdivision of the state) entered into on or after July 1, 2007; It is required of private employees (not state or municipal employees) and apprentices who perform manual labor for a general contractor or subcontractor on a public building project where the total cost of all work to be performed is at least $100,000;

(3) The ten-hour construction course pertains to the ten-hour Outreach Course conducted in accordance with federal OSHA Training Institute standards, and, for telecommunications workers, a ten-hour training course conducted in accordance with federal OSHA standard, 29 CFR 1910.268;

(4) The internet website for the federal OSHA Training

Institute is
http://www.osha.gov/fso/ote/training/edcenters/fact_sheet.htm
l;

(5) The statutory language leaves it to the contractor and its employees to determine who pays for the cost of the ten-hour Outreach Course;

(6) Within 30 days of receiving a contract award, a general contractor must furnish proof to the Labor Commissioner that all employees and apprentices performing manual labor on the project will have completed such a course;

(7) Proof of completion may be demonstrated through either: (a) the presentation of a bona fide student course completion card issued by the federal OSHA Training Institute; or (2) the presentation of documentation provided to an employee by a trainer certified by the Institute pending the actual issuance of the completion card;

(8) Any card with an issuance date more than 5 years prior to the commencement date of the construction project shall not constitute proof of compliance;

(9) Each employer shall affix a copy of the construction safety course completion card to the certified payroll submitted to the contracting agency in accordance with Conn. Gen. Stat. § 31- 53(f) on which such employee's name first appears;

(10) Any employee found to be in non-compliance shall be subject to removal from the worksite if such employee does not provide satisfactory proof of course completion to the Labor Commissioner by the fifteenth day after the date the employee is determined to be in noncompliance;

(11) Any such employee who is determined to be in noncompliance may continue to work on a public building construction project for a maximum of fourteen consecutive calendar days while bringing his or her status into compliance;

(12) The Labor Commissioner may make complaint to the prosecuting authorities regarding any employer or agent of the employer, or officer or agent of the corporation who files a false certified payroll with respect to the status of an employee who is performing manual labor on a public building construction project;

(13) The statute provides the minimum standards required for the completion of a safety course by manual laborers on public construction contracts; any contractor can exceed these minimum requirements; and Regulations clarifying the statute are currently in the regulatory process and shall be posted on the CTDOL website as soon as they are adopted in final form.

(14) Any questions regarding this statute may be directed to the Wage and Workplace Standards Division of the Connecticut Labor Department via the internet website of http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm; or by telephone at (860)263-6790.

THE ABOVE INFORMATION IS PROVIDED EXCLUSIVELY AS AN EDUCATIONAL RESOURCE AND IS NOT INTENDED AS A SUBSTITUTE FOR LEGAL INTERPRETATIONS WHICH MAY ULTMATELY ARISE CONCERNIG THE CONSTRUCTION OF THE STATUTE OR THE REGULATIONS.

November 29, 2006

Notice

To All Mason Contractors and Interested Parties Regarding Construction Pursuant to Section 31-53 of the Connecticut General Statutes (Prevailing Wage)

The Connecticut Labor Department Wage and Workplace Standards Division is empowered to enforce the prevailing wage rates on projects covered by the above referenced statute. Over the past few years, the Division has withheld enforcement of the rate in effect for workers who operate a forklift on a prevailing wage rate project due to a potential jurisdictional dispute. The rate listed in the schedules and in our Occupational Bulletin (see enclosed) has been as follows:

Forklift Operator:

- **Laborers (Group 4) Mason Tenders** - operates forklift solely to assist a mason to a maximum height of nine feet only.

- **Power Equipment Operator (Group 9)** - operates forklift to assist any trade and to assist a mason to a height over nine feet.

The U.S. Labor Department conducted a survey of rates in Connecticut, but it has not been published and the rate in effect remains as outlined in the above Occupational Bulletin.

Since this is a classification matter and not one of jurisdiction, effective January 1, 2007, the Connecticut Labor Department will enforce the rate on each schedule in accordance with our statutory authority.

Your cooperation in filing appropriate and accurate certified payrolls is appreciated.

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS
DIVISION CONTRACTORS WAGE
CERTIFICATION FORM
Construction Manager at Risk/General Contractor/Prime Contractor

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS
DIVISION CONTRACTORS WAGE
CERTIFICATION FORM
Construction Manager at Risk/General Contractor/Prime Contractor

I, of _____,

Officer, Owner, Authorized Rep. Company Name

do hereby certify that the _____
Company Name

_____
Street

_____
City

and all of its subcontractors will pay all workers on the

_____
Project Name and Number

_____
Street and City

the wages as listed in the schedule of prevailing rates required for such project (a copy of which is attached hereto).

_____
Signature

Subscribed and sworn to before me this _____ day of _____, _____.

_____
Notary Public

Return to: Connecticut Department of Labor
Wage & Workplace Standards
Division 200 Folly Brook Blvd.
Wethersfield, CT 06109

Rate Schedule Issued (Date): _____

Information Bulletin
Occupational Classifications

The Connecticut Department of Labor has the responsibility to properly determine "job classification" on prevailing wage projects covered under C.G.S. Section 31-53(d).

Note: This information is intended to provide a sample of some occupational classifications for guidance purposes only. It is not an all-inclusive list of each occupation's duties. This list is being provided only to highlight some areas where a contractor may be unclear regarding the proper classification. If unsure, the employer should seek guidelines for CTDOL.

Below are additional clarifications of specific job duties performed for certain classifications:

- **ASBESTOS WORKERS**

Applies all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.

- **ASBESTOS INSULATOR**

Handle, install apply, fabricate, distribute, prepare, alter, repair, dismantle, heat and frost insulation, including penetration and fire stopping work on all penetration fire stop systems.

- **BOILERMAKERS**

Erects hydro plants, incomplete vessels, steel stacks, storage tanks for water, fuel, etc. Builds incomplete boilers, repairs heat exchanges and steam generators.

- **BRICKLAYERS, CEMENT MASONS, CEMENT FINISHERS, MARBLE MASONS, PLASTERERS, STONE MASONS, PLASTERERS. STONE MASONS, TERRAZZO WORKERS, TILE SETTERS**

Lays building materials such as brick, structural tile and concrete cinder, glass, gypsum, terra cotta block. Cuts, tools and sets marble, sets stone, finishes concrete, applies decorative steel, aluminum and plastic tile, applies cements, sand, pigment and marble chips to floors, stairways, etc.

- **CARPENTERS, MILLWRIGHTS. PILEDRIVERMEN. LATHERS. RESILEINT FLOOR LAYERS, DOCK BUILDERS, DIKERS, DIVER TENDERS**

Constructs, erects, installs and repairs structures and fixtures of wood, plywood and wallboard. Installs, assembles, dismantles, moves industrial machinery. Drives piling into ground to provide foundations for structures such as buildings and bridges, retaining walls for earth embankments, such as cofferdams. Fastens wooden, metal or rockboard lath to walls, ceilings and partitions of buildings, acoustical tile layer, concrete form builder. Applies firestopping materials on fire resistive joint systems only. Installation of curtain/window walls only where attached to wood or metal studs. Installation of insulated material of all types whether blown, nailed or attached in other ways to walls, ceilings and floors of buildings. Assembly and installation of modular furniture/furniture systems. Free-standing furniture is not covered. This includes free standing: student chairs, study top desks, book box desks, computer furniture, dictionary stand, atlas stand, wood shelving, two-position information access station, file cabinets, storage cabinets, tables, etc.

LABORER, CLEANING

• The clean up of any construction debris and the general (heavy/light) cleaning, including sweeping, wash down, mopping, wiping of the construction facility and its furniture, washing, polishing, and dusting.

DELIVERY PERSONNEL

If delivery of supplies/building materials is to one common point and stockpiled there, prevailing wages are not required. If the delivery personnel are involved in the distribution of the material to multiple locations within the construction site, then they would have to be paid prevailing wages for the type of work performed: laborer, equipment operator, electrician, ironworker, plumber, etc.

An example of this would be where delivery of drywall is made to a building and the delivery personnel distribute the drywall from one "stockpile" location to further sub-locations on each floor. Distribution of material around a construction site is the job of a laborer or tradesman, and not a delivery personnel.

ELECTRICIANS

Install, erect, maintenance, alteration or repair of any wire, cable, conduit, etc., which generates, transforms, transmits or uses electrical energy for light, heat, power or other purposes, including the Installation or maintenance of telecommunication, LAN wiring or computer equipment, and low voltage wiring. *License required per Connecticut General Statutes: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9.

ELEVATOR CONSTRUCTORS

Install, erect, maintenance and repair of all types of elevators, escalators, dumb waiters and moving walks. ***License required by Connecticut General Statutes: R-1, 2, 5, 6.**

FORKLIFT OPERATOR

Laborers Group 4) Mason Tenders - operates forklift solely to assist a mason to a maximum height of nine (9) feet only.

Power Equipment Operator Group 9 - operates forklift to assist any trade, and to assist a mason to a height over nine (9) feet.

GLAZIERS

Glazing wood and metal sash, doors, partitions, and 2 story aluminum storefronts. Installs glass windows, skylights, store fronts and display cases or surfaces such as building fronts, interior walls, ceilings and table tops and metal store fronts. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers, which require equal composite workforce.

IRONWORKERS

Erection, installation and placement of structural steel, precast concrete, miscellaneous iron, ornamental iron, metal curtain wall, rigging and reinforcing steel. Handling, sorting, and installation of reinforcing steel (rebar). Metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers which require equal composite workforce.

INSULATOR

Installing fire stopping systems/materials for "Penetration Firestop Systems": transit to cables, electrical conduits, insulated pipes, sprinkler pipe penetrations, ductwork behind radiation, electrical cable trays, fire rated pipe penetrations, natural polypropylene, HVAC ducts, plumbing bare metal, telephone and communication wires, and boiler room ceilings.

LABORERS

Acetylene burners, asphalt rakers, chain saw operators, concrete and power buggy operator, concrete saw operator, fence and guard rail erector (except metal bridge rail (traffic), decorative security fence (non-metal).

installation.), hand operated concrete vibrator operator, mason tenders, pipelayers (installation of storm drainage or sewage lines on the street only), pneumatic drill operator, pneumatic gas and electric drill operator, powermen and wagon drill operator, air track operator, block paver, curb setters, blasters, concrete spreaders.

PAINTERS

Maintenance, preparation, cleaning, blasting (water and sand, etc.), painting or application of

any protective coatings of every description on all bridges and appurtenances of highways, roadways, and railroads. Painting, decorating, hardwood finishing, paper hanging, sign writing, scenic artw o r k and drywall hhg for any and all types of building and residential work.

LEAD PAINT REMOVAL

Painter's Rate 1. Removal of lead paint from bridges. 2. Removal of lead paint as preparation of any surface to be repainted. 3. Where removal is on a Demolition project prior to reconstruction. • Laborer's Rate 1. Removal of lead paint from any surface NOT to be repainted. 2. Where removal is on a TOTAL Demolition project only.

PLUMBERS AND PIPEFITTERS

Installation, repair, replacement, alteration or maintenance of all plumbing, heating, cooling and piping. ***License required per Connecticut General Statutes: P-1,2,6,7,8,9 J1,2,3,4 SP-1,2 S- 1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4.**

POWER EQUIPMENT OPERATORS

Operates several types of power construction equipment such as compressors, pumps, hoists, derricks, cranes, shovels, tractors, scrapers or motor graders, etc. Repairs and maintains equipment.
***License required, crane operators only, per Connecticut General Statutes.**

ROOFERS

Covers roofs with composition shingles or sheets, wood shingles, slate or asphalt and gravel to waterproof roofs, including preparation of surface. (demolition or removal of any type of roofing and or clean-up of any and all areas where a roof is to be relaid.)

SHEETMETAL WORKERS

Fabricate, assembles, installs and repairs sheet metal products and equipment in such areas as ventilation, air-conditioning, warm air heating, restaurant equipment, architectural sheet metal work, sheet metal roofing, and aluminum gutters. Fabrication, handling, assembling, erecting, altering, repairing, etc. of coated metal material panels and composite metal material panels when used on building exteriors and interiors as soffits, facia, louvers, partitions, canopies, cornice, column covers, awnings, beam covers, cladding, sunshades, lighting troughs, spires, ornamental roofing, metal ceilings, mansards, copings, ornamental and ventilation hoods, vertical and horizontal siding panels, trim, etc. The sheet metal classification also applies to the vast variety of coated metal material panels and composite metal material panels that have evolved over the years as an alternative to conventional ferrous and non-ferrous metals like steel, iron, tin, copper, brass, bronze, aluminum, etc. Fabrication, handling, assembling, erecting, altering, repairing, etc. of architectural metal roof, standing seam roof, composite metal roof, metal and composite bathroom/toilet partitions, aluminum gutters, metal and

composite lockers and shelving, kitchen equipment, and walk-in coolers. To include testing and air –balancing ancillary to installation and construction.

- **SPRINKLER FITTERS**

Installation, alteration, maintenance and repair of fire protection sprinkler systems.
***License required per Connecticut General Statutes: F-1, 2, 3, 4.**

- **TILE MARBLE AND TERRAZZO FINISHERS**

Assists and tends the tile setter, marble mason and terrazzo worker in the performance of their duties.

- **TRUCK DRIVERS**

~How to pay truck drivers delivering asphalt is under REVISION~

Truck Drivers are required to be paid prevailing wage for time spent "working" directly on the site. These drivers remain covered by the prevailing wage for any time spent transporting between the actual construction location and facilities (such as fabrication, plants, mobile factories, batch plant, borrow pits, job headquarters, tool yards, etc.) dedicated exclusively, or nearly so, to performance of the contract or project, which are so located in proximity to the actual construction location that it is reasonable to include them. ***License required, drivers only, per Connecticut General Statutes**.
For example:

• Material men and deliverymen are not covered under prevailing wage as long as they are not directly involved in the construction process. If, they unload the material, they would then be covered by prevailing wage for the classification they are performing work in: laborer, equipment operator, etc.
• Hauling material off site is not covered provided they are not dumping it at a location outlined above.
• Driving a truck on site and moving equipment or materials on site would be considered covered work, as this is part of the construction process.

- Any questions regarding the proper classification should be directed to:

Public Contract Compliance Unit
Wage and Workplace Standards Division
Connecticut Department of Labor
200 Folly Brook Blvd, Wethersfield, CT 06109 (860) 263-6543.

Connecticut Department of Labor
Wage and Workplace Standards Division

FOOTNOTES

Please Note: If the "Benefits" listed on the schedule for the following occupations includes a letter(s) (+ a or + a+b for instance), refer to the information below.

Benefits to be paid at the appropriate prevailing wage rate for the listed occupation.

If the "Benefits" section for the occupation lists only a dollar amount, disregard the information below.

Bricklayers, Cement Masons, Cement Finishers, Concrete Finishers, Stone Masons
(Building Construction) and (Residential- Hartford, Middlesex, New Haven, New London and Tolland Counties)

a. Paid Holiday: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked in addition to holiday pay.

Elevator Constructors: Mechanics

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, Christmas Day, plus the Friday after Thanksgiving.

b. Vacation: Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

Glaziers

a. Paid Holidays: Labor Day and Christmas Day.

Power Equipment Operators
(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday. Holidays falling on Saturday may be observed on Saturday, or if the employer so elects, on the preceding Friday.

Ironworkers

a. Paid Holiday: Labor Day provided employee has been on the payroll for

the 5 consecutive work days prior to Labor Day.

Laborers (Tunnel Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. No employee shall be eligible for holiday pay when he fails, without cause, to work the regular work day preceding the holiday or the regular work day following the holiday.

Roofers

a. Paid Holidays: July 4th, Labor Day, and Christmas Day provided the employee is employed 15 days prior to the holiday.

Sprinkler Fitters

a. Paid Holidays: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

Truck Drivers

(Heavy and Highway Construction & Building Construction)

a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas day, and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.

Rev. 7/1/19

SEE BELOW FOR STATE WAGE RATES

INSERT STATE WAGES HERE

Minimum Rates and Classifications for
Heavy/Highway Construction

ID#: 25-8388

Connecticut Department of Labor
Wage and Workplace Standards Division

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number:
Project Town: Naugatuck
State#: 0087-0148
FAP#:
Project: Rehabilitation of Bridge No. 06772 Carrying Route 63 Over Straitsville Brook

CLASSIFICATION	Hourly Rate	Benefits
1) Boilermaker	48.21	30.01
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	43.14	34.74
2) Carpenters, Piledrivermen	42.03	29.19
2a) Diver Tenders	42.03	29.19
2b) Divers Effluent	67.52	29.19
3) Divers	50.49	29.19
03a) Millwrights	43.25	29.13
03b) Carpenter-Welder	42.53	29.19
03c) Carpenter: Working with creosote lumber or acid	43.03	29.19

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4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	59.7	26.65
4a) Painters: Brush and Roller	39.57	26.50
4b) Painters: Spray	42.57	26.50
4bc) Painters: Spray Helper	40.57	26.50
4c) Painters: Steel Only	41.57	26.50
4d) Painters: Blast	44.57	26.50
4de) Painter: Blast Helper	40.57	26.50
4e) Painters: Tanks, Tower and Swingstage etc.	41.57	26.50
4f) Elevated Tanks (60 feet and above)	48.57	26.50
5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	47.4	35.32+3% of gross wage
6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	45.25	43.62 + a
7) Plumbers (Trade License required: (P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (Including HVAC Work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4 G-1, G-2, G-8, G-9)	50.58	36.30
----LABORERS---- -		
8) Group 1: General Laborers and concrete specialist	35.7	28.85

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8) Group 1a: Acetylene Burners (Hours worked with a torch)	36.7	28.85
9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	35.95	28.85
10) Group 3: Pipelayers	36.2	28.85
11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block paver, curb setter and forklift operators	36.2	28.85
12) Group 5: Toxic waste removal (non-mechanical systems)	37.7	28.85
13) Group 6: Blasters	37.45	28.85
Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	38.7	28.85
Group 8: Traffic control signalmen	21.42	28.85
Group 9: Hydraulic Drills	36.45	28.85
Group 10: Toxic Waste Removers A or B With PPE	38.7	28.85
----LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.----		
13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	37.93	28.85 + a
13b) Brakemen, Trackmen, Miners' Helpers and all other men	36.96	28.85 + a

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----CLEANING, CONCRETE AND CAULKING TUNNEL----		
14) Concrete Workers, Form Movers, and Strippers	36.96	28.85 + a
15) Form Erectors	37.29	28.85 + a
----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----		
16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers, Miners Helpers	36.96	28.85 + a
17) Laborers Topside, Cage Tenders, Bellman	36.85	28.85 + a
18) Miners	37.93	28.85 + a
----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: ----		
18a) Blaster	44.42	28.85 + a
19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	44.22	28.85 + a
20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	42.24	28.85 + a
21) Mucking Machine Operator, Grout Boss, Track Boss	45.01	28.85 + a
----TRUCK DRIVERS----(*see note below)		
Block Truck	37.48	32.68 + a

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2 Axle	36.16	32.68 + a
Helpers	34.66	32.68 + a
Three Axle Trucks; Two Axle Mixer	36.27	32.68 + a
Three Axle Mixer	36.33	32.68 + a
Four Axle Trucks	36.39	32.68 + a
Four Axle Mixer	37.19	32.68 + a
5 Axle	36.39	32.68 + a
5 Axle Mixer	37.19	32.68 + a
Heavy Duty Trailer (40 tons and over)	38.66	32.68 + a
Heavy Duty Trailer (up to 40 tons)	37.39	32.68 + a
Snorkle Truck	36.54	32.68 + a
Swivel Dump and Tack Truck	36.39	32.68 + a
Euclids and Semi Trailer	36.44	32.68 + a

----POWER EQUIPMENT OPERATORS----

Group 1: Crane Handling or Erecting Structural Steel or Stone, Hoisting Engineer (2 drums or over). (Trade License Required)	58.19	29.80 + a
Group 1a: Front End Loader (7 cubic yards or over); Work Boat 26 ft. and over.	53.33	29.80 + a
Group 2: Cranes (100 ton rate capacity and over); Bauer Drill/Caisson. (Trade License Required)	57.78	29.80 + a
Group 2a: Cranes (under 100 ton rated capacity).	56.79	29.80 + a
Group 2b: Excavator over 2 cubic yards; Pile Driver ($3.00 premium when operator controls hammer).	52.92	29.80 + a
Group 3: Excavator; Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar);Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required)	51.92	29.80 + a
Group 4: Trenching Machines; Lighter Derrick; CMI Machine or Similar; Koehring Loader (Skooper).	51.42	29.80 + a
Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" mandrel)	50.63	29.80 + a
Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	50.63	29.80 + a
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	50.22	29.80 + a
Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and under Mandrel)	49.77	29.80 + a

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Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.	49.25	29.80 + a
Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder), Vacuum Excavation Truck and Hydrovac Excavation Truck (27 HG pressure or greater).	48.67	29.80 + a
Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	45.96	29.80 + a
Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	45.96	29.80 + a
Group 12: Wellpoint Operator.	45.87	29.80 + a
Group 13: Compressor Battery Operator.	45.12	29.80 + a
Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).	43.6	29.80 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	43.06	29.80 + a
Group 16: Maintenance Engineer.	42.2	29.80 + a
Group 17: Portable Asphalt Plant Operator; Portable Crusher Plant Operator; Portable Concrete Plant Operator., Portable Grout Plant Operator, Portable Water Filtration Plant Operator.	47.91	29.80 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	44.7	29.80 + a
Surveyor: Chief of Party	48.16	29.80 + a
Surveyor: Assistant Chief of Party	44.41	29.80 + a

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Surveyor: Instrument Man	42.73	29.80 + a
Surveyor: Rodman or Chairman	36.78	29.80 + a

**NOTE: SEE BELOW

----LINE CONSTRUCTION----(Railroad Construction and Maintenance)----

20) Lineman, Cable Splicer, Technician	57.6	32.85
21) Heavy Equipment Operator	51.84	29.95
22) Equipment Operator, Tractor Trailer Driver, Material Men	48.96	29.01
23) Driver Groundmen	43.2	26.84
23a) Groundman Experienced	31.68	13.91

----OUTSIDE LINE CONSTRUCTION----

24) Driver Groundmen	42.09	26.84
25) Groundmen	30.87	13.91
26) Heavy Equipment Operators	50.51	29.95
27) Linemen, Cable Splicers, Dynamite Men	56.12	32.85

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28) Material Men, Tractor Trailer Drivers, Equipment Operators	47.7	29.01
29) Technician	56.12	32.85
----COMMUNICATION----		
Sales & Service Technician: To include but not limited to: Installation, Repair, Splicing and Maintenance	48.84	18.07
----DREDGING----		
Class A1: Mechanical Dredge Operator	45.26	17.22+a+b
Class B1: Maintenance Engineer	39.14	16.78+a+b
Class C1: Mate/Welder	35.83	16.54+a+b
Class D: Deckhand	28.81	16.03+a+b

Welders: Rate for craft to which welding is incidental.
Surveyors: Hazardous material removal: $3.00 per hour premium.
*Note: Hazardous waste removal work receives additional $1.25 per hour for truck drivers.
**Note: Hazardous waste premium $3.00 per hour over classified rate.
Truck Drivers: Trainers Premium: $3.00 over wage rate.
Truck Drivers: Night Premium - Mixer Drivers: $2.00 over wage rate.

Crane with 150 ft. boom (including jib) - $1.50 extra
Crane with 200 ft. boom (including jib) - $2.50 extra
Crane with 250 ft. boom (including jib) - $5.00 extra
Crane with 300 ft. boom (including jib) - $7.00 extra
Crane with 400 ft. boom (including jib) - $10.00 extra

As of: August 14, 2025

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyperson instructing and supervising the work of each apprentice in a specific trade.

~~Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing state work ~~

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.
Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.
It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.
The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol. For those without internet access, please contact the division listed below.
The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.
All subsequent annual adjustments will be posted on our Web Site for contractor access.
Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

~~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 clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of: August 14, 2025