TOWN OF KILLINGLY

BID DOCUMENTS

FOR

REPLACEMENT OF BRIDGE NO. 68-002
VALLEY ROAD OVER MASHENTUCK BROOK
State Project No. 9068-0002

REPLACEMENT OF BRIDGE NO. 68-003
VALLEY ROAD OVER WHETSTONE BROOK
State Project No. 9068-0003

REPLACEMENT OF BRIDGE NO. 68-009
BEAR HILL ROAD OVER UNNAMED BROOK
State Project No. 9068-0009

KILLINGLY, CONNECTICUT

NOVEMBER 2022

FREEMAN
COMPANIES

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INVITATION TO BID

KILLINGLY BRIDGE RECONSTRUNCTION

KILLINGLY, CONNECTICUT

Sealed bids for the Killingly Bridge Reconstruction Projects No. 9068-0002, No. 9068-0003, and No. 9068-0009 will be received at the **Office of the Town Engineer, 172 Main Street, Killingly CT 06239 until 2:00 PM on Janurary 11th, 2023**. Thereafter, bids will be opened in public and read aloud in the **Town Meeting Room of the Killingly Town Hall located at 172 Main Street Killingly CT 06239**. No bids will be accepted after said date and time.

The Town of Killingly hereby notifies all bidders that it will affirmatively ensure that in any contract entered into pursuant to this advertisement, minority and disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation and that they will not be discriminated against on the grounds of race, color, national origin or sex in consideration for an award.

Prospective bidders shall examine the "Information for Bidders" and shall comply and conform strictly to the conditions and instructions contained therein.

Plans and Specifications may be obtained from the Town of Killingly website: https://www.killingly.org/finance/pages/bids-and-rfps

Any requests for additional information, interpretations, or clarifications of these Contract Documents by potential bidders shall be made in writing to Mr. Yuyang Lin of Freeman Companies LLC, 36 John Street, Hartford, CT 06106 (ylin@freemancos.com), no later than 12 calendar days prior to the scheduled bid opening date. If determined to be necessary or required, addenda will be issued on the Town bids and rfps website. All addenda shall be posted or sent no later than 5 days prior to the bid closing and opening.

The Town of Killingly reserves the right to accept or reject any bid in part or in whole and to waive any formalities or informalities in the bidding process and to award the bid deemed to be in the best interest of the Town.

All bidders are required to inform themselves fully of the conditions relating to the construction and labor under which the work will be or is now being performed and the contractor shall employ, as far as possible, such methods and means in the carrying out of this work as will not cause interference with any other contractor.

The minimum wages to be paid to labor of the various classifications shall be in accordance with Federal Wage Rate determinations and the current schedule of wages established by the State Labor Commissioner as provided in the General Statutes of Connecticut, as revised.

Note: Surety Company Bond for five percent (5%) of the amount of the bid, must accompany each proposal; certified checks will not be accepted. The Town of Killingly reserves the right to reject any and all bids.

The contractor who is selected to perform this State project must comply with CONN. GEN. STAT. §§ 4a-60, 4a-60a, 4a-60g, and 46a-68b through 46a-68f, inclusive, as amended by June 2015 Special Session Public Act 15-5.

State law requires a minimum of twenty-five (25%) percent of the state-funded portion of the contract for award to subcontractors holding current certification from the Connecticut Department of Administrative Services ("DAS") under the provisions of CONN. GEN. STAT. § 4a-60g. (25% of the work with DAS certified Small and Minority owned businesses and 25% of that work with DAS certified Minority, Women and/or Disabled owned businesses.) The contractor must demonstrate good faith effort to meet the 25% set aside goals.

For municipal public works contracts and quasi-public agency projects, the contractor must file a written or electronic non-discrimination certification with the Commission on Human Rights and Opportunities.

Killingly Town Manager

CONDITIONS:

Bid Surety:
Each bid must be accompanied by a bid bond prepared on the form of bid bond attached hereto, duly executed by the bidder as principal and having a surety thereon approved by the Municipality, in the amount of 5% of the bid.

Payment: Final payment will be made upon the acceptance of the completed work by an authorized representative of the Town of Killingly. Invoices covering the work specified herein should be forwarded to the Killingly Engineering Department upon completion of the project.

Taxes: The Town of Killingly is exempt from all State and Federal taxes. Do not include these amounts in your quotation. A tax-exempt form will be supplied to the selected contractor.

Addendums: All addendums will be posted on the town website, https://www.killingly.org/finance/pages/bids-and-rfps.
It is the responsibility of the bidder to check the website for any addendums before submitting their bid.

F.O.B. Destination: All prices quoted must be net delivered to destination.

Conflict of Interest: No public official or employee shall, while serving as such, have any financial interest or engage in any business, employment, transaction, or professional activity or incur any obligation of any nature which is in substantial conflict with the proper discharge of his/her duties or employment in the public interest.

Insurance Requirements: Shall meet the requirements of Article 1.03.07 of the State of Connecticut Department Transportation Standard Specifications for Roads, Bridges, Facilities, and Incidental Construction Form 818, dated 2020 or the requirements below, whichever is greater. The Town of Killingly shall be listed as Additional Insured on a primary and non-contributory basis to all policies, except Workers Compensation. All policies should also include a Waiver of Subrogation.

Insurance shall be written with Carriers approved in the State of Connecticut and with a minimum AM Best's Rating of "A-" VIII. In addition, all Carriers are subject to approval by the Town of Killingly.

A. General Liability

Occurrence limit $1,000,000; aggregate limit $2,000,000. The insurance carried by the proposer shall be on form CG 00 01, or equivalent. The Town of Killingly shall be named as an additional insured on the contractor's General Liability Insurance Policy with form CG 20 10 or CG 20 33, *and* CG 20 37.

B. Automobile Liability

Combined single limit of $1,000,000. Comprehensive automobile policy to cover all owned, hired or non-owned automobiles or vehicles.

C. Workers Compensation

The proposer must have workers' compensation and employer's liability insurance as required by Connecticut and federal law, plus employer's liability limits of $1,000,000 per

accident, 1,000,000 disease each employee and $1,000,000 disease policy limit.

D. Umbrella Liability

The proposer shall have a minimum coverage of $1,000,000 excess umbrella coverage, naming the Town as additional insured.

The Town of Killingly and the State of Connecticut shall be listed as an additional insured. The proposer shall procure and pay for the insurance coverage described above and must maintain the indicated insurance for a period of two (2) years after completion of the contract. All policies shall provide for thirty (30) days written notice prior to cancellation, substantial change or nonrenewal. The successful bidder must file an Insurance Certificate within two weeks of the date of notification of award. Failure or neglect to do so may be considered by the Town as proof that the proposer is unable to fulfill the contract. A current insurance certificate and a copy of the endorsement or policy wording adding the Town as Additional Insured must be in the Town's possession at all times. In addition, the selected firm shall require its subcontractors, if any, to meet the same insurance requirements and to furnish the Town with similar evidence of insurance.

In addition, the proposer shall, at all times, save, indemnify and hold harmless the Town of Killingly, its officers, agents, employees and servants from liability of any nature or kind, including costs and expenses for or on account of, any patented or copyrighted equipment, materials, articles, or processes used in the performance of this contract, or on account of any and all claims, damages, losses, litigation expense and counsel fees arising out of loss or injuries (including death) sustained by or alleged to have been sustained by the public or any persons affected by the proposer's work, or by the proposer or any subcontractor, or anyone directly or indirectly employed by them while engaged in the performance of their duties in connect.

Original, completed Certificates of Insurance must be presented to the Town of Killingly prior to contract issuance. Contractor agrees to provide replacement/renewal certificates at least 30 days prior to the expiration date of the policies. Should any of the above-described policies be cancelled, limits reduced, or coverage altered, 30 days written notice must be given to the Town of Killingly.

Section I

INFORMATION FOR BIDDERS
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Reconstruction of Valley Road Bridge over Mashentuck Brook

Reconstruction of Valley Road Bridge over Whetstone Brook

Reconstruction of Bear Hill Road over Unnamed Brook

SUBJECT:

INFORMATION FOR BIDDERS

TOWN OF KILLINGLY
Reconstruction of Valley Road Bridge over Mashentuck Brook
Reconstruction of Valley Road Bridge over Whetstone Brook
Reconstruction of Bear Hill Road over Unnamed Brook
in Killingly, CT

1. RECEIPT AND OPENING OF BIDS:

The Town of Killingly, hereinafter referred to as the Municipality, invites bids on the form attached hereto. All blanks must be appropriately filled in. Bids will be received by Town Engineer in the Killingly Town Hall, 172 Main Street / Second Floor, Killingly, CT 06239 until 2:00 P.M. **December 1, 2022**, and then publicly opened and read aloud in the Town Meeting Room of the Killingly Town Hall. Three (3) copies of the bid should be provided. The envelopes containing the bids must be sealed, addressed to Town of Killingly, CT and designated as Bid for the Reconstruction of Valley Road Bridge over Mashentuck Brook, Reconstruction of Valley Road Bridge over Whetstone Brook and Reconstruction of Bear Hill Road over Unnamed Brook in Killingly, CT.

Any bid may be withdrawn prior to the above scheduled time for the opening of bids or the authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within 90 days after the actual date of the opening thereof.

2. PREPARATION OF BID:

Each bid must be submitted on the prescribed form. All blank spaces for bid prices must be filled in, in ink or typewritten, in both words and figures.

Each bid must be submitted in a sealed envelope bearing on the outside, the name of the bidder, his address, and the name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified in the paragraph above.

Only complete bids will be accepted. In order for a bid to be complete, it must include all of the following:

A. Form of Bid

B. Bid security *(bid bond or Certified check)*

C. EEO Certification of Bidder form. *(subcontractors form not required at time of bid)*

D. Non-Collusion Affidavit of Bidder form. (subcontractors form not required as part of bid)

3. SUBCONTRACTS:

The bidder is specifically advised that any person, firm, or other party to whom it is proposed to award a subcontract under this contract must;

A. be acceptable to the Municipality, and:

B. submit form entitled "Certification by Proposed Subcontractor Regarding Equal Employment Opportunity". Approval of the proposed subcontract award cannot be given by the Municipality unless and until the proposed subcontractor has submitted the certification forms and/or other evidence showing that it has fully complied with any reporting requirements to which it is or was subject.

Although the bidder is not required to attach such Certifications by proposed subcontractors to their bid, the bidder is hereby advised of this requirement so that appropriate action can be taken to prevent subsequent delay in contract and subcontract awards and notices to proceed.

4. QUALIFICATIONS OF BIDDER:

The Municipality may make whatever investigations it deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Municipality all information and data for this purpose as the Municipality may request. The Bidder must be pre-qualified by the Connecticut Department of Transportation (ConnDOT) or be pre-qualified with the State of Connecticut Department of Administrative Services (DAS). Contractors shall submit the ConnDOT "Contractor's Prequalification Statement/Application (CON-16)" for Group No. 3 Concrete Restoration. The Municipality reserves the right to reject any bid if the evidence submitted by, or investigation of, the bidder fails to satisfy the Municipality that the bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein. Conditional bids will not be accepted.

5. BID SECURITY:

Each bid must be accompanied by a bid bond prepared on the form of bid bond attached hereto, duly executed by the bidder as principal and having a surety thereon approved by the Municipality, in the amount of 5% of the bid. Bid bonds shall be returned to all but the three lowest bidders within three days after the opening of the bids, and the remaining bid bonds will be returned promptly after the Municipality and the accepted bidder have executed the contract, or if no award has been made, within 90 days after the date of the opening of the bids, upon demand of the bidder at any time thereafter, so long as he has not been notified of the acceptance of his bid.

6. EVALUATION OF PRICES SUBMITTED:

Bids will be compared on the basis of the estimated quantities times unit or lump sum prices state in the Proposal. In the event of a discrepancy between prices written in words and figures; the prices written in words shall govern. It is the intent of the Municipality to make award to the lowest responsible qualified bidder for the base Contract not including any Add Alternates (reference Connecticut General Statute 4a-59). In the event of a discrepancy between the total of the items and the total stated, the total of the items shall govern.

7. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT:

The successful bidder, upon his failure or refusal to execute and deliver the contract, bonds and certificates of insurance required within 10 days after he has received notice of the acceptance of his bid, shall forfeit to the Municipality, as liquidated damages for such failure or refusal, the security deposited with his bid.

8. TIME OF COMPLETION AND LIQUIDATED DAMAGES:

The bidder must agree to commence work on or before a date to be specified in a written "Notice To Proceed" of the Municipality and to fully complete the project within **Four Hundred and Twenty (420)** consecutive calendar days thereafter. The bidder must agree also to pay as liquidated damages, the sum of one thousand dollars (**$1,500.00)** for each consecutive calendar day thereafter.

9. CONDITIONS OF WORK:

Each bidder must inform themselves fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of his obligation to furnish

all material and labor necessary to carry out the provisions of his contract. Insofar as possible, the contractor in carrying out his work, must employ such methods or means as will cause the least interruption of or interference with the work of any other contractor.

10. ADDENDA AND INTERPRETATIONS:

No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally.

Every request for such interpretation must be in writing and addressed to Mr. Yuyang Lin of FREEMAN Companies, 36 John Street, Hartford, CT 06106, and to be given consideration, must be received at least twelve days prior to the date fixed for the opening of the bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be either faxed, or sent by certified mail with return receipt requested to all prospective bidders *(at the respective addresses furnished for such purposes)*, not later than five days prior to the date fixed for the opening of the bids. Failure of any bidder to receive any such addenda or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the contract documents.

11. SECURITY FOR FAITHFUL PERFORMANCE:

Simultaneously with his delivery of the executed contract, the Contractor shall furnish a 100% surety bond or bonds as security of faithful performance of his contract and for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract, as specified in the General Conditions included herein. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the Municipality and listed in the Department of Treasury's Listing of Approved Sureties (Circular 5 Days0).

12. POWER OF ATTORNEY:

Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

13. NOTICE OF SPECIAL CONDITIONS:

Although each and every part of the General Conditions is important, particular attention is called to those sections pertaining to the following:

A. Inspection and testing of materials,

B. Insurance requirements,

C. Wage rates,

D. Contract Compliance Reporting Requirements,

E. Stated allowances.

14. LAWS AND REGULATIONS:

The bidders' attention is directed to the fact that all applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over the construction of the project shall apply to the

contract throughout, and they are considered included in the contract the same as though they were written out in full.

15. OBLIGATION OF BIDDER:

At the time of the opening of the bids, each bidder will be presumed to have inspected the site and to have read and be thoroughly familiar with the plans and the contract documents *(including all addenda)*. The failure or omission of a bidder to examine any form, instrument or document shall in no way relieve the bidder from any obligation with respect to his bid.

16. AFFIRMATIVE ACTION REQUIREMENTS:

This contract is subject to all Federal and State Affirmative Action regulations. The contractor will be required to comply with those regulations. This includes the documentation attached and included within the contract.

Section II

FORM OF BID
TOWN Of KILLINGLY

RECONSTRUCTION OF VALLEY ROAD BRIDGE OVER MASHENTUCK BROOK, KILLINGLY, CT
RECONSTRUCTION OF VALLEY ROAD BRIDGE OVER WHETSTONE BROOK, KILLINGLY, CT
RECONSTRUCTION OF BEAR HILL ROAD OVER UNNAMED BROOK, KILLINGLY, CT

PROPOSAL OF: _____
(Official name of company and hereinafter called "bidder")

organized and existing under the laws of the State of _____, and doing business as:
☐ a corporation, ☐ a partnership, or ☐ an individual *(check one).*

TO the MUNICIPALITY hereinafter called the OWNER.

READERS:
The BIDDER, in compliance with your invitation to bid for the **Reconstruction of Valley Road Bridge over Mashentuck Brook, Reconstruction of Valley Road Bridge over Whetstone Brook and Reconstruction of Bear Hill Road over Unnamed Brook in Killingly, CT,** having examined the plans and specifications with related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the contract documents; within the time set forth therein, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the contract documents, of which this proposal is a part.

BIDDER hereby agrees to commence work under this contract on or before a date to be specified in written "Notice to Proceed" of the OWNER and to fully complete the project within **Four Hundred and Twenty (420)** consecutive calendar days thereafter as stipulated in the specifications. Bidder further agrees to pay as liquidated damages, the sum of **$1,500.00** for each consecutive calendar day thereafter.

BIDDER acknowledges receipt of the following addenda:

No._____Dated _____
No._____Dated_____
No._____Dated_____
No._____Dated _____

PROPOSAL:

The bidder agrees to furnish and install all labor and materials required to fully construct the work in accordance with the contract documents.

The total amount of the bid based on the estimated quantities shown herein and as computed by the undersigned Bidder for the Reconstruction of Valley Road Bridge over Mashentuck Brook, Reconstruction of Valley Road Bridge over Whetstone Brook and Reconstruction of Bear Hill Road over Unnamed Brook**,** is:

SCHEDULE OF PRICES
KILLINGLY BRIDGE RECONSTRUNCTION
VALLEY ROAD BRIDGE OVER MASHENTUCK BROOK
PROJECT No. 9068-0002
BASE BID

ITEM NO.	ITEM AND UNIT PRICE	UOM	QTY.	TOTAL
	Clearing and Grubbing			
0201001	_____ dollars _____ cents	LS	1	
	Excavation and Reuse of Existing Channel Bottom Material			
0202216A	_____ dollars _____ cents	CY	20	
	Supplemental Streambed Channel Material (Estimated Cost-Plus)			
0202217A	_____ dollars _____ cents	EST	1	
	Special Test Pit - Water Main			
0202454A	_____ dollars _____ cents	EA	1	
	Cut Bituminous Concrete Pavement			
0202529	_____ dollars _____ cents	LF	50	
	Structure Excavation - Earth (Excluding Cofferdam and Dewatering)			
0203202	_____ dollars _____ cents	CY	200	
	Structure Excavation - Rock (Excluding Cofferdam and Dewatering)			
0203304	_____ dollars _____ cents	CY	10	
	Handling Water (Site No. 1)			
0204401A	_____ dollars _____ cents	LS	1	
	Formation of Subgrade			
0209001	_____ dollars _____ cents	SY	410	
	Subbase			
0212000	_____ dollars _____ cents	CY	130	
	Compacted Granular Fill			
0214100	_____ dollars _____ cents	CY	30	

SCHEDULE OF PRICES
KILLINGLY BRIDGE RECONSTRUNCTION
VALLEY ROAD BRIDGE OVER MASHENTUCK BROOK
PROJECT No. 9068-0002
BASE BID

ITEM NO.	ITEM AND UNIT PRICE	UOM	QTY.	TOTAL
0216000	Pervious Structure Backfill _____ dollars _____ cents	CY	600	_____
0218999	Sedimentation Control System _____ dollars _____ cents	LF	200	_____
0304002	Processed Aggregate Base _____ dollars _____ cents	CY	60	_____
0402401A	Sawing and Sealing Joint in Bituminous Concrete Pavement _____ dollars _____ cents	LF	50	_____
0406170	HMA S1.0 _____ dollars _____ cents	TON	50	_____
0406171	HMA S0.5 _____ dollars _____ cents	TON	40	_____
0406236	Material for Tack Coat _____ dollars _____ cents	GAL	36	_____
0406275A	Fine Milling of Bituminous Concrete (0" to 4") _____ dollars _____ cents	SY	360	_____
0503890A	Removal of Existing Bridge (Site No. 1) _____ dollars _____ cents	LS	1	_____
0601088A	Concrete Form Liners _____ dollars _____ cents	SF	160	_____
0601228A	13' X 8' Precast Concrete Box Culvert _____ dollars _____ cents	LF	37	_____

SCHEDULE OF PRICES
KILLINGLY BRIDGE RECONSTRUNCTION
VALLEY ROAD BRIDGE OVER MASHENTUCK BROOK
PROJECT No. 9068-0002
BASE BID

ITEM NO.	ITEM AND UNIT PRICE	UOM	QTY.	TOTAL
	Precast Concrete Wingwalls (Site No. 1)			
0601407A	_____ dollars _____ cents	EA	4	
	Class PCC03340			
0601733.40	_____ dollars _____ cents	CY	25	
	Deformed Steel Bars			
0602000	_____ dollars _____ cents	LB	4100	
	Deformed Steel Bars - Galvanized			
0602030	_____ dollars _____ cents	LB	350	
	Drilling Holes and Grouting Dowels			
0602910A	_____ dollars _____ cents	EA	25	
	Modified Riprap			
0703012	_____ dollars _____ cents	CY	35	
	Membrane Waterproofing (Cold Liquid Elastomeric)			
0707009A	_____ dollars _____ cents	SY	75	
	Dampproofing			
0708001	_____ dollars _____ cents	SY	175	
	Temporary Traffic Barrier			
0822100.01	_____ dollars _____ cents	LF	40	
	Metal Beam Rail R-B 350 (Type II) Section			
0910184	_____ dollars _____ cents	EA	2	
	R-B End Anchorage Type II			
0911924	_____ dollars _____ cents	EA	4	

SCHEDULE OF PRICES
KILLINGLY BRIDGE RECONSTRUNCTION
VALLEY ROAD BRIDGE OVER MASHENTUCK BROOK
PROJECT No. 9068-0002
BASE BID

ITEM NO.	ITEM AND UNIT PRICE	UOM	QTY.	TOTAL
	Remove Metal Beam Rail			
0912503	_____ dollars _____ cents	LF	215	
	Pavement for Railing			
0925201	_____ dollars _____ cents	SY	15	
	Turf Establishment			
0950004A	_____ dollars _____ cents	SY	150	
	Wetland Grass Establishment			
0950043A	_____ dollars _____ cents	SY	70	
	Maintenance and Protection of Traffic			
0971001A	_____ dollars _____ cents	LS	1	
	Mobilization and Project Closeout			
0975004A	_____ dollars _____ cents	LS	1	
	Barricade Warning Lights - High Intensity			
0976002	_____ dollars _____ cents	DAY	120	
	Construction Barricade Type III			
0979003	_____ dollars _____ cents	EA	4	
	Construction Staking			
0980001A	_____ dollars _____ cents	LS	1	
	4" Yellow Epoxy Resin Pavement Markings			
1210102	_____ dollars _____ cents	LF	280	
	Protection and Support of Existing Utilities			
1507000A	_____ dollars _____ cents	LS	1	

SCHEDULE OF PRICES
KILLINGLY BRIDGE RECONSTRUNCTION
VALLEY ROAD BRIDGE OVER MASHENTUCK BROOK
PROJECT No. 9068-0002
BASE BID

ITEM NO.	ITEM AND UNIT PRICE	UOM	QTY.	TOTAL

	Base Bid Total:	
"Unit Price" amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words will govern. In case of discrepancy between "Unit Price" and "Total", the unit price will govern.		**Base Bid Total (in words):** dollars cents

SCHEDULE OF PRICES
KILLINGLY BRIDGE RECONSTRUNCTION
VALLEY ROAD BRIDGE OVER WHETSTONE BROOK
PROJECT No. 9068-0003
BASE BID

ITEM NO.	ITEM AND UNIT PRICE	UOM	QTY.	TOTAL
0201001	Clearing and Grubbing _____ dollars _____ cents	LS	1	
0202216A	Excavation and Reuse of Existing Channel Bottom Material _____ dollars _____ cents	CY	30	
0202217A	Supplemental Streambed Channel Material (Estimated Cost-Plus) _____ dollars _____ cents	EST	1	
0202454A	Special Test Pit - Water Main _____ dollars _____ cents	EA	1	
0202529	Cut Bituminous Concrete Pavement _____ dollars _____ cents	LF	70	
0203202	Structure Excavation - Earth (Excluding Cofferdam and Dewatering) _____ dollars _____ cents	CY	500	
0203304	Structure Excavation - Rock (Excluding Cofferdam and Dewatering) _____ dollars _____ cents	CY	25	
0204111A	Cofferdam and Dewatering _____ dollars _____ cents	LS	1	
0209001	Formation of Subgrade _____ dollars _____ cents	SY	470	
0212000	Subbase _____ dollars _____ cents	CY	150	
0214100	Compacted Granular Fill _____ dollars _____ cents	CY	40	

SCHEDULE OF PRICES
KILLINGLY BRIDGE RECONSTRUNCTION
VALLEY ROAD BRIDGE OVER WHETSTONE BROOK
PROJECT No. 9068-0003
BASE BID

ITEM NO.	ITEM AND UNIT PRICE	UOM	QTY.	TOTAL
0216000	Pervious Structure Backfill _____ dollars _____ cents	CY	700	
0218999	Sedimentation Control System _____ dollars _____ cents	LF	50	
0304002	Processed Aggregate Base _____ dollars _____ cents	CY	70	
0401441	1/2" Performed Expansion Joint Filler _____ dollars _____ cents	SF	20	
0402401A	Sawing and Sealing Joint in Bituminous Concrete Pavement _____ dollars _____ cents	LF	100	
0406170	HMA S1.0 _____ dollars _____ cents	TON	50	
0406171	HMA S0.5 _____ dollars _____ cents	TON	40	
0406236	Material for Tack Coat _____ dollars _____ cents	GAL	47	
0406275A	Fine Milling of Bituminous Concrete (0" to 4") _____ dollars _____ cents	SY	410	
0503891A	Removal of Existing Bridge (Site No. 2) _____ dollars _____ cents	LS	1	
0601088A	Concrete Form Liners _____ dollars _____ cents	SF	1000	

SCHEDULE OF PRICES
KILLINGLY BRIDGE RECONSTRUNCTION
VALLEY ROAD BRIDGE OVER WHETSTONE BROOK
PROJECT No. 9068-0003
BASE BID

ITEM NO.	ITEM AND UNIT PRICE	UOM	QTY.	TOTAL
0601133A	10' X 7' Precast Concrete Box Culvert _____ dollars _____ cents	LF	71	
0601186A	Precast Concrete Wingwalls (Site No. 2) _____ dollars _____ cents	EA	4	
0601733.40	Class PCC03340 _____ dollars _____ cents	CY	70	
0601744.62	Class PCC04462 _____ dollars _____ cents	CY	5	
0602000	Deformed Steel Bars _____ dollars _____ cents	LB	4000	
0602030	Deformed Steel Bars - Galvanized _____ dollars _____ cents	LB	10100	
0602910A	Drilling Holes and Grouting Dowels _____ dollars _____ cents	EA	40	
0703012	Modified Riprap _____ dollars _____ cents	CY	55	
0707009A	Membrane Waterproofing (Cold Liquid Elastomeric) _____ dollars _____ cents	SY	125	
0708001	Dampproofing _____ dollars _____ cents	SY	150	
0815001	Bituminous Concrete Lip Curbing _____ dollars _____ cents	LF	235	

SCHEDULE OF PRICES
KILLINGLY BRIDGE RECONSTRUNCTION
VALLEY ROAD BRIDGE OVER WHETSTONE BROOK
PROJECT No. 9068-0003
BASE BID

ITEM NO.	ITEM AND UNIT PRICE	UOM	QTY.	TOTAL
0822100.01	Temporary Traffic Barrier _____ dollars _____ cents	LF	40	
0910173	R-B 350 Bridge Attachment - Vertical Shaped Parapet _____ dollars _____ cents	EA	3	
0911924	R-B End Anchorage Type II _____ dollars _____ cents	EA	3	
0912503	Remove Metal Beam Rail _____ dollars _____ cents	LF	210	
0950004A	Turf Establishment _____ dollars _____ cents	SY	225	
0950043A	Wetland Grass Establishment _____ dollars _____ cents	SY	50	
0974001	Removal of Existing Masonry _____ dollars _____ cents	CY	30	
0971001A	Maintenance and Protection of Traffic _____ dollars _____ cents	LS	1	
0975004A	Mobilization and Project Closeout _____ dollars _____ cents	LS	1	
0976002	Barricade Warning Lights - High Intensity _____ dollars _____ cents	DAY	120	
0979003	Construction Barricade Type III _____ dollars _____ cents	EA	4	

SCHEDULE OF PRICES
KILLINGLY BRIDGE RECONSTRUNCTION
VALLEY ROAD BRIDGE OVER WHETSTONE BROOK
PROJECT No. 9068-0003
BASE BID

ITEM NO.	ITEM AND UNIT PRICE	UOM	QTY.	TOTAL
	Construction Staking			
0980001A	_____ dollars _____ cents	LS	1	
	4" Yellow Epoxy Resin Pavement Markings			
1210102	_____ dollars _____ cents	LF	275	
	Protection and Support of Existing Utilities			
1507000A	_____ dollars _____ cents	LS	1	

	Base Bid Total:	
"Unit Price" amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words will govern. In case of discrepancy between "Unit Price" and "Total", the unit price will govern.		**Base Bid Total (in words):** dollars cents

SCHEDULE OF PRICES
KILLINGLY BRIDGE RECONSTRUNCTION
BEAR HILL ROAD OVER UNNAMED BROOK
PROJECT No. 9068-0009
BASE BID

ITEM NO.	ITEM AND UNIT PRICE	UOM	QTY.	TOTAL
0201001	Clearing and Grubbing _____ dollars _____ cents	LS	1	
0202216A	Excavation and Reuse of Existing Channel Bottom Material _____ dollars _____ cents	CY	20	
0202217A	Supplemental Streambed Channel Material (Estimated Cost-Plus) _____ dollars _____ cents	EST	1	
0202529	Cut Bituminous Concrete Pavement _____ dollars _____ cents	LF	60	
0203202	Structure Excavation - Earth (Excluding Cofferdam and Dewatering) _____ dollars _____ cents	CY	500	
0203304	Structure Excavation - Rock (Excluding Cofferdam and Dewatering) _____ dollars _____ cents	CY	25	
0204111A	Cofferdam and Dewatering _____ dollars _____ cents	LS	1	
0209001	Formation of Subgrade _____ dollars _____ cents	SY	470	
0212000	Subbase _____ dollars _____ cents	CY	150	
0214100	Compacted Granular Fill _____ dollars _____ cents	CY	30	
0216000	Pervious Structure Backfill _____ dollars _____ cents	CY	600	

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ITEM NO.	ITEM AND UNIT PRICE	UOM	QTY.	TOTAL
	Sedimentation Control System			
0218999	_____ dollars _____ cents	LF	60	
	Processed Aggregate Base			
0304002	_____ dollars _____ cents	CY	70	
	Sawing and Sealing Joint in Bituminous Concrete Pavement			
0402401A	_____ dollars _____ cents	LF	70	
	HMA S1.0			
0406170	_____ dollars _____ cents	TON	50	
	HMA S0.5			
0406171	_____ dollars _____ cents	TON	40	
	Material for Tack Coat			
0406236	_____ dollars _____ cents	GAL	47	
	Fine Milling of Bituminous Concrete (0" to 4")			
0406275A	_____ dollars _____ cents	SY	420	
	Removal of Existing Culvert (Site No. 3)			
0503868A	_____ dollars _____ cents	LS	1	
	Concrete Form Liners			
0601088A	_____ dollars _____ cents	SF	160	
	15' X 6' Precast Concrete Box Culvert			
0601159A	_____ dollars _____ cents	LF	32	
	Precast Concrete Wingwalls (Site No. 2)			
0601186A	_____ dollars _____ cents	EA	4	

SCHEDULE OF PRICES
KILLINGLY BRIDGE RECONSTRUNCTION
BEAR HILL ROAD OVER UNNAMED BROOK
PROJECT No. 9068-0009
BASE BID

ITEM NO.	ITEM AND UNIT PRICE	UOM	QTY.	TOTAL
0601733.40	Class PCC03340 _____ dollars _____ cents	CY	30	
0602000	Deformed Steel Bars _____ dollars _____ cents	LB	4500	
0602030	Deformed Steel Bars - Galvanized _____ dollars _____ cents	LB	500	
0602910A	Drilling Holes and Grouting Dowels _____ dollars _____ cents	EA	30	
0703012	Modified Riprap _____ dollars _____ cents	CY	25	
0707009A	Membrane Waterproofing (Cold Liquid Elastomeric) _____ dollars _____ cents	SY	75	
0708001	Dampproofing _____ dollars _____ cents	SY	150	
0822100.01	Temporary Traffic Barrier _____ dollars _____ cents	LF	60	
0910183	Metal Beam Rail R-B 350 (Type II) Section _____ dollars _____ cents	EA	2	
0911924	R-B End Anchorage Type II _____ dollars _____ cents	EA	4	
0912503	Remove Metal Beam Rail _____ dollars _____ cents	LF	300	

SCHEDULE OF PRICES
KILLINGLY BRIDGE RECONSTRUNCTION
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PROJECT No. 9068-0009
BASE BID

ITEM NO.	ITEM AND UNIT PRICE	UOM	QTY.	TOTAL
	Pavement for Railing			
0925201	_____ dollars _____ cents	SY	15	
	Turf Establishment			
0950004A	_____ dollars _____ cents	SY	70	
	Wetland Grass Establishment			
0950043A	_____ dollars _____ cents	SY	300	
	Maintenance and Protection of Traffic			
0971001A	_____ dollars _____ cents	LS	1	
	Mobilization and Project Closeout			
0975004A	_____ dollars _____ cents	LS	1	
	Barricade Warning Lights - High Intensity			
0976002	_____ dollars _____ cents	DAY	120	
	Construction Barricade Type III			
0979003	_____ dollars _____ cents	EA	4	
	Construction Staking			
0980001A	_____ dollars _____ cents	LS	1	
	Protection and Support of Existing Utilities			
1507000A	_____ dollars _____ cents	LS	1	

	Base Bid Total:	
"Unit Price" amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words will govern. In case of discrepancy between "Unit Price" and "Total", the unit price will govern.		**Base Bid Total (in words):** dollars cents

BASE BID (ONLY)

TOTAL AMOUNT IN WORDS:

_____DOLLARS

TOTAL AMOUNT IN FIGURES: $_____

The BIDDER understands that the OWNER reserves the right to accept or reject any or all bids in part or in whole and to waive any informalities in the bidding.

The BIDDER agrees that this bid shall be valid and may not be withdrawn for a period of ninety (90) calendar days after the scheduled closing time for receiving bids.

Upon receipt of written notice of the acceptance of this bid, the BIDDER will execute the OWNER'S formal contract within ten (10) days and deliver Surety Bonds as required.

The bid security attached in the sum of 5% of the bid is to become the property of the OWNER in the event the contract and bonds are not executed within the time set forth, as liquidated damages for the delay and additional expense to the OWNER caused thereby.

RESPECTFULLY SUBMITTED:

BY:_____
(type or print name and title)

_____
(authorized signature of bidder)

List below, the business location, the mailing address, the telephone number and the name of the person of whom any inquiries are to be made.

_____

_____

_____

If bid is submitted by a corporation, its seal must appear.

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we the undersigned, _____

_____PRINCIPAL, and_____

_____

as SURETY are held and firmly bound unto the Town of Killingly hereinafter called the OWNER, in the penal sum of Five Percent of Total Bid Dollars, (5% of Total Bid) lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these Presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has submitted the Accompanying Bid, dated this,_____day of_____, 20 , for

_____

NOW, THEREFORE, if the Principal shall not withdraw said Bid within the period specified therein after the opening of the same, or, if no period be specified, within ninety (90) days after the said opening, and shall within the period specified therefore, or if no period be specified, within ten (10) days after the prescribed forms are presented to him for signature, enter into a written Contract with the Owner in accordance with the Bid, as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such Contract, or in the event of the withdrawal of said Bid within the period specified, or the failure to enter into such Contract and give such bond within the time specified, the Principal shall pay the Owner the difference between the amount specified in said Bid and Amount for which the Owner may procure the required work or supplies or both, if the latter be in excess of the former, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, The Principal and Surety have hereunto set their hands and seals and such of them as corporations have caused their corporate seal to be affixed and these presents be signed by the proper offices, the day and year set forth above.

_____Principal _____Surety

By_____ By_____

Section III
GENERAL CONDITIONS

1. DEFINITIONS:

The following terms as used in this document are specifically defined as follow:

A. **Contractor** means a person, firm or corporation with whom this contract is made.

B. **Subcontractor** means a person, firm or corporation supplying labor and materials or labor only for work at the project under separate contract or agreement with the contractor.

C. **Owner** means either the Town of Killingly, its authorized representative of the Municipality or a combination of those representatives.

D. **Project Manager** means the person employed by the Town of Killingly on behalf of the owner. All major decisions and determinations required during the work will be made jointly by the owner, and the project manager; and if applicable, the architect/engineer, however, instructions to the contractor are to be from the Owner or approved designee. If the contractor performs work beyond the scope of the project at the direction or request of any person other than the owner, it will be at his own risk and expense. If this work must be removed or revised, that also will be at the expense of the contractor.

E. **Work on or at the project** means all work to be performed at the location of the project, including the transportation of materials and supplies to or from the location of the project by employees of the contractor and any subcontractor.

F. **Apprentice** means; 1) a person employed and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau or 2) a person in his first 90 days of probationary employment as an apprentice in such an apprenticeship program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Council (where appropriate) to be eligible for probationary employment as an apprentice.

G. **Trainee** means a person receiving on-the-job training in a construction occupation under a program which is approved (but not necessarily sponsored) by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training, and which is reviewed from time to time by the Manpower Administration to ensure that the training meets adequate standards.

H. **Covered area** means the geographical area described in the solicitation from which this contract resulted.

I. **Director** means Director of the Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority.

J. **Employer identification number** means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

K. **Minority** includes:

1. **Black** (all persons having origins in any of the Black African racial groups not of Hispanic origin),

2. **Hispanic** (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race),

3. **Asian and Pacific Islander** (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands),

4. **American Indian or Alaskan Native** (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification),

5. **Portuguese** (all persons having origins in the Iberian Peninsula, including Portugal, regardless of race).

2. REQUIRED PROVISIONS DEEMED INSERTED:

Each and every provision of law required to be inserted in this contract shall be deemed to be inserted herein and the contract shall be read and enforced as though it were included herein. If through mistake or otherwise any provision is not inserted or is inserted incorrectly then upon the application of either party the contract shall be amended to make such insertion or correction.

3. EMPLOYMENT OF CERTAIN PERSONS PROHIBITED:

No person under the age of sixteen and no person who at the present time is serving sentence in a penal or correctional institute shall be employed on the work covered by this contract.

4. REPORTS, RECORDS AND DATA:

It is imperative that the contractor keep records and submit reports in strict accordance with all sections of these General Conditions. Several different sections require specific information which may be addressed individually or in aggregate with other sections at the contractor's option. Provided all information is available, the Municipality will not mandate a specific format to be followed. If information submitted by the contractor is unclear or incomplete, the Municipality may request that the records/reports be re- submitted.

The contractor shall submit to the owner such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data as the owner may request concerning work performed or to be performed under this contract.

Payrolls and basic records relating thereto will be maintained during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work, or under the United States Housing Act of 1937 or under the Housing Act of 1949, in the construction or development of the project. Such records will contain for each employee, their name, address, correct classification, rate(s) of pay (including rates of contributions or costs anticipated of the types described in section 1(b)(2) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made, and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers and mechanics affected, and which show the costs anticipated or the actual cost incurred in providing such benefits.

The contractor will submit weekly certified copies of all payrolls to the Project Manager. The payroll shall be accompanied by a statement signed by the employer or authorized representative indicating that the payrolls are correct and complete, that the wage rates contained therein are not less than those determined by the Secretary of Labor and that the classifications set forth for each laborer or mechanic conform with the actual work performed. The submission of a "Weekly Statement of Compliance" which is required under

this contract and the Copeland regulations of the Secretary of Labor (29CFR Part 3) and the filing with the initial payroll or any subsequent payroll of a copy of any findings by the Secretary of Labor under 29 CFR 5.5(a)(1)(iv) shall satisfy this requirement. The prime contractor shall be responsible for the submission of copies of payrolls of all subcontractors. The contractor will make the required records available for inspection by authorized representatives of the Municipality, its agents, and the Department of Labor, and will permit such representatives to interview employees during working hours on the job.

A. **PAYROLLS AND BASIC RECORDS.** Payrolls and basic records relating to such payrolls shall be maintained by each employer with respect to his/her own workforce employed on the site of the work. The principal contractor shall maintain such records relative to all laborers and mechanics working on the site of the work. Payrolls and related records shall be maintained during the course of the construction work and preserved by the contractor and all employers for at least 3 years following the completion of the work. Such records shall contain:

1. The name, address and social security number of each laborer and mechanic;

2. His or her correct work classification(s);

3. Hourly rates of pay including rates of contributions or costs anticipated for fringe benefits;

4. Daily and weekly number of hours worked, including any overtime hours;

5. Deductions made and actual net wages paid;

6. Evidence pertaining to any fringe benefit programs;

7. Evidence of the approval of any apprenticeship or trainee program, the registration of each apprentice or trainee and the ratios and wage rates contained in the program.

B. **CERTIFIED PAYROLL REPORTS.** Certified weekly payroll reports (CPRs) shall be submitted with respect to each week any contract work is performed. Each contractor and subcontractor (employer) shall prepare and certify such payroll reports to demonstrate compliance with the labor standards requirements. The principal contractor is responsible for full compliance with regard to its own workforce and with regard to the compliance of every subcontractor. For this reason, all CPRs and any related records are submitted to the Project Manager *through* the principal contractor.

1. CPR Format. CPR information may be submitted in any form provided that the Project Manager can reasonable interpret the information to monitor employer compliance with the labor standards. Employers are encouraged to utilize DOL Payroll Form WH-347.

2. Submission Requirements. CPRs shall be submitted for each contractor/subcontractor (employer) beginning with the first week such employer performs work on the site of the work. CPRs shall be submitted promptly following the close of each such pay week.

3. CPR Preparation. CPRs for each employer shall be numbered sequentially beginning with A1. The CPR for the last week of work to be performed on the project by each employer shall be clearly marked Final.

    a. Employee Information. The first payroll on which each employee appears shall contain the employee's name, address and Social Security Number. Thereafter, the address and Social Security Number only need to be reported if there is a change in such information.

b. Apprentices or Trainees. The first payroll on which any apprentice or trainee appears shall be accompanied with a copy of that apprentices= or trainees registration in an approved program. A copy of the approved program pertaining to the wage rates and rations shall also accompany the first CPR on which the first apprentice or trainee appears.

c. Split Classifications. The division of hours worked in different classifications shall be accurately maintained and clearly reported. The employer may list the employee once for each classification, distributing the hours of work accordingly, and reflecting the rate of pay and gross earnings for each classification. Deductions and net pay may be based upon the total gross amount earned for all classifications.

d. Hours Worked at Other Job Sites. The CPRs should reflect ONLY hours worked at the site of work. If an employee performs work at job sites other than the project for which the CPR is prepared, those hours *should not* be reported on the CPR. In these cases, the employer should list the employees name, classification, hours this project only, and the rate of pay and gross earnings at this project. Deductions and net pay may be reflected based upon the employees' total earnings (for all projects) for the week.

4. No Work = No Payrolls. Employers are not required to submit CPRs for weeks during which no work was performed on the site of the work *provided* that the CPRs are number sequentially *or* that the employer has provided written notice that its work on the project has been suspended.

5. Weekly Payroll Certification. Each weekly payroll shall be accompanied by a *A Statement of Compliance*. The Statement of Compliance shall be executed by the original signature of the principal executive of the contractor/subcontractor or of a person authorized in writing by the principal. The Statement shall contain the language prescribed on DOL Form WH-348 or the reverse side of Form WH-347 which shall certify to the following:

   a. That the payroll for the payroll period contains the information required to be maintained (see &2-7) and that the information is correct and complete;

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

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

6. Falsification. The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

5. OTHER PROHIBITED INTERESTS:

No official of the owner who is authorized solely or jointly to negotiate, make, accept, or approve any architectural, engineering, inspection, construction or material supply contract or any subcontract in connection with the construction of the project, shall become directly or indirectly interested personally in this contract or in any part hereof. No officer, employee, architect, attorney, engineer, or inspector of or for the owner who is authorized in a capacity to exercise any legislative, executive, supervisory or other similar functions in connection with the construction of the project, shall become directly or indirectly interested personally in this contract or any part thereof.

6. NO CONFLICT

No member or Delegate to Congress of the United States, and no Resident Commissioner, shall be admitted to any share or part of this contract or to any benefit to arise from the same.

7. NATIONAL HISTORIC PRESERVATION ACT OF 1966:

The contractor agrees to contribute to the preservation and enhancement of structures and objects of historical, architectural or archaeological significance when such items are found and/or unearthed during the course of project construction and to consult with the State Historic Preservation Officer for recovery of the items. [Reference: National Historic Preservation Act of 1966 (80 Stat 915.16 USC 470) and Executive Order No. 11593 of May 31, 1971.]

8. RIGHT OF THE OWNER TO TERMINATE THE CONTRACT:

In the event that any of the provisions of these general conditions are violated by the contractor, or by any of his subcontractors, the owner may serve written notice upon the contractor and his surety of its intention to terminate the contract, such notices to contain the reasons for such intention, and unless within ten (10) days after the serving of such notice upon the contractor, such violations or delay shall cease and satisfactory arrangements or correction be made, the contract shall, upon the expiration of said ten (10) days, cease and terminate. In the event of any such termination, the owner shall immediately serve notice upon the surety and the contractor. The surety shall have the right to take over and perform the contract; provided however, that if the surety does not commence performance thereof within ten (10) days from the date of the mailing of notice of termination, the owner may take over the work and prosecute the same to completion by contract or by force account for the amount and at the expense of the contractor, and the contractor and his surety shall be liable to the owner for any excess cost occasioned by the owner. In such event, the owner may take possession of and utilize in completing the work, any materials, appliances, and plant as may be on the site of the work and necessary, therefore.

9. SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION:

In order to protect the life and health of his employees under the contract, the contractor shall comply with all pertinent provisions of the Contract Work Hours and Safety Act commonly known as the Construction Safety Act as pertains to health and safety standards; and shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under this contract.

The contractor alone shall be responsible for the safety, efficiency, and adequacy of his plant, appliances, and methods, and for any damage which may result from their failure or their improper construction, maintenance, or operation.

10. CONTRACT AND CONTRACT DOCUMENTS:

The plans, specifications and addenda form part of the contract, and the provisions thereof are as binding upon the contracting parties as if they were herein fully set forth. The tables of contents, titles, headings, running headlines and marginal notes contained herein and in said documents are solely to facilitate reference to various provisions of the contract documents and in no way affect, limit, or cast light on the interpretation of the provisions to which they refer.

11. TIME FOR COMPLETION AND LIQUIDATED DAMAGES:

It is hereby understood and mutually agreed by and between the contractor and the owner that the date of beginning and the time for completion as specified in the contract of work to be done hereunder are essential conditions of the contract and it is further mutually understood and agreed that the work embraced in this contract shall be commenced on a date to be specified in the Notice to Proceed.

The contractor agrees that said work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will ensure full completion thereof within the time specified. It is expressly understood and agreed, by and between the contractor and the owner, that the time for completion of the work described herein is a reasonable time for the completion of the same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

If the contractor neglects, fails or refuses to complete the work within the time herein specified, or any proper extension thereof granted by the owner, then the contractor agrees, as a part consideration for the awarding of this contract, to pay to the owner the amount specified in the contract, not as a penalty but as liquidated damages for breach of contract as hereinafter set forth, for each and every calendar day that the contractor shall be in default after the time stipulated in the contract for completing the work.

The liquidated damages amount is fixed and agreed upon by and between the contractor and the owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the owner would in such event sustain, and said amount is agreed to be the amount of damages which the owner would sustain and said amount shall be retained from time to time by the owner from current periodical estimates.

Given the restricted planting seasons for deciduous plants, planting is excluded from the time of completion and liquidated damages.

It is further agreed that time is of the essence of each and every portion of this contract and of the specification wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the contract an additional time is allowed for the completion of any of the work, the new time limit fixed by such extension shall be of the essence of this contract, provided that the contractor shall not be charged with liquidated damages or any excess cost when the owner determines that the contractor is without fault and the contractor's reasons for the time extension are acceptable to the owner, provided further that the contractor shall not be charged with liquidated damages or any excess cost when the delay of completion of the work is due:

A. to any preference, priority or allocation order duly issued by the government;

B. to unforeseeable cause beyond the control and without the fault or negligence of the contractor, including but not restricted to, acts of the owner, acts of another contractor in the performance of a contract with the owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and severe weather; and/or

C. to any delays of subcontractors or suppliers occasioned by any of the causes specified in the preceding two paragraphs, provided further that the contractor shall, within ten (10) days from the

beginning of such delay, unless the owner shall grant a further period of time prior to the date of final settlement of the contract, notify the owner, in writing, of the cause of delay, who shall ascertain the facts and extent of the delay and notify the contractor within a reasonable time of its decision in the matter.

12. PROJECT MANAGER'S AUTHORITY:

The project manager shall give all orders and directions contemplated under this contract and specifications relative to the execution of the work. The project manager shall determine the amount, quality, acceptability and fitness of the several kinds of work and materials which are to be paid for under this contract and shall decide all questions which may arise in relation to the work. The project manager's estimates and decisions shall be final and conclusive, except as otherwise provided. In case any question shall arise between the parties hereto relative to the contract or specifications, the determination or decision of the project manager shall be a condition precedent to the right of the contractor to receive any money or payment for work under this contract affected in any manner or to any extent by such question.

The project manager shall decide the meaning and intent of any portion of the specifications and of any plan or drawing where the same may be found obscure or be in dispute. Any differences or conflicts in regard to their work which may arise between the contractor and any other contractors performing work for the owner shall be adjusted and determined by the project manager.

13. SURVEYS, PERMITS AND REGULATIONS:

Unless otherwise expressly provided for in this contract, the owner will furnish to the contractor all surveys necessary for the execution of the work. The contractor shall procure and pay for all permits, licenses, and approvals necessary for the execution of his contract. The contractor shall comply with all laws, ordinances, rules, orders, and regulations relating to the performance of the work, the protection of adjacent property, and the maintenance of passageways, guard fences or other protective facilities. The Town of Killingly Inland Wetlands and Watercourses Commission Authorized Agent Approval attached at the end of this section.

14. LAND AND RIGHTS-OF-WAY:

Prior to the start of construction, the owner shall obtain all land rights-of-way necessary for the carrying out and completion of work to be performed under this contract.

15. STORAGE:

In the event the Project site has insufficient, inadequate, and/or improper storage space, it shall be the responsibility of the Contractor to secure, provide and maintain at the Contractor’s sole cost and expense (i) adequate off-site storage space for equipment, materials, incidentals, etc. and (ii) all associated delivery and transportation services. In any event, the contractor shall assume full responsibility for equipment, materials, incidentals, etc. until both title and risk of loss pass to the Owner.

16. NOTICE AND SERVICE THEREOF:

Any notice from the owner to any contractor regarding any part of this contract shall be in writing and considered delivered and the service thereof completed when the notice is posted by certified or registered mail to the contractor at his last given address or delivered in person to the contractor or his authorized representative on the work site.

17. SUSPENSION OF WORK

Should the owner be prevented from proceeding with the work or from authorizing its prosecution by reason of any litigation, the contractor shall not be entitled to make or assert claim for damage by reason of said delay, but time for completion of the work will be extended to such reasonable time as the owner may determine will compensate for time lost by the delay. Determination will be sent in writing from the owner to the contractor.

18. ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS:

The contractor may be furnished additional instructions and detail drawings as necessary to carry out the work included in the contract.

The additional drawings and instructions thus supplied to the contractor will coordinate with the contract documents. The contractor shall carry out the work in accordance with the additional detail drawings and instructions**.** The contractor and the project manager will prepare jointly (a) a schedule, fixing the dates at which specific detail drawings will be required, such drawings, if any, to be furnished by the project manager in accordance with said schedule and (b) a schedule fixing the respective dates for the submission of shop drawings, the beginning of manufacturer's testing, installation of materials, supplies and equipment, and the completion of the various parts of the work; each such schedule is subject to change in accordance with actual work progress.

19. SHOP OR SETTING DRAWINGS:

The contractor shall submit to the project manager six copies of each shop or setting drawing prepared in accordance with the above, predetermined schedule at least 5 calendar days in advance of their proposed use in order to allow for their review by the Engineer, as well as for any necessary revision and approval of the drawing, without undue delay of the Project construction. After examination of such drawings by the project manager, and the return thereof, the contractor shall make such corrections to the drawings as have been indicated and shall furnish the project manager with six corrected copies. Regardless of corrections made in, or approval given to, such drawings by the project manager, the contractor will nevertheless be responsible for the accuracy of such drawings and for their conformity to the plans and specifications, unless he notifies the project manager, in writing, of any deviations at the time he furnishes such drawings.

20. MATERIALS, SERVICES AND FACILITIES:

It is understood that, except as otherwise specifically stated in the contract documents, the contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute, complete, and deliver the work within the specified time.

Any work necessary to be performed after regular hours, on Sundays or legal holidays, shall be performed without additional expense to the owner.

21. CONTRACTOR'S TITLE TO MATERIAL:

No materials or supplies for the work shall be purchased by the contractor or by any subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. The contractor warrants that he has good title to all materials and supplies used in the work, free from all liens, claims or encumbrances.

22. INSPECTION AND TESTING OF MATERIALS:

All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with accepted standards. The laboratory or inspection agency shall be retained by the owner.

Materials of construction, particularly those upon which the strength and durability of the structure may depend, shall be subject to inspection and testing to establish conformance with specifications and suitability

for uses intended.

Any authorized agent of the Municipality shall be permitted to inspect the project in general or any of its phases.

23. FORM 818

Wherever in these Contract Documents reference is made to Form 818, it shall mean the latest revision of the "State of Connecticut, Department of Transportation, Standard Specifications for Roads, Bridges, and Incidental Construction, Form 818, 2020 including all supplemental specifications. Particular paragraphs and articles cited herein are made a part of these Contract Documents.

All references to Commissioner, Department, Engineer, and State anywhere within Form 818 shall be reinterpreted to mean the Owner or a duly authorized agent of the Owner. Any question of ambiguity regarding definition shall be brought to the immediate attention of the Owner.

24. "OR EQUAL" CLAUSE:

Whenever a material, article or piece of equipment is identified on the plans or in the specifications by reference to manufacturers' or vendors' names, trade names, catalogue numbers, etc., it is intended merely to establish a standard. Any material, article, or equipment of other manufacturers or vendors which will adequately perform the duties imposed by the general design will be considered equally acceptable provided the material, article or equipment so proposed is, in the opinion of the project manager, of equal substance and function. It shall not be installed by the contractor without the project manager's written approval.

25. CONTRACTOR'S OBLIGATIONS:

The contractor will, in good workmanlike manner, perform all work and furnish all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary to complete all the work required by this contract, within the time herein specified, in accordance with the provisions of the plans and specifications (including any and all supplemental plans and drawings), and in accordance with the direction of the project manager as given during the progress of the work. He shall furnish, erect, maintain and remove such construction plant(s) and such temporary works as may be required. The contractor shall observe, comply with, and be subject to all terms, conditions, requirements, and limitations of the contract and specifications, and shall do, carry on, and complete the entire work to the satisfaction of the project manager.

All rehabilitation, alterations, repairs, or extensions shall be in compliance with all applicable codes of the Municipality. All electrical, heating, and plumbing work shall comply with the rules and regulations of the National, State and Local Codes. Before commencing work, contractors and/or subcontractors shall obtain all necessary permits.

The Contractor certifies that he has familiarized himself with the requirements of the specifications and/or plans and understands the extent and character of the work to be done and inspected the premises and given his full attention to any and all areas with which he might become specifically involved. He must familiarize himself with all conditions relating to and affecting his work and bid. It is the contractor's responsibility to obtain the annual prevailing wage rate increases directly from the State Department of Labor website. The owner will not allow additional costs for Labor rate increase during the course of the project.

26. SEPARATE CONTRACTS:

The contractor shall coordinate his operations with those of other contractors. Cooperation will be required in the arrangement for the storage of materials and in the detailed execution of the work. The contractor and his subcontractors shall keep informed of the progress and the detail work of other contractors and shall notify the project manager immediately of lack of progress or defective workmanship on the part of other

contractors. Failure of a contractor to keep informed of the work progressing on the site and failure to give notice of lack of progress or defective workmanship by others shall be construed as acceptance by him of the status of the work as being satisfactory for proper coordination with his own work.

27. SUBCONTRACTING:

The contractor may utilize the services of specialty subcontractors on those parts of the work which, under normal contracting practices, are performed by specialty subcontractors.

The contractor shall not award any work to any subcontractor without the approval of the owner. Approval will not be given until the contractor submits to the owner a written statement including appropriate certifications concerning the proposed award to the subcontractor, which statement will contain such information as the owner may require.

The contractor shall be as fully responsible to the owner for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons employed directly by him.

The contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the contractor by the terms of the general conditions and other contract documents insofar as applicable to the work of subcontractors and to give the contractor the same power as regards terminating any subcontract that the owner may exercise over the contractor under any provision of the contract documents.

Nothing contained in this contract shall create any contractual relation between any subcontractor and the owner.

The contractor shall insert these same general conditions in any subcontract he awards.

28. MUTUAL RESPONSIBILITY OF CONTRACTORS:

If through acts of neglect on the part of the contractor, any other contractor or subcontractor shall suffer loss or damage on work, the contractor agrees to settle with such other contractor or subcontractor by agreement or arbitration if the other contractor or subcontractor shall assert any claim against the owner on account of any damage alleged to have been sustained, the owner shall notify the contractor, who shall indemnify and save harmless the owner against any such claim.

29. SUPERINTENDENCE BY CONTRACTOR:

At the site of the work, the contractor shall employ a construction superintendent or foreman who has full authority to act for the contractor. It is understood that the contractor's representative shall be acceptable to the architect/engineer and to the owner.

30. CORRECTION OF WORK:

All work, materials, processes of manufacture and methods of construction shall be subject to inspection by, and the acceptability of the project manager at all times. Should they fail to meet his approval, they shall be reconstructed, made good, replaced and/or corrected by the contractor at his own expense. Rejected material shall be immediately removed from the site. If, in the opinion of the project manager, it is undesirable to reconstruct or correct any portion of the work injured or not performed in accordance with the contract

documents, the compensation paid to the contractor shall be reduced by an equitable amount established by the project manager.

31. WEATHER CONDITIONS:

In the event of temporary suspension of work, or during inclement weather, or whenever the project manager shall direct, the contractor will, and will cause his subcontractors to, carefully protect his and their work and materials against damage or injury from the weather. If, in the opinion of the project manager, any work or materials shall have been damaged or injured by reason of failure on the part of the contractor or any of his subcontractors to so protect his work, such materials shall be removed and replaced at the expense of the contractor.

32. COLD WEATHER WORK:

The Project Manager will determine when low temperature condition is unfavorable for work and may order the work, or any portion of it, suspended whenever, in his opinion, the conditions are not such as will insure first class work.

The Contractor shall not continue road excavation after bituminous concrete plants have shut down for the winter. At that time, the Contractor shall request a "winter shutdown". The Contractor shall receive no extra payment for any labor, apparatus, tools, or materials necessary to comply with the above requirements, but compensation shall be construed items of work as listed in the bid proposal.

33. PROTECTION OF WORK AND PROPERTY - EMERGENCY:

The contractor shall, at all times, protect the owner's property from injury or loss in connection with this contract. He shall, at all times, safely guard and protect his own work, and that of adjacent property, from damage. The contractor shall replace or make good any such damage, loss, or injury unless it was caused directly by errors contained in the contract or by the owner, or the owner's duly authorized representative.

In case of an emergency which threatens loss or injury of property and/or safety of life, the contractor will be allowed to act, without previous instructions from the project manager immediately thereafter. Any claim for compensation by the contractor due to such extra work shall be promptly submitted to the project manager for approval.

Where the contractor has not taken action but has notified the project manager of an emergency threatening injury to persons or damage to the work or any adjoining property, he shall act as instructed or authorized by the project manager.

The amount of reimbursement paid to the contractor on account of any emergency action shall be determined by the project manager and owner based on their review of submitted documentation of actual costs incurred by the contractor.

34. CONFLICTING CONDITIONS:

Any provision in any of the contract documents which may be in conflict or inconsistent with any of the paragraphs in these general conditions shall be void to the extent of such conflict or inconsistency.

35. SUBSURFACE CONDITIONS FOUND DIFFERENT:

Should the contractor encounter subsurface and/or latent conditions at the site which differ materially from those shown on the plans or indicated in the specifications, he shall immediately notify the project manager of the condition prior to its disturbance. The project manager will promptly investigate the condition and make the required changes in the plans and specifications. Any change to the contract cost will be determined in accordance with paragraph 38.

36. CHANGES IN THE WORK:

No change in the work covered by the approved contract documents shall be made without having written approval of the project manager. All changes (increasing or decreasing the contract amount) shall be determined by one or more, or a combination of the following methods;

A. Unit bid prices previously established and approved,

B. An agreed lump sum with back-up data, as required by the engineer.

37. EXTRAS:

Without invalidating the contract, the project manager may order extra work of the kind bid upon or make changes by altering, adding to or deducting from the work. The contract sum will be adjusted accordingly, and the consent of the surety will be obtained as required. All of the work of the kind bid upon shall be paid for at the prices stipulated in the proposal in accordance with Section 1.09.04 of the standard specifications, and no claims for any extra work or materials shall be allowed unless the work is ordered in writing by the project manager and the cost therefore is stated in the order.

38. ANTI-LOBBYING:

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

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

C. It will require that the language of paragraph (n) of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

39. CONSTRUCTION SCHEDULE AND PERIODIC ESTIMATES:

Immediately after execution and delivery of the contract, and before the first partial payment is made, the contractor shall deliver to the owner an estimated construction progress schedule in form satisfactory to the owner, showing the proposed dates of commencement and completion of each of the various subdivisions of work required under the contract documents and the anticipated amount of each monthly payment that will become due the contractor in accordance with the progress schedule. The contractor shall also furnish; A) a detailed estimate (Schedule of Values) giving a complete break-down of the contract price and B) periodic itemized estimates of work done for the purpose of making partial payments thereon. The costs employed in making up any of these schedules will be used only for determining the basis of partial payments and will not be considered as fixing a basis for additions to or deductions from the contract price.

40. RECORD DRAWINGS:

Concurrently with the progress of the Work, the Contractor shall keep on the site a set of "AS-Built" Record Drawings, consisting of a marked set of the Contract Drawings with additional sketches as required, denoting and dimensioning accurately and neatly all changes and conditions that are variation from the Contract Drawings.

All offsets, bends and changes in alignment and grade of underground utilities, which are not marked by a visible surface structure such as manholes, catch basins, etc., shall be recorded. These locations shall be located in reference to three (3) separate permanent surface reference points and recorded on the "As Built" Record Drawings.

An accurate record shall also be kept of all existing site and roadway items which are reworked or relocated under this Contract.

The "As-Build" drawings shall be available for examination at the site at all times. Upon completion of the Work, the Contractor shall deliver to the Town a reproducible set of the Record Drawings for Owner review. Upon review and acceptance by the Town of the reproducible set of the Record Drawings a final set shall be provided to the Owner, certified by a Connecticut licensed land surveyor. The Contractor shall also provide to the Owner an AutoCAD file of the record drawings using AutoCAD software Release 2000 or newer.

The Contractor's attention is directed to the fact that submission of a reproducible set of "As-Built" Record Drawings and AutoCAD file is a pre-requisite for final payment.

41. QUANTITIES OF ESTIMATE:

Wherever the quantities of work to be done and materials to be furnished on a unit basis under this contract are shown in any of the documents including the proposal, they are given for use in comparing bids. The owner reserves the right to increase or decrease the units as may be deemed reasonably necessary or desirable to complete the work in this contract. Any such increase/decrease shall in no way invalidate this contract, nor shall any such increase/decrease give cause for claims or liability for damages.

42. PAYMENT TO THE CONTRACTOR:

The owner shall make monthly progress payments to the contractor on the basis of a duly certified and approved estimate of the work performed during the preceding work period under the contract. To ensure

proper performance under the contract, the owner shall retain 5% of the amount of each estimate until final completion and acceptance of all work covered by the contract. At which time 2.5% will be held as retainage for a one-year warranty period beginning on the date of final acceptance. At the end of the one-year warranty period the 2.5% retainage will be returned to the contractor.

All material and work covered by partial payments made shall thereupon become the sole property of the owner, but this provision shall not be construed as relieving the contractor from his responsibility for the care and protection of materials and work upon which payments have been made or the restoration of any damaged work, or as a waiver of the right of the owner to require fulfillment of all the terms of the contract.

The contractor agrees that he will indemnify and hold the owner and its agents all claims growing out of the lawful demands of subcontractors, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the furtherance of the performance of this contract. The contractor shall, at the owner's request, furnish satisfactory evidence that all obligations of nature hereinabove designated have been paid, discharged or waived. If the contractor fails to do so, then the owner may, after having served written notice on the contractor, either pay unpaid bills of which the owner has written notice, direct or withhold from the contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the contractor shall be resumed in accordance with the terms of this contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon the owner to either the contractor or his surety.

In paying any unpaid bills of the contractor, the owner shall be deemed the agent of the contractor, and any payment so made by the owner shall be considered as a payment made under the contract by the owner to the contractor, and the owner shall not be liable to the contractor for any such payment made in good faith.

43. ASSIGNMENTS:

The contractor shall not assign the whole or any part of this contract or any monies due or to become due hereunder without the express, written consent of the owner. In case the contractor assigns all or any part of any monies due or to become due under this contract, the instruments of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or to become due to the contractor shall be subject to prior claims of all persons, firms and corporations for services rendered or materials supplied for the performance of the work called for in this contract.

44. ACCEPTANCE OF FINAL PAYMENT AS RELEASE:

The acceptance by the contractor of final payment shall be and shall operate as a release to the owner of all claims and all liability to the contractor for all things done or furnished in connection with this work and for every act and neglect of the owner and others relating to or arising out of this work. No payment, final or otherwise, shall operate to release the contractor or his subcontractors or his surety from any obligation under this contract or the bonds affixed thereto.

45. GENERAL GUARANTY:

Neither the final payment nor partial or entire occupancy of the premises constitute an acceptance of any work not done in accordance with the contract documents; nor does either condition relieve the contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The contractor shall remedy any defects in the work and pay for any damage to other work resulting therefrom, which shall appear within a period of one year from the date of final acceptance of the work unless a longer period is specified. The owner will give notice of observed defects with reasonable promptness.

46. USE AND OCCUPANCY PRIOR TO ACCEPTANCE BY THE OWNER:

The contractor agrees to the use and occupancy of a portion of the project by the owner before formal acceptance, provided the owner:

A. secures written consent of the contractor except in the event the contractor is chargeable with unwarranted delay in completing the contract requirements. Final determination will be in the opinion of the project manager.

B. secures consent of the surety.

C. secures endorsement from the insurance carrier(s) permitting occupancy of the building or use of the project during the remaining period of construction.

D. secures permanent fire and extended coverage insurance, including a permit from the insurance carrier to complete construction when the project consists of more than one building, and one of the buildings is occupied.

47. USE OF PREMISES AND REMOVAL OF DEBRIS:

The contractor expressly undertakes at his own expense:

A. To take every precaution against injuries to persons or damage to property.

B. To store his apparatus, materials, supplies and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of his work or the work of any other contractors.

C. To place upon the work or any part thereof only such loads as are consistent with the safety of that portion of the work.

D. To clean up all refuse, rubbish, scrap materials, and debris caused by his operations on a daily basis so that the site of the work shall present a neat, orderly and workmanlike appearance at all times.

E. To remove all surplus material, false work, temporary structures, including foundations thereof, plant of any description and debris of every nature resulting from his operations, and to put the site in a neat and orderly condition before final payment.

F. To affect all cutting, fitting, or patching of his work required to make the same conform to the plans and specifications and, except with the consent of the project manager, not to cut or otherwise alter the work of any other contractor.

48. MAINTANENCE OF CONSTRUCTION AREA:

The Construction Area will be maintained by the contractor throughout the duration of the project and will include all maintenance responsibilities including snow removal.

49. INDEMNIFICATION:

The contractor and all of his subcontractors agree to defend, indemnify and hold harmless the Municipality, its Departments, agents and employees, and the State of Connecticut from any and all claims, liabilities, obligations and causes of action of whatsoever kind and nature for injury to, or death, including contractor employees, of any person and for damages to or destruction of property, or loss of use, including property of the Municipality and/or State of Connecticut, resulting in connection with work services or activities under this agreement regardless of cause except that the contractor shall not be required to assume responsibility or indemnify the Municipality and/or State of Connecticut of such injuries, damages or claims deemed by law to be due to the sole negligence of the Municipality and/or State of Connecticut, its employees or agents.

50. INSURANCE REQUIREMENTS:

The contractor shall procure and maintain in effect for the duration of this agreement, the following insurance coverages with insurers licensed or approved to conduct business in the State of Connecticut. All insurers must be satisfactory to the Municipality.

The selected Contractor must, prior to contract signing, supply the Municipality and the Owner with the original certificates of insurance for commercial general liability, automobile liability, railroad protective liability, and workers compensation insurance as outlined below. The Contractor shall indemnify and save harmless the Owner and the Municipality under these policies, Town of Killingly, its agents and the Owner and State of Connecticut as additional insured. Insurance shall meet the requirements of Article 1.03.07 of the State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 818, dated 2020 or the requirements below, whichever is greater.

A. COMMERCIAL GENERAL LIABILITY

The Contracting Engineer shall carry Commercial General Liability Insurance, including Contractual Liability Insurance, providing for a total limit of One Million Dollars ($1,000,000) for all damages arising out of bodily injuries to or death of all persons in any one accident or occurrence, and for all damages arising out of injury to or destruction of property in any one accident or occurrence, and, subject to that limit per accident, a total (or aggregate) limit of Three Million Dollars ($3,000,000) for all damages arising out of bodily injuries to or death of all persons in all accidents or occurrences and out of injury to or destruction of property during the policy period.

B. AUTOMOBILE LIABILITY

The operation of all motor vehicles, including those hired or borrowed, used in connection with the Agreement shall be covered by Automobile Liability Insurance providing for a total limit of One Million Dollars ($1,000,000) for all damages arising out of bodily injuries to or death of all persons in any one accident or occurrence, and for all damages arising out of injury to or destruction of property in any one accident or occurrence. In cases where an insurance policy shows an aggregate limit as part of the automobile liability coverage, the aggregate limit must be at least Three Million Dollars ($3,000,000).

C. RAILROAD PROTECTIVE LIABILITY

When the Agreement requires work on, over or under the right of way of any railroad company, the Contracting Engineer shall provide, with respect to the operations that it or its subcontractors perform under the Agreement, Railroad Protective Liability Insurance for and on behalf of the railroad company as named

insured, and the Municipality named as additional insured, providing for coverage limits of (1) not less than Three Million Dollars ($3,000,000) for all damages arising out of any one accident or occurrence, in connection with bodily injury or death and/or injury to or destruction of property; and (2) subject to that limit per accident, a total (or aggregate) limit of Six Million Dollars ($6,000,000) for all injuries to persons or property during the policy period. If such insurance is required, the Contracting Engineer shall obtain and submit the minimum coverage indicated above to the Municipality prior to the commencement of rail related work and/or activities and shall maintain coverage until the work and/or activities is/are accepted by the Municipality.

D. WORKERS' COMPENSATION

With respect to all operations the Contracting Engineer performs and all those performed for the Contracting Engineer by subcontractors, the Contracting Engineer and subcontractor(s) shall carry Workers' Compensation Insurance and, as applicable, insurance required in accordance with the U.S. Longshore and Harbor Workers' Compensation Act, in accordance with the requirements of the laws of the State of Connecticut, and of the laws of the United States respectively.

Cancellation Notice - Insurers must give no less than 30 days written notice in the event of either cancellation or non-renewal to the Municipality. Notice is to be to the attention of Town of Killingly.

All policies are to be evidenced by Certificates of Insurance properly authorized by the insurer or their representative and must reflect all coverages. Certificates must be delivered to the Town prior to any work or activity under this agreement.

Section IV
SUPPLEMENTAL GENERAL CONDITIONS

1. **APPRENTICES AND TRAINEES:**

Apprentices will be permitted to work as such only when they are registered, individually, under a bona fide program registered with a State Apprenticeship Agency which is recognized by the Bureau of Apprenticeship and Training, U.S. Department of Labor; or, if no such Agency exists in a State, under a program registered with the Bureau of Apprenticeship and Training, U.S. Department of Labor. The allowable ratio of apprentices to journeymen in any craft classification shall not be greater than the ratio permitted to the contractor as to his entire workforce under the registered program. Any employees listed on a payroll at an apprentice wage rate, who is not a trainee as defined in paragraph 2(G), or is not registered as above, shall be paid the wage rate determined by the Secretary of Labor for the classification of work he actually performs. The contractor or subcontractor will be required to furnish written evidence of the registration of his program and apprentices as well as of the appropriate ratios and wage rates, for the area of construction prior to using any apprentices on the contract work.

Trainees will be permitted to work as such when they are bona fide trainees employed in accordance with a program approved by the U.S. Department of Labor, Manpower Administration Bureau of Apprenticeship and Training, and where the subparagraph below is applicable, in accordance with the provisions of Part 5a, Subtitle A, Title 29, Code of Federal Regulations (CFR).

On contracts in excess of $10,000, the employment of all laborers and mechanics, including apprentices and trainees shall also be subject to the provisions of Part 5a, Subtitle A, Title 29, CFR. Apprentices and trainees shall be hired in accordance with the requirements of Part 5a.

2. MINIMUM WAGES:

All mechanics and laborers employed or working upon the site of the work, or under the United States Housing Act of 1937, or under the Housing Act of 1949 in the construction or the development of this project, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions permitted by regulations issued by the Secretary of Labor under the Copeland Act (29CFR Part 3), the full amounts due at the time of payment computed at wage rates not less than those contained in the wage determination decision of the Secretary of Labor contained herein, regardless of any contractual relationship which may be alleged to exist between the contractor and subcontractor and such laborers and mechanics; and the wage determination decision shall be posted by the contractor at the site of the work in a prominent place where it can be easily seen by the workers. The posted wage determination shall contain a statement showing all deductions in accordance with the provisions of this contract, to be made from wages actually earned by persons employed in each classification. For the purpose of this clause, contributions made, or costs reasonably anticipated under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5 (a)(1)(iv).

The transporting of materials and supplies to or from the work site, and the manufacturing or furnishing of materials, articles, supplies, or equipment on or to the site by employees of the contractor or any subcontractor, is work to which these Federal Labor Standards Provisions apply.

Also, for the purpose of this clause, regular contributions made, or costs incurred for more than a weekly period under plans, funds, or programs, but covering the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

The owner shall require that any class of laborers or mechanics, including apprentices and trainees, which is not listed in the wage determination, and which is to be employed under this contract, shall be classified or reclassified conforming to the wage determination classification and a report of the action taken shall be sent by the local administering agency to the Secretary of Labor. In the event the interested parties cannot agree on the classification or reclassification of a particular class of laborers or mechanics (including apprentices and trainees) to be used, the question accompanied by the recommendation of the contracting officer shall be referred to the Secretary for final determination.

The owner shall require that whenever the minimum wage rate prescribed in the contract for a particular class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly wage rate and the contractor is obligated to pay the cash equivalent of such fringe benefit, an hourly cash equivalent thereto will be established. In the event the interested parties cannot agree upon a cash equivalent for that fringe benefit, the question and accompanying recommendation of the owner shall be referred to the Secretary of Labor for determination.

If the contractor does not make payments to a trustee or other third person, he may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing benefits under a plan or program of a type expressly listed in the wage determination decision of the Secretary of Labor which is a part of this contract; provided however, that the Secretary of Labor has found, upon written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside, in a separate account, assets for the meeting of obligations under the plan or program.

The contractor agrees to comply with Executive Order 11588 issued March 29, 1971, and any other Executive Order, statute, or regulation regarding the stabilization of wages and prices in the construction industry.

A. Complaints, Proceedings, or Testimony by Employees:

No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this contract are applicable shall be discharged or, in any other manner, discriminated against by the contractor or any subcontractor because the employee has filed a complaint or instituted (or caused to be instituted) any proceeding or who has testified (or is about to testify) in any proceeding under or relating to the applicable labor standards of this contract with his employer.

B. Claims and Disputes Pertaining to Wage Rates:

Claims and disputes pertaining to wage rates or to classifications of laborers and mechanics employed upon the work covered by this contract shall be promptly reported by the contractor in writing to the Town of Killingly.

C. Questions concerning certain Federal statutes and regulations:

All questions arising under this contract which relate to the application or interpretation of any of the five following requirements shall be directed to the Town of Killingly.

1. Anti-kickback Act,

2. Contract work hours and Safety Standards Act,

3. Davis-Bacon Act,

4. Secretary of Labor's regulations pertaining to 1, 2 and 3 above,

5. The labor standards provisions of any other pertinent Federal statute.

3. OVERTIME REQUIREMENTS:

No contractor or subcontractor shall require or permit any laborer or mechanic to work in excess of eight hours in any calendar day or in excess of forty hours in any workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times his basic rate of pay for all hours in excess of eight hours/day or in excess of forty hours/week, as the case may be.

In the event of any violation of the above, the contractor and any subcontractor responsible therefore, shall be liable to any affected employee for his unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States for liquidated damages. Liquidated damages shall be computed at $10.00 per calendar day for each laborer or mechanic required or permitted to work in excess of eight hours or in excess of the standard week of forty hours without payment of the overtime wages required.

The Municipality may withhold or cause to be withheld from any monies payable on account of work performed by the contractor or subcontractor, any sums necessary to satisfy any liabilities of the contractor or subcontractor for unpaid wages and liquidated damages.

The contractor shall insert the foregoing stipulation in all subcontracts. Furthermore, subcontractors are to include these same requirements in any lower-tier subcontracts into which they may enter.

4. EQUAL EMPLOYMENT OPPORTUNITY:

A. 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, mental retardation 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. The contractor further agrees to take affirmative action to insure 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, mental retardation, 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;

B. 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.

C. The contractor agrees to provide each labor union or representative of workers with 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 advising the labor union or workers representative of the contractors commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

D. The contractor agrees to comply with each provision of Conn. Gen. Stat. ээ 4a-60, 46a-68e and 46a-68f and with each regulation or relevant order issued by said commission pursuant to Conn. Gen. Stat. ээ 46a-56, as amended by Section 5 of Public Act 89-253, 46a-68e.

E. 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 section 46a-56. If the contract is a public work contract, the contractor agrees and warrants that he will make good faith efforts to employ minority and women business enterprises as subcontractors and suppliers of materials on such public works project.

Pursuant to the provisions of Conn. Stat. Sect. 4a-60a.

A. 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 orientations, in any manner prohibited by the laws of the United States or of the State of Connecticut, and that employees are treated when employed without regard to their sexual orientation.

B. 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 contractors commitments under this section, and to post copies of the notice in conspicuous places available to employees and applicants for employment;

C. The contractor agrees to comply with each provision of this section and sections 46a-68e and 46a-68f of the general statutes and with each regulation or relevant order issued by said Commission pursuant to section 46a-56, 46a-68e and 46a-68f of the general statutes.

D. 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 section 46a-56 of the general statutes.

Executive Order 11246.30 Federal Regulations 12319 (1965) Equal Opportunity Clause.

ADuring the performance of this contract, the contractor agrees as follows:

A. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertisement; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, and to make available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

B. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

C. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided by the Contract Compliance Officer advising the said labor union or workers= representatives of the contractors commitment under this section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

D. The contractor will comply with all provisions of (Federal) Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the (United States) Secretary of Labor.

E. The contractor will furnish all information and reports required by (Federal) Executive Order 11246 of September 24, 1965, and by the rules and regulations, and orders of the (United States) Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by HUD, by the State Department of Housing and by the (United States) Secretary of Labor, for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

F. In the event of the contractors noncompliance with the nondiscrimination clauses of this contract or with any such rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further (United States) Government contracts or federally assisted construction contracts procedures authorized in (Federal) Executive Order 11246 of September 24, 1965, or order of the (United States) Secretary of Labor, or as otherwise provided by law.

G. The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the (United States) Secretary of Labor issued pursuant to Section 204 of (Federal) Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as HUD (or the Commissioner of the Connecticut Department of Economic and Community Development) shall direct as a means of enforcing such provisions, including sanctions for noncompliance: provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by HUD (or the Commissioner of the Connecticut Department of Economic and Community Development), the contractor may request the United States to enter into such litigation to protect the interest of the United States≅

Exemptions from above Equal Employment Opportunity Clause (4)(CFR Chap. 60):

A. Contracts and subcontracts of $10,000 or less (other than Government bills of lading) are exempt. The amount of the contract rather than the amount of the Federal financial assistance shall govern in determining the applicability of this exemption.

B. Except in the case of subcontracts for the performance of construction work at the site of construction, the clause shall not be required to be inserted in subcontracts below the second tier.

C. Contracts and subcontracts of $100,000 or less for standard commercial supplies or raw materials are exempt.

The contractor shall not be nor entering into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

The contractor shall carry out sanctions and penalties for violation of these specifications and the Equal Employment Clause, including suspension, termination and cancellation of existing subcontracts, as imposed or ordered by the Office of Federal Contract Compliance in accordance with Executive Order 11246. 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, at least as extensive as those standards prescribed in the sub-paragraphs above, so as to achieve maximum results from its employees to ensure equal employment opportunity. If the contractor fails to comply with the requirements of the Executive Order, the implementing regulations or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

The contractor shall designate a responsible official to monitor all employment-related activity in order to ensure that the company EEO policy is being carried out. The designated official must keep records and submit reports relating to the provisions hereof as required by the Municipality. Records shall 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 shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application or 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).

Executive Order Number 3.

This contract is subject to the provisions of Executive Order No. 3 of Governor Thomas J. Meskill promulgated June 16, 1971, and, as such, this contract may be canceled, terminated, or suspended by the State Labor Commissioner for violation of or noncompliance with said Executive Order No. Three, or any State or Federal law concerning nondiscrimination, notwithstanding that the Labor Commissioner is not a party to this contract. the parties to this contract, as part of the consideration hereof, agree that said Executive Order No. Three is incorporated herein by reference and made a part hereof. The parties agree to abide by said Executive Order and agree that the State Labor Commissioner shall have continuing jurisdiction in respect to contract performance in regard to nondiscrimination, until the contract is completed or terminated prior to completion.

Executive Order Number 17.

This contract is subject to the provision of Executive Order No. 17 of Governor Thomas J. Meskill, promulgated February 15, 1973, and, as such, this contract may be canceled, terminated, or suspended by the Commissioner of Department of Economic and Community Development or the State Labor Commissioner for violation of or noncompliance with said Executive Order No. Seventeen, notwithstanding that the Labor Commissioner may not be a party to this contract. The parties to this contract, as part of the consideration hereof, agree that Executive Order No. Seventeen is incorporated herein by reference and made a part hereof. The parties agree to abide by said Executive Order and agree that the Commissioner of Department of Economic and Community Development and the State Labor Commissioner shall have joint and continuing jurisdiction in respect to listing all employment openings with the Connecticut State Employment Service.

Certification of Nonsegregated Facilities as required by 41CFR 60-1.8, must be submitted prior to the award of federally assisted construction contracts exceeding $10,000 which are not exempt from the provisions of the Equal Employment Clause.

Contractors receiving federally assisted construction contract awards exceeding $10,000 which are not exempt from the provisions of the Equal Employment Clause shall be required to provide for the forwarding of the following notice to prospective subcontractors for supplies and construction contracts where the subcontracts exceed $10,000 and are not exempt from the provisions of the Equal Employment Clause:

A. A certification of non-segregated facilities as required by the 32CFR 7439, May 19, 1967, must be submitted prior to the award of a subcontract exceeding $10,000 which is not exempt from the provisions of the Equal Employment Opportunity Clause.

B. Contractors receiving subcontract awards exceeding $10,000 which are not exempt from the provisions of the Equal Employment Opportunity Clause shall be required to provide for the forwarding of this notice to prospective subcontractors for supplies and construction contracts where the subcontracts exceed $10,000 and are not exempt from the provisions of the Equal Employment Opportunity Clause.

5. COPELAND "ANTI-KICKBACK" PROVISIONS:

The provisions of this section prescribe "Anti-Kickback" regulations under Section 2 of the Act of June 13, 1964, as amended (40 U.S.C. 276c), popularly known as the Copeland Act.

Each contractor or subcontractor shall furnish each week a Statement of Compliance, Form ED-162, to accompany the weekly submission of payroll forms.

Anyone making and/or using a fraudulent document or statement of entry, in any matter within the jurisdiction of any department or agency of the United States, is subject to being fined up to $10,000 or imprisoned for up to five years, or both (refer to 18 USC 1001-72Stat.967).

The provisions of this section shall not apply to any contract of $2,000 or less.

Upon a written finding by the head of a Federal Agency, the Secretary of Labor may provide reasonable limitations, variations, tolerances, and exemptions from the requirements of this section subject to such conditions as the Secretary of Labor may specify.

Deductions made under the circumstances or in the situations described in the paragraphs below may be made without application to and approval of the Secretary of Labor.

A. Any deduction made in compliance with the requirements of Federal, State, or local law such as Federal or State withholding income taxes and Federal Social Security taxes.

B. Any deductions of sums previously paid to the employee as a bona fide prepayment of wages when such prepayment is made without discount or interest. A "bona fide prepayment of wages" is considered to have been made only when cash or its equivalent has been advanced to the employee in such a manner as to give the employee complete freedom of disposition of the advanced funds.

C. Any deduction of amounts required by court process to be paid to another unless the deduction is in favor of the contractor, subcontractor, or any affiliated person, or when collusion or collaboration exists.

D. Any deduction constituting a contribution on behalf of the employee to funds established by the employer or representative of the employees, or both, for the purpose of providing either from principal or income, or both, medical or hospital care, pensions or annuities or retirement, death benefits, compensation for injuries, illness, accidents, sickness, or disability, or for insurance to provide any of the foregoing, or unemployment benefits, vacation pay, savings accounts, or similar payments for the benefit of employees, their families and dependents; provided, however, that the following standards are met:

1. The deduction is not otherwise prohibited by law.

2. It is either voluntarily consented to by the employee in writing and in advance of the period in which the work is to be done and such consent is not a condition either for the obtaining of or for the continuation of employment or provided for in a bona fide collective bargaining agreement between the contractor or subcontractor and representatives of its employees.

3. No profit or other benefit is otherwise obtained, directly or indirectly, by the contractor or subcontractor or any affiliated person in the form of commission, dividend, or otherwise.

4. The deductions shall serve the convenience and interest of the employee.

E. Any deduction contributing toward the purchase of United States Defense Stamps and Bonds when voluntarily authorized by the employee.

F. Any deduction requested by the employee to enable him to repay loans to or to purchase shares in credit unions organized and operated in accordance with Federal and State credit union statutes.

G. Any deductions voluntarily authorized by the employee for making contributions to Community Chests, United Givers Funds and similar charitable organizations.

H. Any deductions voluntarily authorized by the employee for making contributions to governmental or quasi-governmental agencies.

I. Any deductions to pay regular union initiation fees and membership dues (not including fines or special assessments) as long as a collective bargaining agreement between the contractor or subcontractor and representatives of its employees provided for such deductions and the deductions are not otherwise prohibited by law.

J. Any deductions not more than for the "reasonable cost" of board, lodging, or other facilities meeting the requirements of section 3(m) of the Fair Labor Standards Act of 1938, as amended, and Part 531 of this title. When such a deduction is made, the additional records required under S516.25(a) of this title shall be kept.

6. By execution of this agreement, the municipality hereby certifies that for all subgrants, contacts and subcontracts:

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

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

C. The Municipality shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under subrecipients shall certify and disclose accordingly.

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

Section IV
MISC. FORMS AND CONTRACT AGREEMENT

TABLE OF CONTENTS

To be completed by:

CONTRACTOR

SUBCONTRACTOR

NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

State of _____)
)
County of _____)

_____, being first duly sworn, deposes and says that:

1. He is _____ of _____, the Bidder who has submitted the attached Bid.
2. He is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid:
3. Such Bid is genuine and is not a collusive or sham Bid:
4. Neither the said Bidder nor any of its officers, partners, owners, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit or cost element of the Bid price or the Bid price of any Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the _____ (Owner), or any other person interested in the proposed Contract; and
5. The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

_____
(Signature)

_____
(Date)

Subscribed and sworn to before me
this _____ day of _____, 20___.

_____

_____
Title

My commission expires: _____

CERTIFICATION OF BIDDER REGARDING EQUAL EMPLOYMENT OPPORTUNITY

PROJECT NUMBER:

GENERAL

In accordance with Executive Order 11246 (30 F.R. 12319-25), the implementing rules and regulations thereof, and orders of the Secretary of Labor, a Certification regarding Equal Opportunity is required of bidders or prospective contractors and their proposed subcontractors prior to the award of contracts or subcontracts.

CERTIFICATION OF BIDDER

Bidder's Name:_____

Address:_____

Internal Revenue Service Employer Identification Number: _____

1. Participation in a previous contract or subcontract:

   A. Bidder has participated in a previous contract or subcontract subject to the Equal Opportunity Clause
   ☐ Yes ☐ No

   B. Compliance reports were required to filed in connection with such contract or subcontract
   ☐ Yes ☐ No

   C. Bidder has filed all compliance reports required by Executive Orders 10925, 11114, 11246 or by regulations of the Equal Employment Opportunity Commission issued pursuant to Title VII of the Civil Rights Act of 1964 ☐ Yes ☐ No

   D. If answer to item C is A No, please explain in detail on the reverse side of this certification.

2. Dollar amount of bid: $_____

3. Anticipated performance period_____days.

4. Expected total number of employees who will perform the proposed construction_____.

5. Non-segregated facilities

   A. Notice to Prospective Federally-Assisted Construction Contractors:

      I. A Certification of Non-segregated Facilities, as required by the May 9, 1967, order (32 F.R. 7439, May 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted to the recipient prior to the award of a federally-assisted construction contract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity Clause.

      II. Contractors receiving federally-assisted construction contract awards exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause will be required to provide for the forwarding of the following notice to prospective subcontractors for supplies and construction contracts where the subcontracts exceed $10,000 and are not exempt from the provisions of the Equal Opportunity clause:

B. Notice to Prospective Subcontractors of Requirement for Certification of Non-segregated Facilities:

I. A Certification of Nonsegregated Facilities, as required by the May 9, 1967, order (32 F.R. 7439, May 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a subcontract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity Clause.

II. Contractors receiving subcontract awards exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause will be required to provide for the forwarding of this notice to prospective subcontractors for supplies and construction contracts where the subcontracts exceed $10,000 and are not exempt from the provisions of the Equal Opportunity clause:

C. Certification of Non-segregated Facilities

The federally-assisted construction contractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally-assisted construction contractor certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally-assisted construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term A segregated facilities≅ means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. The federally-assisted construction contractor agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications in duplicate from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain the duplicate of such certifications in his files. The contractor will include the original in his Bid Package.

6. Race or ethnic group designation of bidder. Enter race or ethnic group in the appropriate box:

☐ Black ☐ Spanish American ☐ Oriental ☐ American Indian
☐ Eskimo ☐ Aleut ☐ White (other than Spanish American)
☐ Portuguese

Remarks: _____

_____

_____

_____

Certification: The information above is true and complete to the best of my knowledge and belief.

_____
Bidder=s Name and Title of signer (please print)

_____ _____
Signature Date

Note: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

CONTRACTORS CERTIFICATION
CONCERNING LABOR STANDARDS AND PREVAILING WAGE REQUIREMENTS

To (Department, Agency, or Bureau) Date

c/o Project Number

Project Name

1. The undersigned, having executed a contract with _____ for the Construction of the above-identified project, acknowledges that:

   a) The Labor Standards provisions are included in the aforesaid contract:

   b) Correction of any infractions of the aforesaid conditions, including infractions by any of his subcontractors and any lower tier subcontractors, is his responsibility;

2. He certifies that:

   a) Neither he nor any firm, partnership or association in which he has substantial interest is designated as an ineligible contractor by the Comptroller General of the United States pursuant to Section 5.6 (b) of the Regulations of the Secretary of Labor, Part 5 (29 CFR, Part 5) or pursuant to Section 3 (a) of the Davis- Bacon Act, as amended (40 U.S.C. 276a-2(a)).

   b) No part of the aforementioned contract has been or will be subcontracted to any subcontractor of such subcontractor or any firm, corporation, partnership or association in which such subcontractor has a substantial interest is designated as an ineligible contractor pursuant to any of the aforementioned regulatory or statutory provisions.

3. He agrees to obtain and forward to the aforementioned recipient within ten days after the execution of any subcontract, including those executed by his subcontractors and any lower tier subcontractors, a Subcontractor's Certification Concerning Labor Standards and Prevailing Wage Requirements executed by the subcontractors.

4. He certifies that:

   a) The legal name and business address of the undersigned are:

   b) The undersigned is:

   (1) _____ A Single Proprietorship
   _____ A Partnership
   _____ A Corporation Organized in the State of _____
   _____ Other Organization (describe)

c) The name, title, and address of the owner, partners or officers of the undersigned are:

NAME	TITLE	ADDRESS

d) The names and address of all other persons, both natural and corporate, having a substantial interest in the undersigned, and the nature of the interest are (if none, so state):

NAME	TITLE	NATURE OF INTEREST

e) The names, addresses and trade classifications of all other building construction contractors in which the undersigned has a substantial interest are (if none, so state):

NAME	TITLE	NATURE OF INTEREST

Social Security No. Or
Federal Employer I.D. No. _____ _____
(Contractor)

Date: _____

BY _____

WARNING

U.S. Criminal Code, Section 1010, Title 18, U.S.C., provides in part: AWhoever, ...makes, passes, utters or publishes any statement, knowing the same to be false...shall be fined no more than $5,000 or imprisoned not more than two years, or both.≅

PROPOSED SUBCONTRACTORS BREAKDOWN
FOR THE PERIOD COVERING_____20___THROUGH_____20___
(Duration of the CDBG-Assisted Project)

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
TYPE OF CONTRACT (BUSINESS OF PROFESSIONS)	TOTAL NUMBER OF CONTRACTS	TOTAL APPROXIMATE DOLLAR VALUE	ESTIMATED NUMBER OF CONTRACTS TO PROJECT AREA BUSINESSES*	ESTIMATED DOLLAR AMOUNT TO PROJECT AREA BUSINESSES

* The Project Area is coextensive with the Municipality of_____>s Boundaries.

_____
Company

_____ _____
Project Name Project Number

_____ _____
EEO Officer (Signature) Date

ESTIMATED PROJECT WORKFORCE BREAKDOWN - TABLE B

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
JOB CATEGORY	TOTAL ESTIMATE POSITIONS	NO. POSITIONS CURRENTLY OCCUPIED BY PERMANENT EMPLOYEES	NO. POSITIONS NOT CURRENTLY OCCUPIED	NO. POSITIONS TO BE FILLED WITH L.I.P.A.R*
OFFICERS/ SUPERVISORS				
PROFESSIONALS				
TECHNICIANS				
HOUSING SALES/ RENTAL/MANAGEMENT				
OFFICE CLERICAL				
SERVICE WORKERS				
OTHERS				
TRADE:				
JOURNEYMEN				
HELPERS				
APPRENTICES				
MAX. NO. TRAINEES				
OTHERS				
TRADE:				
JOURNEYMEN				
HELPERS				
APPRENTICES				
MAX. NO. TRAINEES				
OTHERS				
TRADE:				
JOURNEYMEN				
HELPERS				
APPRENTICES				
MAX. NO. TRAINEES				
OTHERS				

* Lower Income Project Area Residents. Individuals residing within the _____ whose family income does not exceed 80% of the median income in the SMSA _____

CERTIFICATE AS TO CORPORATE PRINCIPAL

I,_____, certify that I am the_____Secretary of the Corporation named as Principal in the within bond, that_____who signed the said bond on my behalf of the Principal was then_____of said Corporation; that I know his signature, and his signature thereto is genuine, and that said bond was duly signed, sealed, and attested to for and in behalf of said Corporation by authority of its governing body.

_____(Corporate Seal)

Title:

(The Surety Company must append statement of its financial condition and a copy of the resolution authorizing the execution of bonds by officers of the company, and the Power-of-Attorney of the Surety Company's Attorney-in-Fact, authorized to act within the State of Connecticut.)

FORM OF SURETY GUARANTY

(To Accompany Proposal)

KNOW ALL MEN BY THESE PRESENTS, that for and in consideration of the sum of $1.00, lawful money of the United States, the receipt whereof is hereby acknowledged, paid the undersigned Corporation, and for other valuable consideration, the

(Name of Surety Company)

a Corporation organized and existing under the laws of the State of _____ and licensed to do business in the State of Connecticut, certified and agrees, that if Contract _____ Project Number is awarded to _____, the undersigned _____ _____ (Name of Bidder)

Corporation will execute the bond or bonds as required by the Contract Documents and will become surety in the full amount of the Contract Price for the faithful performance of the contract and for payment of all persons supplying labor or furnishing materials in connection therewith.

(Surety)

(To be accompanied by the usual proof of authority of officers of surety company to execute the same).

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That_____as Principal hereinafter called Contractor, and_____as Surety, hereinafter called Surety, are held and firmly bound unto the Town of Killingly as Obligee, hereinafter called Obligee, in the amount of_____($_____), for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated_____entered into a contract with Obligee for which contract with all its terms, covenants, conditions and stipulations is incorporated herein to form a part hereof as fully as if said contract was recited at length herein.

NOW, THEREFORE, the condition of this obligation is such that, if Contractor shall promptly and faithfully perform said Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

PROVIDED, that any alterations which may be made in the terms of the Contract, or in the work to be done under it, or the giving by the Obligee of any extension of the time for the performance of the Contract, or any other forbearance on the part of either the Obligee or the Contractor to the other shall not in any way release the Contractor and the Surety, or either of any of them, their heirs, executors, administrators, successors or assigns from their liability hereunder, notice to the Surety of any such alterations, extension or forbearance being hereby waived.

Whenever Contractor shall be, and declared by Obligee to be in default under the Contract, at the Obligee's election, the Surety may promptly remedy the default, or shall promptly:

1. Complete the Contract in accordance with its terms and conditions, by another contractor acceptable to the Obligee said other Contractor to act as an agent of the Surety, or

2. Obtain a bid or bids for submission for completing the Contract in accordance with its terms and conditions, and upon determination by Obligee and Surety of the lowest responsible bidder, arrange for a contract between such a bidder and Obligee, and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the contract price" as used in this paragraph, shall mean the total amount payable by Obligee to Contractor under the Contract and any amendments thereto, less the amount properly paid by Obligee to Contractor.

SIGNED AND SEALED this_____day of_____, A.D. 2022.

IN THE PRESENCE OF:

_____ _____

(Principal of Contractor) (Seal) (Title)

_____

(Surety) (Seal)

By: _____

PAYMENT BOND (LABOR AND MATERIAL BOND)

KNOW ALL MEN BY THESE PRESENTS:

That_____, of The Town of Killingly of_____, County of , State of_____, as Principal (hereinafter called the Principal) and (a surety company authorized to transact business in the State of Connecticut) as Surety (hereinafter called the Surety) are held and firmly bound unto the Town of Killingly (hereinafter called the Obligee) in the full penal sum of _____($_____), lawful money of the United States, to be paid to said Obligee which payment will and truly be made and done, the said Principal binds himself, his heirs, executors, and administrators (or itself, its successors and assigns and the said Surety binds itself, its successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, said Principal has entered into a certain written contract with said Obligee, dated_____day of , A.D. 2022, which written contract provides for_____, which contract, with all of its terms, covenants, conditions and stipulations is incorporated herein to form a part hereof as fully as if said contract was recited at length herein.

NOW, THEREFORE, the condition of this obligation is such that, if the said Principal shall promptly pay for all materials furnished and labor supplied or performed in the prosecution of the work included in and under the aforesaid contract, whether or not the material or labor, enters into and becomes a component part of the real asset, then this obligation shall be null and void, otherwise it shall remain and be in full force and effect.

PROVIDED, that any alterations which may be made in the terms of the contract or in the work to be done under it, or the giving by the Obligee of any extensions of time for the performance of the contract, or any other forbearance on the part of either the Obligee or the Principal to the other shall not in any way release the Principal and the Surety or either or any of them, their heirs, executors, administrators, successors or assigns from their liability hereunder, notice to the Surety of any such alterations, extension or forbearance being hereby waived.

Any party, whether a subcontractor or otherwise, who furnishes materials or supplies or performs labor or services in the prosecution of the work under said contract, and who is not paid therefore; may bring a suit on this bond in the name of the person suing, prosecute the same to a final judgment, and have execution thereon for such sum or sums as may be justly due.

This bond is furnished pursuant to Section 49-41 of the General Statutes of Connecticut, Revision of 1958.

SIGNED AND SEALED this_____day of_____, A.D. 2022

IN THE PRESENCE OF:_____

(Principal of Contractor) (Seal)

_____ _____

(Title)

_____

(Surety) (Seal)

_____By:_____

Attorney-in-Fact

Attest:

ACKNOWLEDGMENT OF SURETY COMPANY

State of_____)

County of_____)

Town of_____)

On this_____day of_____, 2022, before me personally came to me known to be the person named in the above instrument and who after being by me duly sworn, did depose and say that he resides in_____, that he is the of the corporation described in which is executed the above instrument; that he knows the seal of said corporation that the seal affixed to said instrument is such corporate seal, that it was so affixed pursuant to a resolution of the Board of Directors of said corporation, and that he signed his name by like order.

(Notary Public)

MY COMMISSION EXPIRES:

(The Surety Company must append statement of its financial condition and a copy of the resolution authorizing the execution of bonds by officers of the company, and the power-of-attorney of the surety company's attorney-in-fact, authorized to act within the State of Connecticut).

The foregoing bond and sureties are hereby approved.

Dated:_____, 2022.

Town Manager
Town of Killingly

Town Clerk
Town of Killingly

AGREEMENT

THIS AGREEMENT made this_____day of_____, 2022 by and between _____hereinafter called the "Contractor", and The Town of Killingly hereinafter called the "Owner".

WITNESSETH, that the Contractor and The Town of Killingly for _____($_____) and considerations stated herein mutually agree as follows:

ARTICLE 1. Statement of Work. The Contractor shall furnish all supervision, technical personnel, labor, materials, machinery, tools, equipment and service, including utility and transportation service, and perform and complete in an efficient and workmanlike manner all work required for "Reconstruction of Valley Road Bridge over Mashentuck Brook, Reconstruction of Valley Road Bridge over Whetstone Brook and Reconstruction of Bear Hill Road over Unnamed Brook" in strict accordance with the Contract Documents, including all Addenda, thereto, all as prepared by the Town of Killingly.

ARTICLE 2. The Contract Price. and The Town of Killingly will pay the Contractor for the performance of the Contract in current funds for the total quantities of work performed at the unit prices or lump sum prices stipulated in the Bid for the several respective items of work completed subject to additions and deductions as provided in the Contract Documents.

ARTICLE 3. The CONTRACTOR will commence the WORK required by the CONTRACT DOCUMENTS within ten (10) calendar days after the date of the NOTICE TO PROCEED. The WORK to be done under this Contract shall be fully completed within **Four Hundred and Twenty (420)** consecutive calendar days thereafter. The bidder must agree also to pay as liquidated damages, the sum of one thousand dollars (**$1,500.00)** for each consecutive calendar day thereafter, unless the period for completion is extended by the Town of Killingly.

ARTICLE 4. Contract. The executed contract documents shall consist of the following:

a. This Agreement
b. Addenda
c. Invitation for Bids
d. Instructions to Bidders
e. Signed Copy of Bid Form
f. Bid Bond
g. Certificate as to Corporate Principal
h. Form of Surety Guaranty
i. Statement of Bidder's Qualifications
j. Performance Bond and Payment Bond Forms
k. Acknowledgement of Surety Company
l. Non-Collusive Affidavit of Prime Bidder
m. Equal Employment Opportunity
n. Nondiscrimination, Service of Process, Listing All Employment Openings with the Office of the Connecticut State Employment Service
o. Schedule of Prevailing wages and Certificate Forms
p. General Conditions, Supplemental General Conditions, and Special Conditions
q. Special Provisions: Specific Amendments to Form 818

r. CDOT FORM 818, 2020
s. Drawings
t. Notice of Award

THIS AGREEMENT, together with other documents enumerated in this ARTICLE 4, which said other documents are as fully a part of the Contract as if thereto attached or herein repeated, form the Contract between the parties hereto. In the event that any provision in any component part of this Contract conflicts with any provision of any other component part, the provision of the component part first enumerated in this ARTICLE 4, shall govern, except as otherwise specifically stated.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed in four (4) original copies on the day and year first above written.

Attest:

_____
(Contractor)

_____ By: _____
(Name)

_____
(Title)

Attest: The Town of Killingly

By: _____
Mary Calorio, Town Manager
Town of Killingly

By: _____
Elizabeth Wilson, Town Clerk
Town of Killingly

Certification of Corporate Contractor

I, _____, certify that I am the _____ of the corporation named as Contractor herein; that _____ who signed this Agreement on behalf of the Contractor, was then _____ of said corporation; that said Agreement was duly signed for and on behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

Corporate Seal

_____ (Signature)

_____
(Corporation)

NON-COLLUSION AFFIDAVIT OF SUBCONTRACTOR

State of_____)

County of_____)

_____, being first duly sworn, deposes and says that:

1. He is_____of_____, hereinafter referred to as the Subcontractor;
2. He is fully informed respecting the preparation and contents of the Subcontractor's Proposal submitted by the Subcontractor to_____, the Contractor for certain work in connection with the_____Contract pertaining to the project in_____.
3. Such Subcontractor's Proposal is genuine and is not a collusive or sham Proposal:
4. Neither the Subcontractor nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Bidder, firm, or person to submit a collusive or sham Proposal in connection with such Contract, or has in any manner, directly or indirectly, sought by unlawful agreement or connivance with any other Bidder, firm, or person to fix the price or prices in said Subcontractor's Proposal, or to fix any overhead, profit or cost element of the price or prices in said Subcontractor's Proposal, or to secure through collusion, conspiracy, connivance or unlawful agreement any advantage against the (Owner), or any other person interested in the proposed Contract; and
5. The price or prices quoted in the Subcontractor's Proposal are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

_____
(Signature)

_____
(Title)

Subscribed and sworn to before me
this_____day of_____, 20 _____

_____

_____
(Title)

My commission expires: _____

CERTIFICATION OF PROPOSED SUBCONTRACTOR REGARDING EQUAL EMPLOYMENT OPPORTUNITY

Name of Prime Contractor Project Number

GENERAL

In accordance with Executive Order 11246 (30 F.R. 12319-25), the implementing rules and regulations thereof, and orders of the Secretary of Labor, a Certification regarding Equal Opportunity is required of bidders or prospective contractors and their proposed subcontractors prior to the award of contracts or subcontracts.

SUBCONTRACTOR'S CERTIFICATION

Subcontractor's Name:_____

Address:_____

Internal Revenue Service Employer Identification Number:_____

1. Participation in a previous contract or subcontract:

   A. Bidder has participated in a previous contract or subcontract subject to the Equal Opportunity Clause
   ☐Yes ☐ No

   B. Compliance reports were required to filed in connection with such contract or subcontract
   ☐Yes ☐No

   C. Subcontractor has filed all compliance reports required by Executive Orders 10925, 11114, 11246 or by regulations of the Equal Employment Opportunity Commission issued pursuant to Title VII of the Civil Rights Act of 1964 ☐Yes ☐No

   D. If answer to item C is ANo≅, please explain in detail on the reverse side of this certification.

2. Dollar amount of bid: $_____
3. Anticipated performance period_____days.
4. Expected total number of employees who will perform the proposed subcontract_____.
5. Non-segregated facilities

   A. Notice to Prospective Subcontractors or Requirement for Certification of Non-segregated Facilities:

      I. A Certification of Non-segregated Facilities, as required by the May 9, 1967, order (32 F.R. 7439, May 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted to the contractor prior to the award of a subcontract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity Clause.

      II. Contractors receiving subcontract awards exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause will be required to provide for the forwarding of this notice to prospective subcontractors for supplies and construction contracts where the subcontracts exceed $10,000 and are not exempt from the provisions of the Equal Opportunity clause:

B. Certification of Non-segregated Facilities

The federally-assisted construction contractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally-assisted construction contractor certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally-assisted construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term A segregated facilities≅ means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. The federally-assisted construction contractor agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications in duplicate from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain the duplicate of such certifications in his files. The contractor will include the original in his Bid Package.

6. Race or ethnic group designation of bidder. Enter race or ethnic group in the appropriate box:

☐ Black ☐ Spanish American ☐ Oriental ☐ American Indian

☐ Eskimo ☐ Aleut ☐ White (other than Spanish American)

☐ Portuguese

7. The construction subcontractor certifies that he is not affiliated in any manor with the Grantee/Borrower of the federally-assisted construction

Remarks: _____

_____

_____

_____

_____

_____

Certification: The information above is true and complete to the best of my knowledge and belief.

_____

Subcontractor's Name and Title of signer (please print)

_____ _____

Signature Date

Note: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

SUBCONTRACTOR'S CERTIFICATION
CONCERNING LABOR STANDARDS AND PREVAILING WAGE REQUIREMENTS

To (Department, Agency, or Bureau)	Date
c/o	Project Number
	Project Name

1. The undersigned, having executed a contract with_____ for_____ in the amount of $_____

   in the construction of the above-identified project, certifies that:

   a) The Labor Standards Provisions of The Contract For Construction are included in the aforesaid contract,

   b) Neither he nor any firm, corporation, partnership or association in which he has a substantial interest is designated as an ineligible contractor by the Comptroller General of the United States pursuant to Section 5.6(b) of the Regulations of the Secretary of Labor, Part 5 (29 CFR, Part 5), or pursuant to Section 3(a) of the Davis-Bacon Act, as amended (40 USC 276a-2(a)),

   c) No part of the aforementioned contract has been or will be subcontracted to any subcontractor if such subcontractor or any firm, corporation, partnership or association in which such subcontractor has a substantial interest is designated as an ineligible contractor pursuant to the aforesaid regulatory or statutory provisions.

2. He agrees to obtain and forward to the contractor, for transmittal to the recipient, within ten days after the execution of any lower subcontract, a Subcontractors Certification Concerning Labor Standards and Prevailing Wager Requirements, executed by the lower tier subcontractor, in duplicate.

   The workmen will report for duty on or about _____
   (date)

3. He certifies that:

   a) The legal name and the business address of the undersigned are:

   b) The undersigned is:

   (1) _____ A Single Proprietorship
   _____ A Partnership
   _____ A Corporation Organized in the State of _____
   _____ Other Organization (describe) _____

c) The name, title, and address of the owner, partners or officers of the undersigned are:

NAME	TITLE	ADDRESS

d) The names and addresses of all other persons, both natural and corporate, having a substantial interest in the undersigned, and the nature of the interest are (if none, so state):

NAME	TITLE	NATURE OF INTEREST

e) The names, addresses and trade classifications of all other building construction contractors in which the undersigned has a substantial interest are (if none, so state):

NAME	TITLE	TRADE CLASSIFICATION

Social Security No. or
Federal Employer I.D. No. _____

_____

(Contractor)

Date: _____ BY

_____

WARNING

U.S. Criminal Code, Section 1010, Title 18, U.S.C., provides in part: Whoever, makes, passes, utters or publishes any statement, knowing the same to be false...shall be fined no more than $5,000 or imprisoned not more than two years, or both.

Section VI
State Prevailing Wage Rates & Davis-Bacon Wage Rates

Section VII
Notice to Contractor and Technical Specifications

TOWN OF KILLINGLY

TECHNICAL SPECIFICATIONS

FOR

REPLACEMENT OF BRIDGE NO. 68-002
VALLEY ROAD OVER MASHENTUCK BROOK
State Project No. 9068-0002

REPLACEMENT OF BRIDGE NO. 68-003
VALLEY ROAD OVER WHETSTONE BROOK
State Project No. 9068-0003

REPLACEMENT OF BRIDGE NO. 68-009
BEAR HILL ROAD OVER UNNAMED BROOK
State Project No. 9068-0009

KILLINGLY, CONNECTICUT

November 15, 2022

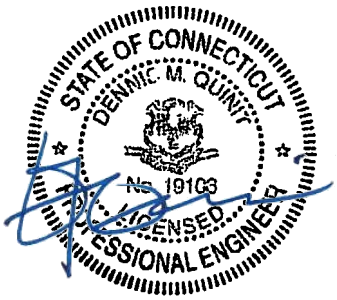

TABLE OF CONTENTS OF SPECIAL PROVISIONS

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.

TOWN OF KILLINGLY

REPLACEMENT OF BRIDGE NO. 68-002
State Project No. 9068-0002

REPLACEMENT OF BRIDGE NO. 68-003
State Project No. 9068-0003

REPLACEMENT OF BRIDGE NO. 68-009
State Project No. 9068-0009

KILLINGLY, CONNECTICUT

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0503890A – Removal of Existing Bridge (Site No. 1)
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0601088A – Concrete Form Liners
0601133A – 10’ x 7’ Precast Concrete Box Culvert
0601170A – 15’ x 6’ Precast Concrete Box Culvert
0601228A – 13’ x 8’ Precast Concrete Box Culvert
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1507000A – Protection and Support of Existing Utilities

Permits and/or Required Provisions

Geotechnical Reports

NOTICE TO CONTRACTOR - CONTRACT DURATION

The Contractor is hereby notified that this is not to be considered an ordinary project by any means and that due to the inconvenience to the traveling public that it causes, extra manpower, equipment and work shifts may be required to complete the work in accordance within the specified contract time.

NOTICE TO CONTRACTOR – BEST MANAGEMENT PRACTICES

In constructing or maintaining the construction activities for this project, the Contractor shall employ Best Management Practices to control storm water discharges and erosion and sedimentation and prevent pollution. Such practices to be implemented by the Contractor at the construction Sites include, but not necessarily limited to the following:

1. Prohibiting dumping of any quantity of oil, chemicals or other deleterious material on the ground.

2. Immediately informing the DEEP's Oil and Chemical Spill Section at (860) 424-3338 and the Engineer 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 of indirect result of the construction activities.

3. Separating staging areas at the Site from regulated areas by silt fences or haybales at all times.

4. Prohibiting storage of any fuel and refueling of equipment within 25 feet from any wetland or watercourse.

5. 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 Contractor with the Engineer for deficiencies at least once per week and immediately after each rainfall and at least daily during prolonged rainfall. The Contractor shall correct any such deficiencies to the Engineer within forty-eight (48) hours of said deficiencies being found.

6. Stabilizing disturbed soils in a timely fashion to minimize erosion. If a grading operation at the construction site will be suspended for a period of thirty (30) or more consecutive days, the Contractor 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 construction site the Contractor shall seed and mulch the soil involved in such grading operation or take such other appropriate measures to stabilize such soil until the final seeding and mulching can be accomplished.

7. Prohibiting the storage of any materials at the site that are buoyant, hazardous, flammable, explosive, soluble, expansive, and radioactive or that 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 Contractor must be firmly anchored, restrained or enclosed to prevent flotation. The quantity of fuel stored below such elevation for equipment used at the construction site shall not exceed the quantity of fuel that is expected to be used by such equipment in one day.

8. Immediately informing the District Environmental Coordinator and the Engineer 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 the Inland Wetland and Watercourse Permit. The District Environmental Coordinator shall, no later than 48 hours after the Engineer learns of a violation of the Permit, report the same in writing to the OEP Commissioner. Such report shall contain the information that is outlined in the Permit. The OEP Commissioner shall inform DEEP's Inland Water Resources Division (IWRD) 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 the Inland Wetland and Watercourse Permit.

There will be no direct payment for the above conditions but the cost shall be included in the general cost of the contract.

NOTICE TO CONTRACTOR – NCHRP REPORT 350 REQUIREMENTS FOR WORK ZONE TRAFFIC CONTROL DEVICES

Category 1 Devices (traffic cones, traffic drums, tubular markers, flexible delineator posts)

Prior to using the Category 1 Devices on the project, the Town shall submit to the Engineer a copy of the manufacturer's self-certification that the devices conform to NCHRP Report 350.

Category 2 Devices (construction barricades, construction signs and portable sign supports)

Prior to using Category 2 Devices on the project, the Town shall submit to the Engineer a copy of the Letter of Acceptance issued by the FHWA to the manufacturer documenting that the devices (both sign and portable support tested together) conform to NHRP Report 350 (TL-3).

Specific requirements for these devices are included in the Special Provisions.

Information regarding NCHRP Report 350 devices may be found at the following web sites:

FHWA: http://safety.fhwa.dot.gov/fourthlevel/pro_res_road_nchrp350.htm

ATSSA: http://www.atssa.com/nchrp350.htm

Note: The portable wooden sign supports that have been traditionally used by most contractors in the State of Connecticut do NOT meet NCHRP Report 350 criteria and shall not be utilized on any project advertised after October 1, 2000.

Category 3 Devices (Truck-Mounted Attenuators & Work Zone Crash Cushions)

Prior to using Category 3 Devices on the project, the Town shall submit to the Engineer a copy of the Letter of Acceptance issued by the FHWA to the Manufacturer documenting that the devices conform to NCHRP Report 350.

NOTICE TO CONTRACTOR – SITE NUMBERS

The proposed work on bridge structures and culverts included in this contract are assigned the following site designations:

- Site No. 1 – Bridge No. 68-002: Valley Road over Mashentuk Brook
- Site No. 2 – Bridge No. 68-003: Valley Road over Whetstone Brook
- Site No. 3 – Bridge No. 68-009: Bear Hill Road over Unnamed Brook

NOTICE TO CONTRACTOR – SITE CLEANLINESS

The Contractor is hereby notified that all areas utilized for construction activities including all onsite and offsite facilities shall be maintained so as to be free of rubbish, trash and deleterious construction debris at all times. The use of covered and secured trash receptacles is required. All receptacles will be regularly emptied and maintained.

There will be no direct payment for maintaining the site cleanliness of the construction areas under the contract.

NOTICE TO CONTRACTOR – CONTRACTOR'S MAINTENANCE RESPONSIBILITY DURING CONSTRUCTION DURATION

The Contractor is hereby notified that the construction area will be maintained by the contractor throughout the duration of the project and will include all maintenance responsibilities with the exception of snow removal. There will be no payment for maintaining the construction area by the Contractor. The cost shall be included in the general cost of the project.

NOTICE TO CONTRACTOR – PROTECTION OF WATERWAY

The Contractor's operations shall conform to the following general conditions:

1) Positive means shall be taken to prevent any debris, tools, or construction material from entering the waterway.

2) During the progress of work, should any material, machinery or equipment be lost, dumped, thrown overboard, or sunk so as to obstruct, interfere with or hazard navigation, immediate notice shall be given to the Water Resources Unit of the Connecticut Department of Energy and Environmental Protection (CTDEEP) at 860-566-7220, and the object removed immediately. Until removal can be affected, the obstruction shall be properly marked in order to protect navigation. Notice to the Water Resources Unit shall give a description and location of any such object and the action taken to protect navigation.

3) Spillage of oil and hazardous substances is specifically prohibited by Section 311 of the Federal Water Pollution Control Act of 1972, as amended. Measures should be taken including: (1) proper maintenance of construction equipment, (2) arrangement of fuel/hazardous substances handling areas so as to ensure that any spills are contained before reaching navigable waterways or their adjoining shorelines, (3) instructions to personnel not to dispose of oil/hazardous substances into drains or the navigable waterways directly or onto adjoining shorelines, and (4) any other procedures to prohibit spillage. If in spite of such planning oil/hazardous substances are spilled into a navigable waterway or adjoining shoreline, the CTDEEP is to be notified immediately at 860-566-4924. A supply of an absorbent material should be retained so that it may be rapidly deployed to soak up any possible spillage, pending CTDEEP arrival on scene. The use of chemical dispersing agents and emulsifiers is not authorized without prior, specific CTDEEP approval.

NOTICE TO CONTRACTOR – VERIFICATION OF PLAN DIMENSIONS AND FIELD MEASUREMENTS

The Contractor is responsible for verifying all dimensions before any work is begun. Dimensions of the existing structures shown on the plans are for general reference only; they are not guaranteed. The Contractor shall take all field measurements necessary to assure proper fit of the finished work and shall assume full responsibility for their accuracy. When shop drawings and/or working drawings based on field measurements are submitted for approval and/or review, the field measurements shall also be submitted for reference by the reviewer.

In the field, the Contractor shall examine and verify all existing and given conditions and dimensions with those shown on the plans. If field conditions and dimensions differ from those shown on the plans, the Contractor shall use the field conditions and dimensions and make the appropriate changes to those shown on the plans as approved by the Engineer. All field conditions and dimensions shall be so noted on the drawings submitted for approval.

There shall be no claim made against the Town by the Contractor for work pertaining to modifications required by any difference between actual field conditions and those shown by the details and dimensions on the contract plans. The Contractor will be paid at the unit price bid for the actual quantities of materials used or for the work performed, as indicated by the various items in the contract.

NOTICE TO CONTRACTOR – VERIFICATION OF EXISTING CONDITIONS

Included in this contract is the reconstruction, modification, alteration, and/or addition to existing structures. The Contractor is cautioned that it is their responsibility to verify locations, conditions, and field dimensions of all existing features as actual conditions may vary from information shown on the design plans, the record plans or contained elsewhere in the Specifications.

The cost for this work and incorporation of information into the working drawings and shop drawings is part of the general cost of the work. Accordingly, no additional payment will be made for this work.

NOTICE TO CONTRACTOR - UTILITY SPECIFICATIONS

The contractor is hereby notified that all utility specifications contained elsewhere herein shall be made a part of this contract, and that the contractor shall be bound to comply with all requirements of such specifications. The requirements and conditions set forth in the subject specifications shall be binding on the contractor just as any other specification would be.

NOTICE TO CONTRACTOR – COORDINATION WITH UTILITY COMPANIES AND RELOCATION OF EXISTING UTILITIES

Existing utilities shall be maintained during construction operations. The Contractor shall verify the location of underground and overhead utilities and shall verify the conditions and field dimensions of all existing features as actual conditions may differ from the information shown on the plans or contained elsewhere in the specifications. Construction work within the vicinity of utilities shall be in accordance with current safety regulations.

Utility relocation work, by others, is required within the project limits. The Contractor shall schedule their operations in such a manner as to minimize interferences with utility relocation/protection activities. There are utility relocations for aerial utilities. The proposed pole relocations are shown on the roadway plan for information purposes only and are subject to change.

The contractor is hereby notified that the utility work schedules will have to be accommodated prior to proceeding. The Contractor shall coordinate with utility companies to accommodate their schedule with all utility company schedules. This includes, but is not limited to, providing access staging, and sequencing prior to proceeding. Any inconvenience or delay that may result from utility company work shall be included in the contract bid for the work. The work to repair or replace any damage to utilities caused by the Contractor's operations will be solely at the Contractor's expense, in accordance with Form 818, Section 1.07. The Contractor shall consider in their bid any inconvenience and work required to meet these conditions.

As required by State Law, the Contractor shall contact "Call Before You Dig." Telephone 1-800-922-4455 for the location of public underground facilities in accordance with Section 16-345 of the Regulations of the Department of Public Utility Control. The underground activities should be clearly delineated within all areas of proposed excavation prior to performing actual excavation. The notification of "Call Before You Dig" must be made at least 48 hours in advance.

Site No. 1: Bridge No. 68-002 – Valley Road over Mashentuck Brook

Overhead Utilities: A utility pole located on the south side of the road and southeasterly of the existing bridge shall be relocated further east beyond the limits of the proposed metal beam rail.

Subterranean Utilities: A subterranean water main traverses south of the proposed structure. Its location has been marked but no information on its depth is available. The Contractor shall perform a test pit to determine its depth and evaluate whether it will be impacted and/or impede with its operations. Consequently, the Contractor shall be responsible for the protection of this facility should its operation impact the facility and/or that the Connecticut Water Company (CT Water) deem it necessary.

Site No. 2: Bridge No. 68-003 – Valley Road over Whetstone Brook

Overhead Utilities: Due to the layout and complexity of relocating the overhead utilities at this Site, and without knowledge of the Contractor's means and methods and sequence of construction to demolish and replace the bridge, utility relocation cannot be determined beforehand. Therefore,

it is the Contractor's responsibility to coordinate with the utility companies providing service in this area to determine and develop a utility relocation and/or utility protection plan that conforms to the Contractor's means and methods and sequence of operation.

Subterranean Utilities: The Connecticut Water Company (CT Water) has an abandoned 10" cast iron pipe (CIP) along the north side of the bridge. This pipe has not been located; therefore, the Contractor shall verify its location to determine whether it impedes with its operation. This pipe can be removed if and as the Contractor finds it necessary and shall coordinate with CT Water accordingly.

Site No. 2: Bridge No. 68-003 – Valley Road over Whetstone Brook

Overhead Utilities: Overhead utility lines traverse diagonally over the road and directly above the proposed structure, which could restrict the Contractor's ability to excavate and erect the proposed concrete box culvert. Accordingly, the utility pole located on the northeast corner of the project limits will be relocated northwest of the project limits, further north and to the other side of the street, in order to relocate the overhead utility lines along the west side of Bear Hill Road.

NOTICE TO CONTRACTOR – PROTECTION OF EXISTING UTILITIES

The Contractor's attention is directed to the need for the protection of the existing utilities during the bridge reconstruction operations.

The Contractor shall be responsible for protecting existing utilities prior to and during construction operations. The Contractor shall be responsible for coordinating with utility companies providing services in the area for appropriate manner of protecting the utilities. A 10-foot minimum clearance is required from any unprotected overhead lines. The Contractor may and shall adjust its means and methods in order to conform to this requirement at no additional cost to the Town.

The Contractor shall be liable for damages and/or claims received or sustained by any persons, corporations, or property in consequence of damage to the existing utilities, their appurtenances, or other facilities caused directly or indirectly by the operations of the Contractor.

Damages to existing utilities shall be repaired including all materials, labor, etc., to the Engineer's satisfaction at no cost to the Town and/or to the utility companies.

NOTICE TO CONTRACTOR – UTILITY GENERATED SCHEDULE

After award, the Contractor shall conduct a utility coordination meeting(s) with utility companies providing services in the area to obtain the utility companies' anticipated schedule for relocating their facilities prior to submitting its baseline schedule to the Town.

The Contractor shall incorporate the scheduled utility relocation or utility relocation duration into its baseline schedule submittal. The baseline schedule shall include the predecessor and successor activities and construction operations to the utility work in such detail as acceptable to the Engineer.

NOTICE TO CONTRACTOR – PROCUREMENT OF MATERIALS

Upon award, the Contractor shall proceed with shop drawings, working drawings, procurement of materials, and all other submittals required to complete the work in accordance with the contract documents.

NOTICE TO CONTRACTOR – MINIMUM CONCRETE COMPRESSIVE STRENGTH

The concrete strength or allowable design stress specified in the General Notes is for design purposes only. The minimum compressive strength of concrete in constructed components shall comply with the requirements of Section 6.01 – Concrete for Structures.

NOTICE TO CONTRACTOR – MINIMUM CONCRETE COMPRESSIVE STRENGTH

SECTIONS 6.01 and M.03 MIX CLASSIFICATION EQUIVALENCY

Sections 6.01 *Concrete for Structures* and M.03 *Portland Cement Concrete* are herein revised to reflect changes to item names and nomenclature for standard Portland Cement Concrete (PCC) mix classifications. Other Special Provisions, standard specifications, plan sheets and select pay items in this Contract may not reflect this change. Refer to Concrete Mix Classifications Equivalency Table below to associate the Concrete Mix Classifications with Former Mix Classifications that may be present elsewhere in the Contract.

Concrete Mix Classification Equivalency Table

New Mix Classification (Class PCCXXXYX1)	Former Mix Classification
Class PCC03340	Class "A"
Class PCC03360	Class "C"
Class PCC04460[2]	Class "F"
Class PCC04460[2]	High Performance Concrete
Class PCC04481 Class PCC05581	Class "S"

Table Note:

1. See Table M.03.02-1, Standard Portland Cement Concrete Mixes, for the new Mix Classification naming convention.
2. Class PCC04462 (low permeability concrete) is to be used for the following cast-in-place bridge components: decks, bridge sidewalks, and bridge parapets.

Where called for in the Contract, **Low Permeability Concrete** shall be used as specified in Sections 6.01 and M.03. Please pay special attention to the requirements for Class PCC04462, including:

- Submittal of a mix design developed by the Contractor and a concrete supplier **at least 90 days prior to placing the concrete**.
- Testing and trial placement of the concrete mix to be developed and discussed with the Town.

The Town will not consider any request for change to eliminate the use of Low Permeability Concrete where called for on this Project.

NOTICE TO CONTRACTOR - SECTION 4.06 AND M.04 MIX DESIGNATION EQUIVALENCY AND PG BINDER EQUIVALENCY

Sections 4.06 and M.04 have been replaced in their entirety with the Special Provisions included as part of this contract. These Special Provisions reflect changes in mix designations for various types of hot-mix asphalt (HMA) and include the removal of mixes designed and governed by the Marshall Mix Design method. The following table is to be used to associate mix designations noted on the plans with those in the contract specifications and related documents. Mix designations on each row are equivalent and refer to a single mix, which shall be subject to the requirements of the Section 4.06 and M.04 Special Provisions for the Official Mix Designation in the leftmost column of the corresponding row in the table.

Mix Designation Equivalency Table

Official Mix Designation	Equivalent Mix Designation (a)	Equivalent Mix Designation (b)
(c)	Superpave 1.5 inch	Superpave 37.5 mm
HMA S1	Superpave 1.0 inch	Superpave 25.0 mm
HMA S0.5	Superpave 0.5 inch	Superpave 12.5 mm
HMA S0.375	Superpave 0.375 inch	Superpave 9.5 mm
HMA S0.25	Superpave 0.25 inch	Superpave 6.25 mm
(c)	Superpave #4	Superpave #4
HMA S0.5 (d)	Bituminous Concrete Class 1 **(e)**	Bituminous Concrete Class 1 **(e)**
HMA S0.375 (d)	Bituminous Concrete Class 2 where it is specified in lifts 1.25 or thicker **(e)**	Bituminous Concrete Class 2 where it is specified in lifts 1.25 or thicker **(e)**
HMA S0.25 (d)	Bituminous Concrete Class 2 where it is specified in lifts 1.0 inches to less than 1.25 inches **(e)**; Bituminous Concrete Class 12 **(e)**	Bituminous Concrete Class 2 where it is specified in lifts 1.0 inches to less than 1.25 inches **(e)**; Bituminous Concrete Class 12 **(e)**
HMA S1 (d)	Bituminous Concrete Class 4 **(e)**	Bituminous Concrete Class 4 **(e)**
Curb Mix	Bituminous Concrete Class 3	Bituminous Concrete Class 3

Notes

(a) This mix designation is generally included with projects where the English measurement system is used. The mix designation may contain both the English measurement system

designation and the SI (metric) measurement system designation, one of which would be in parenthesis.

(b) This mix designation is generally included with projects where the SI (metric) measurement system is used. The mix designation may contain both the English measurement system designation and the SI measurement system designation, one of which would be in parenthesis.

(c) This mix is no longer in use except by contract-specific Special Provision; if this mix is called for in the Plans but no such Special Provision is included for this contract a suitable substitute must be approved by the Engineer.

(d) Unless approved by the Engineer, the Superpave Design Level for the Official Mix Designation bituminous concrete replacing a Marshall mix called for in the plans or other contract documents shall be Design Level 2 for mixes used on mainline or shoulders of state-maintained roadways and Design Level 1 elsewhere, including but not limited to driveways or sidewalks.

(e) All mixes designed under the Marshall mix-design method are no longer covered by the 4.06 Special Provision. Wherever they appear in Contract plans and documents they shall be substituted by the "Official Mix Designation" in the same row of the Mix Designation Equivalency Table. Unless approved by the Engineer, the Superpave Design Level shall be Level 1.

PG Binder Designation Equivalency Table

Official Binder Designation	Equivalent Binder Designation	Use
PG 64S-22	PG 64-22	Hot-Mix Asphalt (HMA S* pay items and pay items using HMA S* materials)**(a),(b)**
PG 64E-22	PG 76-22	Polymer-Modified Asphalt (PMA S* pay items and pay items using HMA S* materials)**(a),(b)**

Notes

(a) Use the Mix Designation Equivalency Table above to identify the Official Mix Designation for materials using the Marshall mix design method, i.e. "Bituminous Concrete Class *."

(b) Refer to the NTC – Superpave Design Level for the Superpave Design Level to use for each mix on a project. The PG Binder Designation Equivalency Table can be used to obtain the Official Binder Designation for each mix identified in the NTC – Superpave Design Level.

NOTICE TO CONTRACTOR – ACCESS TO PRIVATE PROPERTIES

The Contractor shall maintain access to private properties adjacent to and within the project limits unless specified otherwise within these contract documents. The Contractor is responsible for coordinating with the property owners, through the Town, for the scheduling of work and access.

Access to and from private properties shall be maintained at all times. As shown on the contract plans and property maps prepared for this project, easements are obtained on portions of adjacent properties for the purposes of staging equipment, tools and materials and other construction operations called for on the plans.

Should a temporary driveway closure be required, the Contractor shall make every effort to minimize driveway closure durations. The work requiring driveway closures shall be coordinated with affected property owners and shall provide a 30-day notice to the property owners and to the Town prior to initiating driveway closures.

SECTION 1.05 – CONTROL OF THE WORK

Replace Article 1.05.02 *with the following:*

1.05.02—Contractor Submittals, Working Drawings, Shop Drawings, Product Data, Submittal Preparation and Processing - Review Timeframes, Department's Action:

1. **Contractor Submittals:** The plans provided by the Town show the details necessary to give a comprehensive idea of the construction contemplated under the Contract. The plans will generally show the location, character, dimensions, and details necessary to complete the Project. If the plans do not show complete details, they will show the necessary dimensions and details, which when used along with the other Contract documents, will enable the Contractor to prepare working drawings, shop drawings or product data necessary to complete the Project.

   The Contractor shall prepare submittals as Portable Document Format (PDF) files. The submittals shall be sent to the Town's reviewer(s), sufficiently in advance of the work detailed, to allow for their review in accordance with the review periods as specified herein (including any necessary revisions, resubmittal, and final review), and acquisition of materials, without causing delay of the Project.

2. **Working Drawings:** When required by the Contract or when ordered to do so by the Engineer, the Contractor shall prepare and submit the working drawings, signed, sealed and dated by a qualified Professional Engineer licensed to practice in the State of Connecticut, for review. The drawings shall be delivered sufficiently in advance of the work detailed, to allow for their review in accordance with the review periods specified herein (including any necessary revisions, resubmittal, and final review).

   There will be no direct payment for furnishing any working drawings, procedures or supporting calculations, but the cost thereof shall be considered as included in the general cost of the work.

   The Contractor shall supply to the Engineer a certificate of insurance in accordance with 1.03.07 at the time that the working drawings for the Project are submitted.

   The Contractor's designer, who prepares the working drawings, shall secure and maintain at no direct cost to the State a Professional Liability Insurance Policy for errors and omissions in the minimum amount of $2,000,000 per error or omission. The Contractor's designer may elect to obtain a policy containing a maximum $250,000 deductible clause, but if the Contractor's designer should obtain a policy containing such a clause, they shall be liable to the extent of at least the deductible amount. The Contractor's designer shall obtain the appropriate and proper endorsement of its Professional Liability Policy to cover the indemnification clause in this Contract, as the same relates to negligent acts, errors or omissions in the Project work performed by them. The Contractor's designer shall continue this liability insurance coverage for a period of three (3) years from the date of acceptance of

the work by the Engineer or three (3) years after the termination of Contract, whichever is earlier, subject to the commercial availability of such insurance.

3. **Shop Drawings:** When required by the Contract, or when ordered to do so by the Engineer, the Contractor shall prepare and deliver shop drawings to the Engineer for review. Review timeframes and submission locations are as specified herein.

   There will be no direct payment for furnishing any shop drawings, but the cost thereof shall be considered as included in the general cost of the work.

4. **Product Data:** When required by the Contract, or when ordered to do so by the Engineer, the Contractor shall prepare and deliver product data.

   The Contractor shall submit the product data in a single submittal for each element or group of elements of construction.

   The Contractor shall mark each copy of the product data submittal to show applicable choices and options. Where product data includes information on several products that are not required, copies shall be marked to indicate the applicable information. Product data shall include the following information and confirmation of conformance with the Contract to the extent applicable: manufacturer's printed recommendations, compliance with recognized trade association standards, compliance with recognized testing agency standards, application of testing agency labels and seals, notation of coordination requirements, Contract item number, and any other information required by the individual Contract provisions.

   There will be no direct payment for furnishing any product data, but the cost thereof shall be considered as included in the general cost of the work.

5. **Submittal Preparation and Processing – Review Timeframes:** The Contractor shall allow 30 calendar days for submittal review by the Town and the Engineer, from the date receipt is acknowledged by the Town and the Engineer. For any submittals marked with "Revise and Resubmit" or "Rejected," the Town and the Engineer are is allowed an additional 20 calendar days for review of any resubmissions.

   An extension of Contract time will not be authorized due to the Contractor's failure to transmit submittals in a timely manner and sufficiently in advance of the work to permit processing.

   The furnishing of shop drawings, working drawings or product data, or any comments or suggestions by the Designer or Engineer concerning shop drawings, working drawings or product data, shall not relieve the Contractor of any of its responsibility for claims by the State or by third parties, as per 1.07.10.

   The furnishing of the shop drawings, working drawings and product data shall not serve to relieve the Contractor of any part of its responsibility for the safety or the successful

completion of the Project construction.

6. **Designer's Action:** The Designer or Engineer will review each submittal, mark each with a self-explanatory action stamp, and return the stamped submittal promptly to the Contractor. The Contractor shall not proceed with the part of the Project covered by the submittal until the submittal is marked "No Exceptions Noted" or "Exceptions as Noted" by the Designer or Engineer. The Contractor shall retain sole responsibility for compliance with all Contract requirements. The stamp will be marked as follows to indicate the action taken:

   a. If submittals are marked "No Exceptions Noted," the Designer or Engineer has not observed any statement or feature that appears to deviate from the Contract requirements. This disposition is contingent on being able to execute any manufacturer's written warranty in compliance with the Contract provisions.

   b. If submittals are marked "Exceptions as Noted" the considerations or changes noted by the Designer's Action are necessary for the submittal to comply with Contract requirements. The Contractor shall review the required changes and inform the Designer or Engineer if they feel the changes violate a provision of the Contract or would lessen the warranty coverage.

   c. If submittals are marked "Revise and Resubmit," the Contractor shall revise the submittals to address the deficiencies or provide additional information as noted by the Designer or Engineer. The Contractor shall allow an additional review period as specified in 1.05.02-5.

   d. If submittals are marked "Rejected," the Contractor shall prepare and submit a new submittal in accordance with the Designer's or Engineer's notations. The resubmissions require an additional review and determination by the Designer or Engineer. The Contractor shall allow an additional review period as specified in 1.05.02-5.

Section 1.07 – LEGAL RELATIONS AND RESPONSIBILITIES

1.07.13 – Contractor's Responsibility for Adjacent Property, Facilities and Services: *This article is supplemented as follows:*

The Contractor shall contact the following companies and their representatives to at least four (4) weeks prior to start of on-site construction operations to coordinate protection, temporary support, and/or relocation of their utilities.

Utility	Contact
Atlantic Broadband	Mr. Mark Giannattasio Construction Supervisor 61 Myrock Ave Waterford, CT 06385 (860) 629-6778 mgiannattasio@atlanticbb.com Mr. Rick Daigle (860) 625-5761 rdaigle@atlanticbb.com
Frontier	James Tourgee 1441 North Colony Rd Meriden, CT 06450-4101 (203) 237-5517 James.tourgee@ftr.com
Eversource (Electric Distribution)	Ms. Irene R. Debernardo Supervisor Field Engineering Design 63R Myrock Ave Waterford, CT 06385 (860) 447-5713 irene.debernardo@eversource.com Mr. Richard Arremony richard.arremony@eversource.com Mr. Scott Cormier (860) 779-5680 scott.cormier@eversource.com

The Connecticut Water Company	Mr. Christopher Wojciak, PE Infrastructure Rehabilitation Supervisor 446 Smith St Middletown, CT 06457 (860) 292-2840 cwojciak@ctwater.com Mr. Sean Smith (203) 499-8901 stmith@ctwater.com
Emergency Responder – Fire Department	Mr. Randy Burchard Fire Marshall 172 Main St Killingly, CT 06239 (860) 779-5318 rburchard@killinglyct.gov

Representatives of the various utility companies shall be allowed access to the project Sites at all times.

The Contractor shall be liable for damages and/or claims received or sustained by any persons, entities or properties in consequence of damages to the existing utilities, their appurtenances or other facilities caused directly or indirectly by the Contractor's operations.

SECTION 1.08 - PROSECUTION AND PROGRESS

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 that will interfere with the described traffic operations on all project roadways as follows:

Valley Road and Bear Hill Road

Monday through Friday between 6:00 a.m. and 9:00 a.m. & between 3:00 p.m. and 6:00 p.m.
Saturday and Sunday between 10:00 a.m. and 6:00 p.m.

During the bridge replacement, the Contractor will be allowed to close Valley Road and Bear Hill Road and detour traffic in accordance with the Detour Plan. **Both Valley Road bridges (Site 1 and Site 2), shall not be closed simultaneously for construction.** The length of the detour operation shall not exceed 60 days. Once the detour starts, the contractor shall continue working until the work is done to minimize duration of detour.

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.
Saturday and Sunday between 10:00 a.m. and 6:00 p.m.

Additional Lane Closure Restrictions

The Contractor shall be aware of adjacent projects, if any, that might be ongoing simultaneously with this project. If and as necessary, the Contractor shall anticipate coordination with those projects 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 (1) mile clear area length where the entire roadway is open to traffic, or the closures and detours have been coordinated and are acceptable to the Town Engineer. The one (1) 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.

It is anticipated that work on both Valley Road projects will not be performed simultaneously with this project.

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

Description: Work under this item shall consist of excavating existing channel bottom material in areas where the channel bottom is to be re-graded or disturbed to create a work area for box culvert placement and cofferdam installation. This item shall also include stockpiling and protecting the excavated material on the project site, subsequent placement of the stockpiled material in the channel, removal, and proper off-site disposal of all unused material.

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

Rock excavated from ledge (bedrock) formations, or broken from larger boulders, will not be allowed for reuse. Broken concrete will not be allowed for reuse.

If an insufficient quantity of material is available from the existing channel bottom at this site, the Contractor shall furnish supplemental material meeting the approval of the Office of Environmental Planning (OEP) from other sources within the project limits, or from another approved source. Material the Contractor proposes to bring to the Site from another source must be inspected and approved by the OEP at the source prior to the excavation or hauling of the material. A minimum notice of 2 weeks must be given to the OEP for inspection and approval.

Bank run gravel, if approved for use as supplemental material, shall be uncrushed, conforming to the requirements of M.02.02-1 of the State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction Form 817.

Construction Methods: The Contractor shall prepare an area, approved by the Engineer, suitable in size and location for storing the excavated channel bottom material, so that it will not be contaminated, mixed with other excavated material or erode. Select a location where disruption to the channel and wetland areas caused by moving the excavated material to and from the stockpile is minimized. Locate the stockpile where it can remain undisturbed for the duration of the culvert construction. Identify the temporary stockpile area(s) prior to the start of excavation for approval by the Engineer.

Prepare a clean surface for the stockpile adequate to prevent mixing with the underlying soil or other material. Provide adequate measures to contain the stockpiled material and protect it from erosion by rain or other forces. Store material excavated from the existing channel bottom separately from other excavated materials until it may be reused or disposed of, as directed by the Engineer. Do not add any other excavated or imported material to the stockpile of channel bottom material.

After clearing and grubbing, the Engineer will identify the limits of exposed channel bottom material to be excavated under this item. Only areas within the limits of channel to be re-graded or disturbed to create a work area for the culvert or bridge or articulate concrete block placement and cofferdam placement will be identified for excavation. As much material as possible, will be

identified for this excavation. The Engineer will identify the bottom limit of the excavation based on the qualities of the material encountered. Do not in any case excavate below the depth otherwise required for culvert and cofferdams, including any unsuitable material excavation. Perform the excavation separately prior to beginning any other roadway, structure, channel, or unsuitable material excavation in the area.

The Contractor shall perform all containment, diversion, or other separation of the channel flow from the excavation of channel bottom material in accordance with the requirements of "Handling Water".

Complete all stages of the culvert construction and cofferdam installation to the satisfaction of the Engineer before placing any existing channel bottom material. Notify the OEP at least ten (10) days prior to initiating the placement of channel bottom material in the channel. Any and all coordination with the Department of Energy and Environmental Protection (DEEP) will be done through the OEP.

Place the channel bottom material to the thickness and in the locations shown on the plans, and as directed by the Engineer or OEP. Use equipment and placement techniques that will prevent integration with the surrounding material and keep the channel bottom material relatively homogeneous. Place the channel material in a manner that replicates the original condition of the channel, with a well-defined low flow channel connecting to the existing channel.

Place or dispose of any surplus or unsuitable material in accordance with Section 2.02. Restore the stockpile area as directed by the Engineer.

All material not identified for excavation in accordance with this specification shall be excavated, as required for other contract work, in accordance with Section 2.02.

Method of Measurement: Work under this item will be measured for payment by the actual number of cubic yards of channel bottom material excavated and stockpiled in accordance with this specification. The Engineer will delineate the horizontal pay limits before the start of excavation. The vertical pay limits will be measured from the existing channel bottom to the bottom of the excavation required specifically for the stockpiling of existing channel bottom material.

Material excavated beyond the approved horizontal pay limits, or deeper that the depth of channel bottom material identified and approved by the Engineer will not be measured for payment under this item. Such additional excavation required to complete the contract work, including roadway, structure, channel, and unsuitable material excavation, will be measured for payment separately under the applicable pay items. In no case will excavated material be measured for payment under more than one pay item.

The storage, re-excavation, placement and/or disposal of the channel bottom material will not be measured for payment.

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, tools and labor incidental to the preparation of the stockpile area, excavation of channel bottom, hauling of the material to the stockpile area, storing, protecting, and final placement of the excavated channel bottom material. The price shall also include the removal and placement or disposal of surplus or unsuitable excavated material.

If bank run gravel is required and approved for use as supplemental material at the site, furnishing and placing the bank run gravel will be paid for as extra work, in accordance with Article 1.04.05.

Payment for all containment, diversion, or other separation of the stream flow from the excavation of channel bottom material will be included in the item "Handling Water" or “Cofferdam and Dewatering”.

Payment for clearing and grubbing will be included in the item “Clearing and Grubbing”.

Excavation of material not identified by the Engineer for stockpiling and re-use in accordance with this specification will be paid in accordance with Section 2.02.

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 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 work shall also include necessary temporary protection and stockpiling of supplemental streambed channel material on the Site and removal and proper disposal of all unused material.

Materials: When a sufficient quantity of material is not available from the existing streambed channel within the permitted footprint of the Site, the Contractor shall furnish visually inspected and accepted supplemental streambed channel material from an off-site source.

The supplemental streambed channel 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 ledge (bedrock) formations, broken from larger boulders, broken concrete or angular material will not be accepted. Rock larger than 12 inches in diameter will not be accepted. Silts and clays will be accepted.

The visual inspection of the supplemental streambed channel material shall be performed by the Engineer at an off-site source prior to delivery of material to the Site. The Contractor shall notify the Engineer at least 10 days in advance of the need for inspection of proposed off-site material.

Construction Methods: 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 channel 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 channel material to and from the stockpile are minimized during 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 clear and cleaned adequately to prevent mixing with underlying soil or other materials, including the use of structural fabric if required. The stockpile area shall be adequately covered to protect the supplemental streambed channel material from erosion by rain or other forces. After the supplemental streambed channel bottom material and the excavated channel bottom material to be reused have been placed in the stockpile areas, no other excavated or off-site material shall be placed in the stockpiles.

The reused and supplemental streambed channel material shall be placed at the designated location(s) to the required thickness as shown on the plans or denoted on the permit application, or as directed by the Engineer. The Contractor's equipment and means and methods of placement shall prevent integration with surrounding material and shall keep the channel bottom material relatively homogenous. Reused and supplemental streambed channel material shall be placed in a manner that replicated the original condition of the channel prior to excavation.

The Contractor shall perform all containment, diversion, or other separation of the channel flow when placing the reused and supplemental streambed channel material to minimize sediment transport downstream.

The disposal of surplus or unsuitable material shall be in accordance with Section 2.02. Restore stockpile area as directed by the Engineer.

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 the itemized proposal as "Estimated Cost" for this work will be considered the price bid even though payment will be made only for the 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: This work will be paid for under Article 1.09.04 – Extra and Cost-Plus Work.

The 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 "Excavation and Reused of Existing Channel Bottom Material."

Payment for all containment, diversion, or other separation of stream flow from the excavation of channel material will be included in the item "Cofferdam and Dewatering" or the item "Handling Water (Site No. X)."

Pay Item	Pay Unit
Supplemental Streambed Channel Material	est.

ITEM #0202454A – SPECIAL TEST PIT – WATER MAIN

Description: Work under this item shall consist of the performance and completion of test pits for the purpose of locating an existing water main and to identify the occurrence, location, and dimensions of existing subsurface structures. Work under this section shall also include excavation, inspection, measurements of the pipe, and backfilling. Measurements of the pipe shall include but are not limited to depth from ground surface and from channel bed to top of pipe, pipe size, and type of pipe.

Work under this section shall also include but not limited to:

- furnishing, installing, operating, and maintaining temporary cofferdam and dewatering system required to perform the test pit within the channel;
- water handling system for test pit within the channel;
- furnishing, installing, and removal of support of excavation, if and as required; and
- backfilling and compaction of excavation.

Materials: Material to be used for backfilling test pits within the channel shall consists of natural streambed channel material as specified in these specifications. Excavated channel bottom material shall be reused as specified in these specifications.

If, in the opinion of the representative of The Connecticut Water Company (CT Water), the excavated material is unsuitable for backfill, it shall be removed and disposed of to such limits as directed by the CT Water Representative and a suitable backfill material conforming to the Standard Specifications shall be furnished and installed accordingly.

Construction Methods: Test pits shall be made in conformity with the requirements of the plans or as ordered by the Engineer. The Contractor shall furnish and employ such supports of excavation as may be necessary for the protection of property and adjacent facilities, and proper and safe completion of the work. All bracing and supports of excavation shall be removed after completion and backfill of the test pits, and when no longer required for the construction and safety of the work.

The Contractor shall design, furnish, and install temporary cofferdam, dewatering, and water handling systems required for the performance and completion of test pits within the limits of the channel. Water handling systems shall conform to hydraulic requirements as shown on the water handling plans. Dewatering operations and measures shall conform to dewatering requirements and provisions as specified within these specifications. Turbidity curtains shall be installed alongside and in conjunction with the temporary cofferdam. Sedimentation basins shall be installed in conjunction with the dewatering system.

The Contractor shall perform field surveys to establish the horizontal and vertical locations of the water main. The work shall be performed in accordance with the requirements of Section 9.80, Construction Staking. The Contractor shall furnish the Engineer copies of all test pit data.

All suitable material that was excavated during the performance of the test pit shall be used for backfilling, if required. All surplus or unsuitable material shall be removed and disposed of as directed by the Engineer. Should additional material be required for backfilling, it may be obtained from the Project's excavation or from borrow pits, gravel pits, or elsewhere as the Engineer may direct. Excavated channel bottom material shall be reused for backfilling test pits performed within the channel.

Method of Measurement: Work under this item shall be measured per each test pit performed and completed. Work incidental to the performance of this work including but not limited to temporary cofferdam, dewatering, water handling, support of excavation, and backfilling will not be measured for payment but the cost thereof shall be considered as included in the cost of the item "Special Test Pit – Water Main."

Basis of Payment: This work will be paid for at the Contract unit price per each of "Special Test Pit – Water Main," which price shall include excavation, documentation, backfilling, restoration, materials, tools, equipment, labor, work, and any related environmental controls used in the dewatering operations. Cost shall also include the design, furnishing, installation, and satisfactory removal of temporary cofferdams, dewatering measures, water handling systems, and supports of excavation.

The payment for clearing and grubbing will be included in the item "Clearing and Grubbing."

Cost of excavation and reuse of existing channel bottom material shall be included in the cost of the item "Special Test Pit – Water Main."

Payment for all containment, diversion, or other separation of stream flow from the excavation associated with the performance of test pits within the channel shall be included in the cost of the item "Special Test Pit – Water Main."

Pay Item	Pay Unit
Special Test Pit – Water Main	ea.

ITEM #0204111A – COFFERDAM AND DEWATERING

Cofferdam and Dewatering shall be in accordance with Section 2.04, supplemented as follows:

2.04.01 - Description: S*upplemented with the following:*

Work under this item shall also include the furnishing, placement, operation, and removal of dewatering measures to handle and treat intrusive water during construction operations where shown and noted on the plans or as ordered by the Engineer. Dewatering measures shall include dewatering receptacles, storage basins, furnishing and placing turbidity curtains and sedimentation basins or other measures available to remove sediment from water. At no time shall dewatering measures be placed beyond or impact areas beyond the right-of-way limits or designated limits of project site construction area. The dewatering measures are subject to the review and approval of the Engineer prior to placement and use.

2.04.03 - Construction Methods: *Add the following:*

Dewatering Measures: The Contractor shall be responsible for locating and sizing dewatering measures. The measures shall be sized to have a minimum retention time of two (2) hours and shall be inspected at least every two (2) hours during periods of use. Accumulated sediment shall be disposed of properly. Energy dissipation shall be provided at the treated water discharge point prior to re-entering the stream. After dewatering operations are completed, all materials shall be removed and the impacted areas restored to existing condition or better. The cofferdam shall be designed to properly retain existing facilities during excavation or fill for the placement of substructure or other facilities, if and as necessary.

Turbidity Curtain: Turbidity curtains shall be installed where shown on the plans and as shown on the attached details.

Sedimentation Basin: The Contractor shall be responsible for locating and sizing sedimentation basins.

2.04.04 - Methods of Measurement: *Replace with the following:*

There shall be no direct payment for dewatering measures and the item shall not be measured for payment, but the cost thereof shall be considered as included in the cost of the item "Cofferdam and Dewatering."

Work under this item will be measured for payment based on a percent complete of the lump sum cost for this item.

2.04.05 - Basis of Payment: *Replace with the following:*

This work will be paid on a lump sum basis under the item "Cofferdam and Dewatering," which price shall include all costs for design, materials, tools, equipment, labor, work, and any related environmental controls used in the dewatering operations, which are required for the construction of cofferdams shown on the plans, including cost of pumping and dewatering, dewatering

receptacles, repair, correction, adjustments, maintenance, reconstruction, and removal of such cofferdams required by and as shown on the plans. Cost shall also include furnishing, installation, removal of dewatering measures, and disposal of dewatering materials, wastewater and any debris collected, as well as removal of any related environmental controls used in the dewatering operations.

Pay Item	Pay Unit
Cofferdam and Dewatering	LS

ITEM #0204401A – HANDLING WATER (SITE NO. 1)

2.04.01 Description: Work under this item shall consist of the construction of a temporary pipe, flow diversions, temporary cofferdams or other such protective facilities and methods as are necessary to convey stream flow through the existing culverts, the dewatering of the site on which the new structure is to be constructed, and the removal of all such temporary structures and facilities upon the completion of the permanent work. The handling of water shall be in accordance with the requirements of Section 1.10. The means of handling water shall be the Contractor's option but shall be in conformance with the Contract Drawings and approved by the Engineer and the Town. The handling of flood flows and the protection of existing structures and any or all of the finished construction during high water are included in the scope of work under this item.

2.04.03 Construction Methods: The Contractor shall investigate and verify existing stream conditions and evaluate the need for and the type of protection and facilities required. Before commencing construction, the Contractor shall furnish the Engineer with details of the plan and methods he proposes to use for handling water and accomplishing the work. The furnishing of such plans and methods shall not relieve the Contractor of any of his responsibility for the safety of the work and for the successful completion of the project.

The height or top of temporary cofferdams, flow diversions and barriers shall be in accordance with the plans. All such temporary structures shall be constructed to assure construction of all permanent work in the dry without interfering with the proposed work, forms, or inspection thereof. Any movement or failure of the temporary construction, which interferes with the permanent construction, shall be corrected at the sole expense of the Contractor.

Any pumping from the area of construction shall be done in such a manner as to prevent the possibility of movement of water through any fresh concrete. Pumping shall be done from a suitable sump, properly located and with sufficient pumping capacity to protect against damage from sudden rising of water. Any pumped water must be discharged in accordance with the requirements of Section 1.10. Unless otherwise provided, or directed, all such temporary work shall be removed and disposed of in an approved manner when no longer required.

2.04.04 Method of Measurement: This item, being paid for on a lump sum basis, will not be measured for payment. Temporary cofferdams, in addition to what is called out for on the plans and used for the purpose of handling water, will not be measured for payment but shall be included in the lump sum cost of the item "Handling Water (Site No. X)."

2.04.05 Basis of Payment: This work will be paid for at the contract lump sum price for "Handling Water (Site No. X)," complete and accepted, which price shall include all equipment, tools, labor, and materials incidental to the construction and reconstruction, if required, dewatering, including pumping and any related environmental controls used in Handling Water, handling of the stream flow during construction, maintenance, removal and disposal of all protective works and facilities, disposal of water removed from the construction, damages incurred by the Contractor, and any damages to existing facilities and to the work in progress, materials or equipment from flows or high stages of the stream.

Pay Item	Pay Unit
Handling Water (Site No. 1)	l.s.

ITEM #0402401A – SAWING AND SEALING JOINTS IN BITUMINOUS CONCRETE PAVEMENT

Description: Work under this section shall consist of making a straight-line saw cut transversely across the final lift of HMA pavement directly over the edge of the new concrete box culvert. The sawing and sealing of joints shall be immediately cleaned and sealed with a joint seal material. The sawing and sealing shall commence within one week of the completion of the final lift of pavement and be a continuous operation until all joints have been completed.

Materials: Joint sealer shall conform to the requirements of AASHTO M324 Type II. Material that is heated or cooled beyond the manufacturer's recommended temperature range shall be discarded.

Equipment: All equipment necessary for the work shall meet the following requirements:

a. Kettle: The unit shall be a combination melter and pressurized applicator of a double-boiler type with space between the inner and outer shells filled with oil or other material not having a flash point of less than 600° F. The kettle shall include a temperature control indicator and mechanical agitator. The kettle shall be capable of maintaining the material at a temperature within 15° F of the manufacturer's recommended temperature.

b. Compressor: The compressor shall have a sufficient capacity and length of hose to enable a continuous sealing operation.

c. Saw: The saw shall be capable of providing straight cut of uniform depth and width.

Construction Methods: Prior to the paving operation, the Contractor shall establish sufficient controls to locate each transverse joint. This work shall include setting markers at each joint to reference its location and alignment and having each of these markers tied and references. A written procedure for this work shall be submitted to the Engineer for review prior to commencement of such work.

The sawcut will be made using diamond saw blades with a gang blade arrangement in order to archive the joint detail shown on the plans. The sawcut will be in a straight line across the pavement directly over the edge of the concrete box culvert. The sawed joints shall be cleaned with compressed air to the satisfaction of the Engineer.

Immediately following the cleaning, the joint seal material shall be installed. When cooled, the top of the sealant material shall be recessed a minimum of $^{1}/_{16}$ inch but not greater that $^{1}/_{8}$ inch below the adjacent pavement surface. The roadway shall not be opened to traffic until the material has become tack free. Any depression in the sealer greater than $^{1}/_{8}$ inch shall be brought up to the specified limit by further addition of joint seal material. Care shall be taken during the sealing operation to ensure that overfilling and spilling of material is avoided.

Any reflective cracking attributable to the improper joint referencing or construction shall be repaired at the expense of the Contractor in a manner approve by the Engineer for a period of one (1) year from the date of completion on any sawed and sealed portion of final pavement.

Acceptance of Work: Work identified by the Engineer as not acceptable shall be re-done at the Contractor's expense. The Contractor shall notify the Engineer upon completion of required corrective work.

Method of Measurement: This work shall be measured by the total number of lineal feet of sawing and sealing joints in bituminous concrete as indicated in the Contract Plans and as measured, verified, and accepted by the Engineer.

Basis of Payment: The accepted quantity of sawing and sealing joints in bituminous concrete shall be paid for at the Contract unit price per lineal foot of "Sawing and Sealing Joints in Bituminous Concrete Pavement." The price shall include all materials, equipment, tools, and labor incidental thereto.

Pay Item	Pay Unit
Sawing and Sealing Joints in Bituminous Concrete Pavement	l.f.

ITEM #0406275A – FINE MILLING OF BITUMINOUS CONCRETE (0 TO 4 INCHES)

Description: This work shall consist of the milling, removal, and disposal of existing bituminous concrete pavement.

Construction Methods: The Contractor shall remove the bituminous concrete material using means acceptable to the Engineer. The pavement surface shall be removed to the line, grade, and existing or typical cross-section shown on the plans or as directed by the Engineer.

The bituminous concrete material shall be disposed of offsite by the Contractor at an approved disposal facility unless otherwise stated in the Contract.

Any milled surface, or portion thereof, that is exposed to traffic shall be paved within five (5) calendar days unless otherwise stated in the plans or Contract.

The equipment for milling the pavement surface shall be designed and built for milling bituminous concrete pavements. It shall be self-propelled with sufficient power, traction, and stability to maintain depth and slope and shall be capable of removing the existing bituminous concrete pavement.

The milling machine shall be equipped with a built-in automatic grade averaging control system that can control the longitudinal profile and the transverse cross-slope to produce the specified results. The longitudinal controls shall be capable of operating from any longitudinal grade reference, including string line, contact ski (30 feet minimum), non-contact ski (20 feet minimum), or mobile string line (30 feet minimum). The transverse controls shall have an automatic system for controlling cross-slope at a given rate. The Engineer may waive the requirement for automatic grade or slope controls where the situation warrants such action.

The machine shall be able to provide a 0 to 4-inch deep cut in one pass. The rotary drum of the machine shall use carbide or diamond tipped tools spaced not more than $^{5}/_{16}$ inches apart. The forward speed of the milling machine shall be limited to no more than 45 feet/minute. The tools on the revolving cutting drum must be continually maintained and shall be replaced as warranted to provide a uniform pavement texture.

The machine shall be equipped with an integral pickup and conveying device to immediately remove material being milled from the surface of the roadway and discharge the millings into a truck, all in one operation. The machine shall also be equipped with a means of effectively limiting the amount of dust escaping from the milling and removal operation.

When milling smaller areas or areas where it is impractical to use the above-described equipment, the use of a lesser equipped milling machine may be permitted when approved by the Engineer.

Protection shall be provided around existing catch basin inlets, manholes, utility valve boxes, and any similar structures. Any damage to such structures as a result of the milling operation is the Contractor's responsibility and shall be repaired at the Contractor's expense.

To prevent the infiltration of milled material into the storm drainage system, the Contractor shall take special care to prevent the milled material from falling into the inlet openings or inlet grates. Any milled material that has fallen into inlet openings or inlet grates shall be removed at the Contractor's expense.

Surface Tolerance: The milled surface shall provide a satisfactory riding surface with a uniform textured appearance. The milled surface shall be free from gouges, longitudinal grooves and ridges, oil film, and other imperfections that are a result of defective equipment, improper use of equipment, or poor workmanship. The Contractor, under the direction of the Inspector, shall perform random spot-checks with a Contractor supplied ten-foot straightedge to verify surface tolerances at a minimum of five (5) locations per day. The variation of the top of two ridges from the testing edge of the straightedge, between any two ridge contact points, shall not exceed ¼ inches. The variation of the top of any ridge to the bottom of the groove adjacent to that ridge shall not exceed ¼ inches. Any unsatisfactory surfaces produced are the responsibility of the Contractor and shall be corrected at the Contractor's expense and to the satisfaction of the Engineer.

The depth of removal will be verified by taking measurements every 250 feet per each pass of the milling machine, or as directed by the Engineer. These depth measurements shall be used to monitor the average depth of removal.

Where a surface delamination between bituminous concrete layers or a surface delamination of bituminous concrete on Portland cement concrete causes a non-uniform texture to occur, the depth of milling shall be adjusted in small increments to a maximum of ½± inches to eliminate the condition.

When removing bituminous concrete pavement entirely from an underlying Portland cement concrete pavement, all of the bituminous concrete pavement shall be removed leaving a uniform surface of Portland cement concrete, unless otherwise directed by the Engineer.

Any unsatisfactory surfaces produced by the milling operation are the Contractor's responsibility and shall be corrected at the Contractor's expense and to the satisfaction of the Engineer.

No vertical faces, transverse or longitudinal, shall be left exposed to traffic unless the requirements below are met. This shall include roadway structures (catch basins, manholes, utility valve boxes, etc.). If any vertical face is formed in an area exposed to traffic, a temporary paved transition shall be established according to the requirements shown on the plans. If the milling machine is used to form a temporary transition, the length of the temporary transition shall conform to Special Provision Section 4.06 – Bituminous Concrete, "Transitions for Roadway Surface," the requirements shown on the plans, or as directed by the Engineer. At all permanent limits of removal, a clean vertical face shall be established by saw cutting prior to paving.

Roadway structures shall not have a vertical face of greater than one (1) inch exposed to traffic as a result of milling. All structures within the roadway that are exposed to traffic and greater than one (1) inch above the milled surface shall receive a transition meeting the following requirements:

For roadways with a posted speed limit of 35 mph or less*:

1. Round structures with a vertical face of greater than 1 inch to 2.5 inches shall be transitioned with a hard rubber tapered protection ring of the appropriate inside diameter designed specifically to protect roadway structures.
2. Round structures with a vertical face greater than 2.5 inches shall receive a transition of bituminous concrete formed at a minimum 24 to 1 (24:1) taper in all directions.
3. All rectangular structures with a vertical face greater than 1 inch shall receive a transition of bituminous concrete formed at a minimum 24 to 1 (24:1) taper in all directions.

*Bituminous concrete tapers at a minimum 24 to 1 (24:1) taper in all directions may be substituted for the protection rings if approved by the Engineer.

For roadways with a posted speed limit of 40, 45 or 50 mph:

1. All structures shall receive a transition of bituminous concrete formed at a minimum 36 to 1 (36:1) taper in the direction of travel. Direction of travel includes both the leading and trailing side of a structure. The minimum taper shall be 24 to 1 (24:1) in all other directions.

For roadways with a posted speed limit of greater than 50 mph:

1. All structures shall receive a transition of bituminous concrete formed at a minimum 60 to 1 (60:1) taper in the direction of travel. Direction of travel includes both the leading and trailing side of a structure. The minimum taper shall be 24 to 1 (24:1) in all other directions.

All roadway structure edges and bituminous concrete tapers shall be clearly marked with fluorescent paint. The paint shall be maintained throughout the exposure to traffic.

The milling operation shall proceed in accordance with the requirements of the “Maintenance and Protection of Traffic” and “Prosecution and Progress” specifications, or other Contract requirements. The more stringent specification shall apply.

Prior to opening an area which has been milled to traffic, the pavement shall be thoroughly swept with a sweeper truck. The sweeper truck shall be equipped with a water tank and be capable of removing the millings and loose debris from the surface. The sweeper truck shall operate at a forward speed that allows for the maximum pickup of millings from the roadway surface. Other sweeping equipment may be provided in lieu of the sweeper truck where acceptable by the Engineer.

Any milled area that will not be exposed to live traffic for a minimum of 48 hours prior to paving shall require a vacuum sweeper truck in addition to, or in lieu of, mechanical sweeping. The vacuum sweeper truck shall have sufficient power and capacity to completely remove all millings from the roadway surface including any fine particles within the texture of the milled surface.

Vacuum sweeper truck hose attachments shall be used to clean around pavement structures or areas that cannot be reached effectively by the main vacuum. Compressed air may be used in lieu of vacuum attachments if approved by the Engineer.

Method of Measurement: This work will be measured for payment by the number of square yards of area from which the milling of asphalt has been completed and the work accepted. No area deductions will be made for minor unmilled areas such as catch basin inlets, manholes, utility boxes and any similar structures.

Basis of Payment: This work will be paid for at the Contract unit price per square yard for "Fine Milling of Bituminous Concrete (0 to 4 Inches)." This price shall include all equipment, tools, labor, and materials incidental thereto.

No additional payments will be made for multiple passes with the milling machine to remove the bituminous surface.

No separate payments will be made for cleaning the pavement prior to paving; providing protection and doing handwork removal of bituminous concrete around catch basin inlets, manholes, utility valve boxes and any similar structures; repairing surface defects as a result of the Contractors negligence; providing protection to underground utilities from the vibration of the milling operation; removal of any temporary milled or paved transition; removal and disposal of millings; furnishing a sweeper truck and sweeping after milling. The costs for these items shall be included in the Contract unit price.

Pay Item	Pay Unit
Fine Milling of Bituminous Concrete (0 to 4 Inches)	s.y.

ITEM #0503868A – REMOVAL OF EXISTING CULVERT (SITE NO. 3)

Work under this item shall conform to the requirements of Section 5.03 amended as follows:

5.03.01 - Description: *Add the following:*

This work shall consist of the complete removal and satisfactory disposal of the existing culvert structure.

This work shall also include the removal and satisfactory disposal of the existing headwalls and wingwalls.

5.03.03 - Construction Methods: *Add the following:*

All work shall proceed as directed by and to the satisfaction of the Engineer and in accordance with the details shown on the plans, or as ordered by the Engineer.

No record plans are available for the culvert covered in this pay item.

The existing culvert shall be demolished and removed in accordance with the methods proposed by the Contractor and reviewed by the Engineer. The Contractor's attention is drawn to the environmental sensitivity of stream and surrounding wetlands. The Contractor shall ensure to prevent debris, tools, and/or other materials from entering and/or dropping into the brook. Any demolition material, which accidentally falls into the waterway shall be promptly retrieved, removed from the waterway, and properly disposed of by the Contractor.

The demolition shall not result in damage to any adjoining property or brook area. If damage does occur, it shall be repaired by the Contractor to the satisfaction of the Engineer at no additional expense to the Town.

Prior to initiating work, the Contractor shall submit for review, plans and written documentation describing his methods of removal and the protection of environmentally sensitive areas and adjoining properties. The review of the Contractor's plans shall not be construed as relieving the Contractor of any of his responsibility. Working drawings and design computations showing (where appropriate) the Contractor's means and methods for sequencing the construction in conformance with the Maintenance and Protection of Traffic Plans shall be submitted to the Engineer in accordance with Section 1.05.02(2).

5.03.04 – Method of Measurement: *Replace the article with the following:*

This item, being paid for on a lump sum basis, will not be measured for payment. Removal and disposal of waste material from the culvert removal will not be measured for payment but shall be included in the cost of this item.

5.03.05 – Basis of Payment: *Replace the article with the following:*

This work shall be paid for at the contract lump sum price for "Removal of Existing Culvert (Site No. 3)," which price shall include all materials, equipment, tools, labor, and all work that are incidental for the removal and satisfactory disposal of the existing culvert, including headwalls and wingwalls. This item shall also include the satisfactory removal and disposal of all waste materials from the demolition.

Pay Item	Pay Unit
Removal of Existing Culvert (Site No. 3)	l.s.

ITEM #0503890A – REMOVAL OF EXISTING BRIDGE (SITE NO. 1)

ITEM #0503891A – REMOVAL OF EXISTING BRIDGE (SITE NO. 2)

Work under this item shall conform to the requirements of Section 5.03 amended as follows:

5.03.01 - Description: *Add the following:*

This work shall consist of the complete removal and satisfactory disposal of the existing bridge, abutments, wingwalls, parapets, and bridge rails as shown on the plans and as directed by the Engineer.

5.03.03 - Construction Methods: *Add the following:*

All work shall proceed in accordance with the details and approved water handling plans, shall conform to the item "Handling Water (Site No. X)," or as ordered by the Engineer, and shall be completed to the satisfaction of the Engineer

No record plans are available for the bridge structure covered in this pay item. Accordingly, the Contractor shall verify existing conditions, features, and dimensions of the existing structure.

The existing bridge shall be demolished and disposed of in such means and methods as the Contractor may propose, subject to the review and approval of the Engineer. Care shall be taken not to damage any permanent construction, to adjoining property and facilities, and/or to the brook area. If damage does occur, it shall be repaired by the Contractor to the satisfaction of the Engineer at no additional expense to the Town.

The Contractor's attention is drawn to the environmental sensitivity of the stream and surrounding wetlands. The Contractor shall ensure to prevent debris, tools, and/or other materials from entering and/or dropping into the brook. Any demolition material, which accidentally falls into the waterway shall be promptly retrieved, removed from the waterway, and properly disposed of by the Contractor.

Prior to initiating work, the Contractor shall submit for review, plans and written documentation describing his methods of removal and the protection of environmentally sensitive areas and adjoining properties. The review of the Contractor's plans shall not be construed as relieving the Contractor of any of his responsibility. Working drawings and design computations showing (where appropriate) the Contractor's means and methods for sequencing the construction in conformance with the Maintenance and Protection of Traffic Plans shall be submitted to the Engineer in accordance with Section 1.05.02(2).

5.03.04 – Method of Measurement: *Replace the article with the following:*

This item, being paid for on a lump sum basis, will not be measured for payment. Removal and disposal of waste material from the bridge removal will not be measured for payment but shall be included in the cost of this item. Debris shields, temporary shoring, and other items incidental to this work will not be measured payment but shall be included in the cost of this item.

5.03.05 – Basis of Payment: *Replace the article with the following:*

This work shall be paid for at the contract lump sum price for "Removal of Existing Bridge (Site No. X)," which price shall include all materials, equipment, tools, labor, and all work that are incidental for the removal and satisfactory disposal of the existing bridge, including removal of abutment, wingwalls, parapets, and bridge rails. This item shall also include the satisfactory removal and disposal of all waste materials from the demolition.

Pay Item	Pay Unit
Removal of Existing Bridge (Site No. 1)	l.s.
Removal of Existing Bridge (Site No. 2)	l.s.

ITEM #0601088A – CONCRETE FORM LINERS

Description: This item shall consist of furnishing, staining, and coordinating with the approved precast concrete wingwall manufacturer for the casting of formed, textured concrete surfaces using form liners to closely resemble the appearance of natural stone of the type, size, and pattern as described herein and as called for on the plans, including accessories and hardware, as described by the Engineer, and in accordance with these specifications.

Materials: Materials shall conform to the following requirements:

1. Design and Pattern: The design and pattern of form lined concrete surfaces shall conform to the following:

Pattern:	1203 – New England Dry Stack
Relief:	1.50 inches
Liner Thickness:	2.75 inches

Manufacturer:	Customrock Formliner 2020 West 7th Street St. Paul, MN 55116
Telephone:	(651) 699-1345
Email:	gbatt@customrock.com
Web Page:	www.customrock.com

   Or approved equal.

2. Form Liners: Form liner material shall conform to the following:

   a. Form liners shall be reusable elastomeric form liners, made of high-strength urethane and cuttable form liners, made of lower grade urethane, easily attachable to forms. The form liners shall leave crisp, sharp definition of the architectural surface. Recurring textural configurations exhibited by repeating, recognizable shadow patterns shall be prevented by proper casting of formliner patterns. The form liners shall not compress more than 6 mm when concrete is poured at a rate of three vertical meters per hour. The form liners shall be removable without causing deterioration of surface or underlying concrete. No substitutions will be permitted. The form liner shall conform to the pattern shown on the plans.

   b. The form liner shall be designed to allow 180-degree rotation and interconnection with itself or another pattern liner of differing horizontal dimension. Maximum relief of pattern and the average relief shall be as shown on the contract plans. The simulated stone pattern shall vary in a random manner in the coursing parameters to prevent noticeable multiple duplicate pattern repetition and avoid stacked joints.

c. In addition to orthogonal surfaces, the form liner shall be capable of forming curved and/or battered surfaces, if shown on the plans, while maintaining the dimensioned coursing and plumb vertical joints without distortion.

3. Color Stain: **The color stain pattern shall be approved by the Town.**

The color stain shall be a penetrating stain mix as provided by the manufacturer, shall achieve color variations present in the natural stone being simulated for the project, as approved by the Engineer and in accordance Items 1 and 2 above. The stain shall create a surface finish that is breathable (allowing water vapor transmission) and that resists deterioration from water, acid, alkali, fungi, sunlight, or weathering. The stain mix shall be a water borne, low V.O.C. material, less than 180 grams/liter and shall meet requirements for weathering resistance of 2000 hours accelerated exposure measured by weather-o-meter in accordance with ASTM G23 with 3-bulb. Scrub test 1000 revolutions. Abrasive resistance (Tabor-CF-10) of 500 cycles. Adhesion ASTM D3359 1.00 MM crosscuts on glass pass 3 or higher on a scale of 1 to 5. The Contractor shall supply information pertaining to chemical resistance in accordance with ASTM D1308.

4. Release Agent: If a form release agent is used, it must be of a non-staining type. The release agent shall be compatible with the stone masonry architectural treated surface as recommended by the manufacturer.

5. Form Ties: Form ties shall be designed to separate at least one inch back from finished surface, leaving only a neat hole that can be plugged with patching material. The Patching material shall be Tamms Speed-crete or equal mixed with latex or acrylic bonder, as approved by the manufacturer and Engineer

Construction Methods:

1. Show Drawings and Submittals: Before fabricating any materials, the Contractor shall submit shop drawings, product data sheets, samples, and mock-ups to the Engineer for approval in accordance with Article 1.05.02 for the materials listed in Item 3 below. These drawings and submittals shall include, but not limited to, the following information: manufacturer's name, listing of product compliance with referenced specification standards, complete details of the assemblies, material designations, nominal hardness of appropriate materials, design loads, quantities, and locations. The Engineer's drawings shall not be reproduced, traced, or used for show drawings or erection purposes.

2. Field Measurements: Prior to ordering or fabricating any materials, the Contractor shall take complete and accurate field measurements.

3. Submittals: Catalog cuts, manufacturer's literature and technical data for the materials specified herein, including but not limited to simulated stone mold pattern, form liner, release agent, concrete patching materials and color charts for staining of hardened concrete.

a) Photographs: Color photographs of three (3) similar past projects of the manufacturer. Include project names, locations, and a telephone number of the pervious projects Owner's representatives.

b) Samples: Form ties, sample, and description, showing method of separation when forms are removed.

c) Plan, elevation, and details to show overall pattern, joint locations, form tie locations and end, edge, and other special conditions.

d) Form Lined and Color Stained Concrete Mock-up: A mock-up sample concrete panel shall be provided by the approved precast concrete wingwall manufacturer and sent to the site at least four weeks before concrete work to be textured and colored starts, using same materials, methods and work force that will be used for the Project. Location on site for construction of mock-up shall be as approved by Engineer. Concrete shall be placed in the mock-up, texture constructed and construction procedure adjusted until a final texture and color is produced that complies with the color and texture of the Referee Panel.

   i. Size: 50 s.f. or larger if needed to adequately illustrate the pattern and texture selected.

   ii. Include an area to demonstrate simulated stone masonry butt joint, corner and if appropriate, continuation of pattern through expansion joint.

   iii. If design includes stone texture across top of wall, include in mock-up.

   iv. After concrete has cured sufficiently, the Contractor shall prepare the surface for color staining. After the Engineer has approved the prepared surface of the cast simulated stone masonry for color staining, the work of form lined cast-in-place concrete may proceed, except that color staining is not yet authorized.

   v. After concrete work on mock-up is completed and cured and after surface is determined by the Engineer to be acceptable for forming and pouring, the Contractor shall proceed with mock-up as quality standard.

   vi. After a 30-day cure of the mock-up and the date of last pour of architectural concrete the ample is to be stained. After coloring is determined to be acceptable by the Engineer, construction of the remaining work under this specification section may proceed, using mock-up as quality standard.

   vii. The Contractor shall remove mock-up as directed by the Engineer.

4. Scheduling: Schedule color stain application after adjacent earthwork is completed, to avoid contaminating or damaging the surface. Place topsoil and establish turf after staining application is completed. Coordinate the work to prevent interference with other trades.

5. Installation:

   a) Contractor's responsibilities:
      i. Furnish form liners & coordinate/ deliver formliners, as required, to the approved precast concrete wingwall manufacturer.
      ii. Apply manufacturer release agent.
      iii. Install concrete as specified elsewhere in the Specifications.
      iv. Remove form liner.
      v. Patching, grinding, and bush hammering of form liner seams as required.
      vi. Provide scaffolding and heat as required and clean water for power washing of the hardened concrete prior to the staining process.
      vii. Power washing and patching of form liners.
      viii. Return of form liners to manufacturer.

   b) Manufacturer's responsibilities:
      i. Ship and supply form liners and release agent.
      ii. Technical information.
      iii. Power wash wall.
      iv. Apply the color staining process.

6. Liner to Form Attachment System: Securely attach form liners to forms with wood or sheet metal screws, threaded inserts added to the back of the form liner for bolts to fasten the form liner through the forms or bolted through the face of the form liner with flat head bolts inserted in a pattern joint and through the form liner and forming system. Construction adhesives may be used, but not on reusable forms. Place adjacent form liners with less than ¼ inch separation between form liners.

7. Release of Form Liners from Hardened Concrete: Only manufacturer recommended form release agents (Lark V or Orna Con) shall be utilized and shall be applied to the form liners before the concrete is poured. Release agents shall be applied in strict accordance with release agent manufacturer recommendations. Hand-charged sprayers will only be allowed if a thin uniform coating of release agent is obtained on the form liner.

8. Removal of Form Liner: Remove the form liner from the wall after 24 hours of pouring the concrete. The form liners shall be detached from the forms and then removed from the concrete or they may remain attached to the forms and the entire forming system removed from the concrete. Remove the form liners from the top down. Curing of concrete may be accomplished with form liners and forms placed back against the wall after the initial detachment. Other means of curing can also be used including curing blankets and/or plastic. Curing compounds shall not be used.

9. Care and Cleaning of Form Liner: Form liners shall be cleaned the same day they are removed from the wall with a power wash and mild detergent. Synthetic brushes with stiff bristles may be used on areas. Mild acid washes may also be used. Solvents shall not be

used. If necessary, patching of holes shall be performed with 100% clear silicone caulk. Form liners shall be stored inside or under a protective, non-transparent cover, in a vertical, upside-down position.

10. Wall Patching and Preparation: After form liners are removed from the hardened concrete, the textured uncolored surface shall be prepared for color staining. All concrete, the textured uncolored surface shall be prepared for color staining. All holes larger than ¾" in greatest principal dimension shall be filled with concrete patching material such as Tammas Speed-crete or equal mixed with latex or acrylic bonder, as approved by the manufacturer and Engineer. All honeycombed areas shall be filled and textured to match surrounding areas. Seam lines and other unnatural protrusions shall be ground down to match adjacent areas with a hand-held power grinder using discs made for concrete. Grinding of seams shall be performed immediately after removal of the form liners. Perform final bush hammering to blend defects and ground areas into the final rock texture. In particular, the process of wall patching and preparation shall be subject to approval of the manufacturer and Engineer.

11. Color Staining (by Manufacturer): The hardened concrete shall be a minimum of 30 days old before color staining is applied. Power wash the wall to free it from latence, dirt, oil, and other objectionable materials. Do not sandblast. Preferred method to remove latency is pressure washing with water, minimum 3000 psi (a rate of three to four gallons per minute), using fan nozzle perpendicular to and at a distance of one (1) or two (2) feet from surface. Completed surface shall be free of blemishes, discoloration, surface voids, and unnatural form marks. After the wall has dried, the color staining process is applied in such a way that the stones shall have individual colorations from one to the other. Water-based stains shall be used in air temperatures between 50° F and 100° F. Solvent-based stains shall be used in air temperatures of 50° F and below but in no case when the temperature of the hardened concrete is 40° and falling.

    During color staining operations the Contractor shall protect property, pedestrians, vehicular and other traffic upon, underneath, or in the vicinity of the bridge, or disfigurement from errant stain materials. Comply with all environmental regulations regarding surface cleaning, stain application, ground and watercourse protection and disposal protection of waste materials. Refer to Section 1.10 of the Specifications.

12. Simulated Stone Molds Preparation: Clean and make free of buildup prior to each pour. Inspect for blemishes and tears. Repair if needed following manufacturer's recommendations.

Method of Measurement: This work will be measured for payment by the number of square feet of surface area of accepted form liner, cast-in-place simulated stone masonry concrete, completed within the limits shown on the plans, or as ordered by the Engineer.

Basis of Payment: This Work will be paid for at the contract unit price per square feet for "Concrete Form Liner," complete in place, which price shall include all equipment, formwork, molds, liners, caulk, patching material, tools, and labor incidental thereto. This work shall also include the cost of furnishing and application of the color stain system to the simulated stone masonry surface.

Pay Item	Pay Unit
Concrete Form Liner	s.f.

ITEM #0601133A – 10' X 7' PRECAST CONCRETE BOX CULVERT

ITEM #0601159A – 15' X 6' PRECAST CONCRETE BOX CULVERT

ITEM #0601228A – 13' X 8' PRECAST CONCRETE BOX CULVERT

Description: Work under this item shall consist of designing, furnishing and installing a box culvert constructed of four-sided, steel reinforced, monolithically cast concrete box sections with open ends of the size and length as shown on the plans. This item shall include concrete baffles, steel reinforcement, dowel bar splicer system for concrete baffles, threaded inserts, lifting and seating fixtures, non-shrink grout, and all other necessary materials and equipment necessary to complete the work described herein.

Materials:

Concrete: The concrete shall conform to the requirements of the Subarticle M.14.01-1, as applicable except that the entrained air content requirement shall be eliminated when zero-slump concrete is used.

Reinforcement: Reinforcing steel shall be uncoated and shall conform to ASTM A615, Grade 60.

Welded Wire Fabric: Welded wire fabric, when used as reinforcement, shall be uncoated and conform to the requirements of Section M.06 of the Standard Specifications.

Threaded Inserts, Lifting Fixtures and Miscellaneous Hardware: All inserts, fixtures and hardware cast into precast concrete components shall have a corrosion-resistant coating or be fabricated from a non-corrosive material suitable for the intended use. The coating shall be either an epoxy material or galvanization, applied mechanically or by the hot-dip process. All hardware shall be as specified on the working drawings.

Gaskets: Gaskets shall be flexible, expanded rubber conforming to ASTM D1056.

Non-shrink Grout: Non-shrink grout shall conform to Article M.03.05.

Geotextile: Geotextile shall be "Separation (High Survivability)", as listed in the Connecticut Department of Transportation's Approved List for Geotextiles. Torn or punctured geotextiles shall not be used.

Construction Methods: The design and manufacture of the precast concrete box culvert shall conform to the requirements of the AASHTO LRFD Bridge Design Specifications 9th Edition (AASHTO LRFD) and the Connecticut Department of Transportation Bridge Design Manual (CTDOT BDM), as supplemented by ASTM C1433 with the following additions and revisions:

1. **Working Drawings**: Prior to fabrication, the Contractor shall submit working drawings to the Engineer for review in accordance with Article 1.05.02.

Working drawings for all box culverts shall include but not be limited to the following:

- Layout plan of box culvert;
- Plans and cross-sections showing length, width, height and thickness of walls and slabs;
- Type, size, location and spacing of steel reinforcing and inserts for anchoring threaded deformed steel bars. Bending diagrams, material lists and catalog cuts for inserts shall be provided;
- Type, size and location of lifting holes and seating fixtures. All fixtures (inserts, etc.) cast permanently into the sections shall be recessed a minimum of ¾". No more than four lifting holes or fixtures shall be located in each box section;
- Location and size of all holes cast for grouting deformed steel bars or other reasons as noted on the plans;
- Complete details of the lap joints at the end of the box sections, which shall include the type, size and location of gaskets and additional steel reinforcement. Except where shown otherwise, the ends of the box sections shall have lap joints with not less than 1½" of concrete overlap. Each joint shall be provided with a preplaced gasket;
- Material designations.

Working drawings for all box sections shall be signed and sealed by a Professional Engineer licensed in the State of Connecticut. Each sheet of the working drawings shall be stamped.

After the working drawings have been reviewed and the Engineer's comments have been appropriately taken into account and implemented, the Contractor shall submit a final submission of working drawings. The final submission shall include one set of full size (approximately 22" x 34") mylar sheets, and three sets of half-scale paper copies, and an electronic copy in a portable document format (pdf) file. Two of the half-scale sets are intended for distribution to the Connecticut Department of Transportation (CTDOT) Office of Bridge Safety and Evaluation and the remaining half-scale and mylar sets are intended for the Town.

Erection drawings shall also be prepared and submitted for review by the Engineer.

2. **Design Computations:** Together with the submission of working drawings, the Contractor shall also submit to the Engineer for review four sets of complete design computations for the box culvert. These computations shall be prepared, signed, and sealed by a Professional Engineer registered in the State of Connecticut.

   The box culvert shall be designed in accordance with the Load and Resistance Factor Design (LRFD) as provided for in the AASHTO LRFD and ASTM specifications. The box culvert shall be designed for the AASHTO HL-93 design live load and the CTDOT permit vehicles,

as provided for in the BDM, and shall satisfy the required load combinations of applicable AASHTO limit states.

The maximum allowable bearing capacity of the soil shall be assumed to be 4 ksf unless otherwise shown on the plans. If additional soils information is required by the Contractor's designer, it must be obtained by the Contractor. The cost of obtaining additional geotechnical information shall be included in the cost of this item.

The Contractor shall perform load rating analyses of the box culvert based on the AASHTO Load and Resistance Factor Rating (AASHTO LRFR) as provided for in the AASHTO Manual for Bridge Evaluation (AASHTO MBE) and the CTDOT CE Memorandum 11-03 as amended by CTDOT CE Memorandum 12-01. The Contractor shall prepare and submit two sets of load rating report that summarizes the analyses results and includes calculations of the load rating analyses.

3. **Length of Sections:** The length of each precast box section shall be determined by the Contractor. When laid together, the culvert sections shall satisfy the total length of the box culvert shown on the plans.

4. **Forms and Forming Material:** Forms shall be mortar-tight and sufficiently strong to prevent misalignment of adjacent box sections. Forms shall be constructed to allow their removal without damage to the concrete. A positive means of supporting reinforcing cages in place during forming shall be required.

   The forms shall not be removed until the concrete is sufficiently strong to avoid possible damage to the concrete. Forms shall not be removed without approval being granted by the Engineer.

   All forming materials used for casting cylindrical openings for lifting holes or holes for grouting deformed steel bars shall be removed. All non-plastic material used as forms for casting weepholes shall also be removed.

5. **Mixture:** The Contractor shall design and submit to the Engineer for review a concrete mix that shall attain a minimum 28-day compressive strength (f'_c) as shown on the plans.

6. **Placing Concrete:** Concrete shall not be deposited in the forms until the Engineer has verified the presence and proper location of the reinforcing steel and other cast-in-place components and has given his approval thereof.

   Concrete shall not be deposited into the forms when the ambient temperature is below 40°F or above 100° F unless adequate heating or cooling procedures are provided and have been previously approved by the Engineer. The concrete temperature shall be within the range of 60°F to 90°F at the time of placement.

   Production during the winter season, from November 15 to March 15 inclusive, will be permitted only on beds located in a completely enclosed structure of suitable size and

dimension that provides a controlled atmosphere for the protection of both the casting operation and the product.

Outside concreting operations will not be permitted during rainfall unless the operation is completely under cover.

Void forms shall be held in place against uplift or lateral displacement during the pouring and vibrating of the concrete by substantial wire ties or other satisfactory means as approved by the Engineer.

The concrete shall be vibrated internally, or externally, or both, as ordered by the Engineer. The vibrating shall be done with care in such a manner as to avoid displacement of reinforcing steel, voids, forms, or other components. There shall be no interruption in the pouring of any of the sections. Concrete shall be carefully placed in the forms and sufficiently vibrated to produce a surface that is free from imperfections such as honeycombing, segregation, cracking, or checking. Any deficiencies noted in the sections may be cause for rejection.

7. **Test Cylinders:** During the casting of the sections, the Contractor shall make test cylinders under the supervision of a representative of the Department. A minimum of 4 cylinders shall be taken during each production run or as ordered by the Engineer. The dimensions and type of cylinder mold shall be as specified by the Engineer. Cylinders shall be cured under the requirements of ASTM C31 and shall be used to determine the 28-day compressive strength requirements (f'_c). Failure of any of the 28-day tests cylinders to meet 90% of the minimum compressive strength requirement may be cause for rejection. The Engineer also reserves the right to request and test core specimens from the sections to determine their adequacy.

8. **Repairs:** The Engineer shall evaluate the acceptability and the cause of the defects and the service condition of the box section. No repairs shall be done by the Contractor unless permission has been granted by the Engineer. The Contractor shall submit to the Engineer, for review, the proposed method and materials to be used in the repair operation. All repairs shall be sound and properly finished and cured before the box section is delivered to the job site. The Contractor shall bear the costs of all repair work.

9. **Finishing:** All exposed, outside surfaces of end sections shall be given a grout clean-down finish in accordance with Subarticle 6.01.03-10 except where concrete will be field cast against the section. Other formed surfaces need not be finished in any specific manner. All fins, runs, or mortar shall be removed from surfaces that will remain exposed. Form marks on exposed surfaces shall be smoothed by grinding.

10. **Handling and Storage:** Care shall be taken during storage, transporting, hoisting, and handling of all box sections to prevent damage. Sections damaged by improper storing, transporting, or handling shall be repaired or replaced by the Contractor, as directed by the Engineer and at no cost to the Town. All storage and handling operations shall be as directed by the Engineer.

The box sections shall not be removed from their casting beds until the concrete has attained a minimum compressive strength of 75% of the 28-day compressive strength. The box sections shall not be shipped to the job site until the 28-day compressive strength (f'_c) has been attained.

11. Installation: The installation of the precast concrete box culvert shall conform to the following requirements:

The installation of the precast concrete box culvert sections shall proceed as required by the sequence of construction, stage construction plans, and the special provisions entitled "Prosecution and Progress" and "Maintenance and Protection of Traffic."

The box sections shall be placed in a manner to best accommodate and facilitate the construction of the cast-in-place concrete headwalls, cut-off walls, wingwalls, etc. No box sections shall be set on cast-in-place concrete without the approval of the Engineer.

The box sections shall be set to the line and grade indicated on the plans or as directed by the Engineer. Placement of the sections shall not start until the Engineer has approved the depth of excavation and the suitability of the foundation material.

The lap joints shall be securely seated together to achieve a silt-tight joint all around. A silt-tight joint is defined as a joint in which the gasket is compressed to a minimum of one half of its uncompressed width. The gasket shall be uniformly compressed along all vertical and horizontal surfaces. A positive means, through the use of seating devices, shall be used for pulling one section against another to assure an adequate silt-tight joint.

Details for the seating method shall be submitted to the Engineer for review. The lap joints shall be seated such that they make a continuous line of sections with a smooth interior free from irregularities in the invert line.

The top portions of the horizontal lap joints for the roof and floor slabs and the outside face of the vertical lap joints (full height on each side) shall be neatly filled with non-shrink grout after seating the sections. The exposed portions of the lap joints within the haunches or fillets shall also be neatly filled with non-shrink grout. The finished surface shall be smooth and level with the adjacent concrete.

The box sections for multiple barrel culverts shall be placed as detailed on the plans. Slight mismatches along the 1” longitudinal joint may be tolerated by the Engineer provided that the vertical difference between the top surfaces of adjacent sections is 1” or less. The top 2” of the longitudinal joint shall be filled flush with non-shrink grout. The top surface of the non-shrink grout shall be sloped to form a smooth transition to correct any allowable mismatches.

Geotextile shall be placed over all vertical joints. Geotextile shall also be placed over the roof joints of culverts not receiving membrane waterproofing. The geotextile shall extend 6” to each side of the joint and be attached to the culvert using silicone caulk.

After its installation, any box section or joint that is not acceptable, as determined by the Engineer, in vertical or horizontal alignment for any reason, including but not limited to settlement, displacement, excess camber or misfit, shall be removed by the Contractor and correctly installed, as directed by the Engineer and at no additional cost to the Town.

All fixtures or holes cast into the sections for lifting or seating shall be neatly filled with non-shrink grout. The finished surface shall be smooth and level with the adjacent concrete.

The surface preparation, mixing, placing, curing, and finishing of the non-shrink grout shall conform to the written instructions provided by the manufacturer of the grout. The Contractor shall furnish the Engineer with copies of the instructions. The grout shall be cured at least 3 days unless determined otherwise by the Engineer.

Method of Measurement: This work will be measured for payment by the number of lineal feet of precast concrete box culvert, of the size indicated, completed and accepted, and measured in place along the floor at the centerline of culvert.

Basis of Payment: Payment for this work will be made at the Contract unit price per lineal foot for "(Size) Precast Concrete Box Culvert", of the size indicated, complete and accepted, which price shall include dowel bar splicer system for headwalls, threaded inserts, non-shrink grout, geotextile, gaskets, and all other materials, equipment, tools, and labor incidental thereto.

The contract unit price per lineal foot for "(Size) Precast Concrete Box Culvert" shall also include the costs of preparing and furnishing design computations, working drawings, and erection plans.

Pay Item	Pay Unit
10' x 7' Precast Concrete Box Culvert	l.f.
15' x 6' Precast Concrete Box Culvert	l.f.
13' x 8' Precast Concrete Box Culvert	l.f.

ITEM #0601407A – PRECAST CONCRETE WINGWALLS (SITE NO. 1)

ITEM #0601408A – PRECAST CONCRETE WINGWALLS (SITE NO. 2)

ITEM #0601409A – PRECAST CONCRETE WINGWALLS (SITE NO. 3)

Description: This item shall consist of the design, fabrication, furnishing, transportation, and installation of precast reinforced concrete wingwalls to the size and dimensions as shown on the plans. The precast concrete wingwalls shall be furnished and installed where shown on the plans and in accordance with these specifications. All wingwall sections shall be steel reinforced and monolithically cast concrete designed in a manner such that it can be supported on shallow foundation.

This item shall also include the concrete wall stem and foundation, steel reinforcement, dowel bars and dowel bar splicers, weepholes, lifting and seating fixtures, grout, gaskets, and other miscellaneous items and hardware that are integral and incidental to the design, fabrication, transportation, and installation of the precast concrete wingwalls.

Work under this item shall conform to applicable provisions under the Incidental Construction and Materials Section of the Standard Specifications and the specific requirements stipulated herein for various component parts of this item as noted below. For those component parts where no specific requirement is included here, the Standard Specifications shall apply except for measurement and payment.

Work under this item does not include concrete form liner. Where form liner is called for on the plans, work associated with and incidental to the furnishing and staining of form liners on precast concrete wingwalls shall be paid for under the item for "Concrete Form Liners."

Materials: Materials shall conform to the following requirements:

1. Concrete: The concrete shall have a minimum 28-day compressive strength of 5,000 psi and shall conform to the requirements of Subarticle M14.01-1, as applicable except that the entrained air content requirement shall be eliminated when zero-slump concrete is used.

2. Reinforcing: Deformed steel bars shall be uncoated and shall conform to ASTM A615, Grade 60.

3. Structural Steel: Structural steel required for the precast concrete wingwall joints shall be per manufacturer's specifications.

4. Dowel Bar Splicers: Dowel bar splicers shall be capable of fully developing the specified bars and shall be hot-dip galvanized in accordance with ASTM F2329 pr mechanically galvanized in accordance with ASTM B695, Class 55.

5. Threaded Inserts, Lifting and Seating Fixtures, and Miscellaneous Hardware: All inserts, fixtures, and miscellaneous hardware cast into precast concrete components shall have a

corrosion-resistant coating or shall be fabricated from a non-corrosive material suitable for the intended use. The coating shall be either an epoxy material or galvanization, applied mechanically or by the hot-dip process. All hardware shall be as specified on the working drawings.

6. Non-Shrink Grout: Non-shrink grout shall conform to Subarticle M.03.05 or per material specifications of the manufacturer of or the designer of the precast concrete wingwalls. At exposed locations, the grout used for patching shall match the color of the adjacent surface.

6. Gaskets: Gaskets shall be flexible, expanded rubber conforming to ASTM D1056.

7. Weepholes: Shall be the size and at the locations as shown on the plans and shall consist of schedule 40 polyvinyl chloride pipe anchored in place to prevent movement.

8. Form Liner: Form liners shall be in accordance with the provisions for the item "Concrete Form Liners."

Construction Methods: The design and manufacture of the wingwall shall conform to the requirements of the CTDOT Bridge Design Manual and the AASHTO LRFD Bridge Design Specifications with the following additions and revisions:

1. Working Drawings: Before fabrication, the Contractor shall submit working drawings and design computations to the Engineer for review in accordance with Article 1.05.02 of the Standard Specifications.

   Working drawings for the wingwall(s) shall include but not be limited to the following:

   a. Layout plan of the wingwall.
   b. Plans and cross-sections showing length, width, height and thickness of walls.
   c. Type, size, location and spacing of steel reinforcing and inserts for anchoring threaded deformed steel bars. Bending diagrams, material lists and catalog cuts for inserts shall be provided.
   d. Type, size and location of lifting holes and seating fixtures. All fixtures (inserts, etc.) cast permanently into the sections shall be recessed a minimum of ¾". No more than four lifting holes or fixtures shall be located in each wingwall section.
   e. Location and size of all holes cast for grouting deformed steel bars or other reasons as noted on the plans.
   f. The type and application method of the corrosive resistant coating.
   g. Material designations.

   Working drawings for all wingwall sections shall be stamped by a Professional Engineer licensed in the State of Connecticut. Each sheet of the working drawings shall be stamped.

After the working drawings have been reviewed and the Engineer's comments have been appropriately taken into account and implemented, the Contractor shall submit a final submission of working drawings.

Erection drawings shall also be prepared and submitted for review by the Engineer.

2. Design Computations: With the submission of working drawings, the Contractor shall also submit to the Engineer for review four sets of complete design computations for the wingwall, and the connection of the wingwall to the pile cap, if applicable. These computations shall be stamped by a Professional Engineer licensed in Connecticut.

   Unless otherwise noted, the wingwall shall be designed in accordance with the Load and Resistance Factor Design method (LRFD) described in the aforementioned AASHTO and ASTM specifications. The wingwall shall be designed for the applicable AASHTO LRFD Limit States.

   The maximum allowable bearing capacity of the soil shall be assumed to be 4 ksf unless otherwise shown on the plans. If additional soils information is required by the Contractor's designer, it must be obtained by the Contractor. The cost of obtaining additional geotechnical information shall be included in the cost of this item.

3. Length of Sections: The length of each wingwall section shall be determined by the Contractor but approved by the Engineer. When laid together, the wingwall sections shall satisfy the total length of the wingwall shown on the plans.

4. Forms and Forming Material: Forms shall be mortar-tight and sufficiently strong to prevent misalignment of adjacent wingwall sections. Forms shall be constructed to allow their removal without damage to the concrete. A positive means of supporting reinforcing cages in place during forming shall be required.

   The forms shall not be removed until the concrete is sufficiently strong to avoid possible damage to the concrete. Forms shall not be removed without approval being granted by the Engineer.

   All forming materials used for casting cylindrical openings for lifting holes or holes for grouting deformed steel bars shall be removed. All non-plastic material used as forms for casting weepholes shall also be removed.

5. Mixture: The Contractor shall design and submit to the Engineer for review a concrete mix that shall attain a minimum 28-day strength (f 'c) as shown on the plans.

6. Placing Concrete: Concrete shall not be deposited in the forms until the Engineer has verified the presence and proper location of the reinforcing steel and other cast-in-place components and has given his approval thereof.

Concrete shall not be deposited into the forms when the ambient temperature is below 40° F or above 100° F, unless adequate heating or cooling procedures are provided and have been previously approved by the Engineer. The concrete temperature shall be within the range of 60° F to 90° F at the time of placement.

Production during the winter season, from November 15 to March 15 inclusive, will be permitted only on beds located in a completely enclosed structure of suitable size and dimension that provides a controlled atmosphere for the protection of both the casting operation and the product.

Outside concreting operations will not be permitted during rainfall unless the operation is completely under cover.

Void forms shall be held in place against uplift or lateral displacement during the pouring and vibrating of the concrete by substantial wire ties or other satisfactory means as approved by the Engineer.

The concrete shall be vibrated internally, or externally, or both, as ordered by the Engineer. The vibrating shall be done with care in such a manner as to avoid displacement of reinforcing steel, voids, forms, or other components. There shall be no interruption in the pouring of any of the sections. Concrete shall be carefully placed in the forms and sufficiently vibrated to produce a surface that is free from imperfections such as honeycombing, segregation, cracking, or checking. Any deficiencies noted in the sections may be cause for rejection.

7. Test Cylinders: During the casting of the wingwall sections, the Contractor shall make test cylinders under the supervision of a representative of the Department. A minimum of 4 cylinders shall be taken during each production run or as ordered by the Engineer. The dimensions and type of cylinder mold shall be as specified by the Engineer. Cylinders shall be cured under the requirements of ASTM C31 and shall be used to determine the 28-day compressive strength requirements (f ′c). Failure of any of the 28-day tests cylinders to meet 90% of the minimum compressive strength requirement may be cause for rejection. The Engineer also reserves the right to request and test core specimens from the sections to determine their adequacy.

8. Repairs: The Engineer shall evaluate the acceptability and the cause of the defects and the service condition of the wingwall section. No repairs shall be done by the Contractor unless permission has been granted by the Engineer. The Contractor shall submit to the Engineer, for review, the proposed methods and materials to be used in the repair operation. All repairs shall be sound and properly finished and cured before the wingwall section is delivered to the job site. The Contractor shall bear the costs of all repair work.

9. Finishing: All exposed, outside surfaces of end sections shall be given a grout clean-down finish in accordance with Subarticle 6.01.03-10 except where concrete will be field cast against the section. Other formed surfaces need not be finished in any specific manner. All

fins, runs, or mortar shall be removed from surfaces that will remain exposed. Form marks on exposed surfaces shall be smoothed by grinding.

10. Handling and Storage: Care shall be taken during storage, transporting, hoisting and handling of all wingwall sections to prevent damage. Sections damaged by improper storing, transporting or handling shall be repaired or replaced by the Contractor, as directed by the Engineer and at no cost to the town. All storage and handling operations shall be as directed by the Engineer.

    The wingwall sections shall not be removed from their casting beds until the concrete has attained a minimum compressive strength of 75% of the 28-day strength. The wingwall sections shall not be shipped to the job site until the 28-day strength (f 'c) has been attained.

11. Installation: The installation of the precast concrete wingwall shall conform to the following requirements:

    The installation of the wingwall sections shall proceed as required by the sequence of construction, stage construction plans, and the special provisions entitled "Prosecution and Progress" and "Maintenance and Protection of Traffic."

    The wingwall sections shall be seated within the center of the both keyways and shimmed to the proper low-chord elevation. The wingwall stem shall be grouted securely within the keyways.

    The wingwall sections shall be placed in a manner to best accommodate and facilitate the construction of the precast concrete headwalls, culvert, etc. No wingwall sections shall be set on cast-in-place concrete without the approval of the Engineer. The wingwall sections shall be grouted in place and fully bear on the pile caps.

    The wingwall sections shall be set to the line and grade indicated on the plans or as directed by the Engineer. Placement of the sections shall not start until the Engineer has approved the compressive strength of the foundation material.

    Slight mismatches may be tolerated provided that the vertical difference between the top surfaces and the horizontal difference between adjacent sections is less ½".

    The butted joints shall be securely seated together to achieve a silt-tight joint all around. A positive means, through the use of seating devices, shall be used for pulling one section against another to assure an adequate silt-tight joint.

    Details for the seating method shall be submitted to the Engineer for review. The lap joints shall be seated such that they make a continuous line of sections with a smooth interior free from irregularities in the invert line.

    After its installation, any wingwall section or joint that is, as determined by the Engineer, not acceptable in vertical or horizontal alignment for any reason, including but not limited to

settlement, displacement, excess misalignments or misfits, shall be removed by the Contractor and correctly installed, as directed by the Engineer and at no additional cost to the State.

All fixtures or holes cast into the sections for lifting or seating shall be neatly filled with non-shrink grout. The finished surface shall be smooth and level with the adjacent concrete.

The surface preparation, mixing, placing, curing, and finishing of the non-shrink grout shall conform to the written instructions provided by the manufacturer of the grout. The Contractor shall furnish the Engineer with copies of the instructions. The grout shall be cured at least 3 days unless determined otherwise by the Engineer.

Method of backfilling shall be in conformance with the requirements of the plans and Section 2.16 except that the fill placed around the wingwall sections shall be deposited on both sides to approximately the same elevation at the same time.

Method of Measurement: This item, being paid for on a lump sum basis, will not be measured for payment. Work incidental to the fabrication, furnishing, transportation, and installation of precast concrete wingwalls that are not specifically paid for under any other items, will not be measured for payment but shall be considered incidental to the work performed under this item.

Basis of Payment: This work will be paid for at the contract lump sum price for "Precast Concrete Wingwalls (Site No. X)," complete and accepted, which price shall include all equipment, tools, labor, and materials incidental to the fabrication, furnishing, transportation, and installation of the precast concrete wingwalls. The lump sum price shall include but not limited to steel reinforcement, dowel bars and dowel bar splicers, non-shrink grout, joint sealant, preformed expansion joint filler, and all other materials incidental thereto. The lump sum cost shall also include the cost of preparing and furnishing design computations, working drawings, shop drawings, and erection plans.

There shall be no direct payment for forming weepholes through the wall or for the pipe necessary for this purpose, but the cost thereof shall be considered as included in the general cost of the work. Cost of bagged stone behind the weepholes shall be included in the cost of the item "Pervious Structure Backfill."

Pay Item	Pay Unit
Precast Concrete Wingwalls (Site No. 1)	l.s.
Precast Concrete Wingwalls (Site No. 2)	l.s.
Precast Concrete Wingwalls (Site No. 3)	l.s.

ITEM #0602910A – DRILLING HOLES AND GROUTING DOWELS

Description: Work under this item shall consist of drilling holes in concrete and grouting dowels or anchor rods at the locations shown on the plans, in accordance with the plans, the manufacturer's recommendations, and as directed by the Engineer.

Materials: The adhesive bonding material shall be a resin compound specially formulated to anchor steel bars in holes drilled into concrete for the purpose of resisting tension pull-out. The adhesive bonding material shall be selected from the Connecticut Department of Transportation Qualified Products List.

Certification: A Materials Certificate and Certificate of Compliance shall be required for the adhesive bonding material in accordance with Article 1.06.07, certifying the conformance of this material to the requirements stated herein.

Construction Methods: The Contractor shall drill holes into the concrete to the depth and at the locations shown on the plans. The Contractor shall submit the following to the Engineer for review: type of drill, diameter of bit, method of cleaning holes and method of placement of the adhesive bonding material. Specifications and recommendations for the aforementioned may be obtained from the manufacturer of the adhesive bonding material. The weight of the drill shall not exceed 20 pounds. The reinforcing dowels shall be able to develop a pull-out resistance of 90 percent of their nominal yield strength when bonded at the embedment depths provided. The Contractor shall provide the minimum cover for the dowels as shown on the plans. If the existing reinforcing steel is encountered during drilling, the holes may be relocated only if approved by the Engineer. Drilling methods shall not cause spalling, racking, or other damage to the concrete. Those areas damaged by the Contractor shall be repaired by the Contractor in a manner suitable to the Engineer and at no expense to the State. The Contractor shall take necessary precautions to prevent any materials from falling onto the river below. For the adhesive bonding materials, a Certificate of Compliance and a Materials Certificate will be required in accordance with Article 1.06.07, confirming the conformance of the adhesive bonding material to the requirements set forth these specifications.

Methods of Measurements: This work will be measured for payment by each number of drilled and grouted holes completed and accepted.

Basis of Payment: This work will be paid for at the contract unit price per each for "Drilling Holes and Grouting Dowels," which price shall include drilling and preparing holes, and applying adhesive bonding material in the hole. It shall also include all materials, except dowels, and all equipment, tools, and labor incidental thereto.

Cost of dowels are not included in this item but shall be paid for under the item "Deformed Steel Bars."

Pay Item	Pay Unit
Drilling Holes and Grouting Dowels	ea.

ITEM #0707009A – MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC)

Description: Work under this item consists of furnishing and installing a seamless elastomeric waterproofing membrane system applied to a concrete or steel surface as shown on the plans, in accordance with this specification and as directed by the Engineer. Work shall also include conditioning of the surface to be coated and all quality-control testing noted herein.

The completed membrane system shall be comprised of a primer coat followed by the membrane coating, which is applied in one or two layers for a minimum total thickness of 80 mil. This work shall also include an additional 40 mil membrane layer with aggregate broadcast into the material while still wet.

Materials: The Contractor shall select a waterproofing membrane system from the Department's current Qualified Product List (QPL) for Spray-Applied Membrane Waterproofing System. All materials incorporated in the works shall meet the Manufacturer's specification for the chosen system. The Engineer will reject any system that is not on the QPL.

Materials Certificate: The Contractor shall submit to the Engineer a Materials Certificate for the primer and membrane in accordance with the requirements of Article 1.06.07.

Construction Methods: At least ten days prior to installation of the membrane system, the Contractor shall submit to the Engineer, the manufacturer's recommended procedure for preparing the deck surface, pre-treatment or preparing at cracks and gaps, treatment at curbs, vertical surfaces, or discontinuities, application of the primer and membrane, and placement of aggregated coat. Procedures shall also include recommended repairs of system non-compliant issues identified during application. The system shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer's recommendations.

A technical representative, in the direct employ of the manufacturer, shall be present on-site immediately prior to and during application of the membrane. The representative shall inspect and approve the surface prior to priming, and provide guidance on the handling, mixing and addition of components and observe application of the primer and membrane. The representative shall perform all required quality-control testing and remain on the Project site until the membrane has fully cured.

All quality-control testing, including verbal direction or observations on the day of the installation, shall be recorded and submitted to the Engineer for inclusion in the Project's records. A submittal of the quality-control testing data shall be received by project personnel prior to any paving over the finished membrane or within 24 hours following completion of any staged portion of the work.

1. Applicator Approval: The Contractor's membrane Applicator shall be fully trained and licensed by the membrane manufacturer and shall have successfully completed at least three spray membrane projects in the past five years. The Contractor shall furnish references from

those projects, including names of contact persons and the names, addresses and phone numbers of persons who supervised the projects. This information shall be submitted to the Engineer prior to the start of construction. The Engineer shall have sole authority to determine the adequacy and compliance of the submitted information. Inadequate proof of ability to perform the work will be grounds to reject proposed applicators.

2. Job Conditions:

   (a) Environmental Requirements: Air and substrate temperatures shall be between 32°F (0°C) and 104°F (40°C) providing the substrate is above the dew point. Outside of this range, the Manufacturer shall be consulted.

   The Applicator shall be provided with adequate disposal facilities for non-hazardous waste generated during installation of the membrane system. The applicator shall follow safety instructions regarding respirators and safety equipment.

   (b) Safety Requirements: All open flames and spark producing equipment shall be removed from the work area prior to commencement of application.

   "No Smoking" signs shall be visibly posted at the job site during application of the membrane waterproofing.

   Personnel not involved in membrane application shall be kept out of the work area.

3. Delivery, Storage and Handling:

   (a) Packaging and Shipping: All components of the membrane system shall be delivered to the site in the Manufacturer's packaging, clearly identified with the products type and batch number.

   (b) Storage and Protection: The Applicator shall be provided with a storage area for all components. The area shall be cool, dry, and out of direct sunlight and shall be in accordance with the Manufacturer's recommendations and relevant health and safety regulations.

   Copies of Material Safety Data Sheets (MSDS) for all components shall be kept on site for review by the Engineer or other personnel.

   (c) Shelf Life - Membrane Components: Packaging of all membrane components shall include a shelf-life date sealed by the Manufacturer. No membrane components whose shelf life has expired shall be used.

4. Surface Preparation:

   (a) Protection: The Applicator shall be responsible for the protection of equipment and adjacent areas from over spray or other contamination. Parapets and bridge joints shall be masked prior to application of the materials.

(b) Surface Preparation: Sharp peaks and discontinuities shall be ground smooth. The surface profile of the prepared substrate is not to exceed ¼-inch (peak to valley) and areas of minor surface deterioration of ½-inch and greater in depth shall also be repaired. The extent and location of the surface patches require the approval of the Engineer before the membrane system is applied.

Surfaces shall be free of oil, grease, curing compounds, loose particles, moss, algae, growth, laitance, friable matter, dirt, bituminous products, and previous waterproofing materials. If required, degreasing shall be done by detergent washing in accordance with ASTM D4258.

The surface shall be abrasively cleaned, in accordance with ASTM D4259, to provide a sound substrate free from laitance.

Voids, honeycombed areas, and blow holes on vertical surfaces shall be repaired in the same manner.

All steel components to receive membrane waterproofing shall be blast cleaned in accordance with SSPC SP6 and coated with the membrane waterproofing system within the same work shift.

5. Inspection and Testing: Prior to priming of the surface, the Engineer, Applicator and Manufacturer's technical representative shall inspect and approve the prepared substrate.

(a) Random tests for deck moisture content shall be conducted on the substrate by the Applicator at the job site using a "Sovereign Portable Electronic Moisture Master Meter," a "Tramex CMEXpertII Concrete Moisture Meter" or approved equal. The minimum frequency shall be one test per 1000 s.f. but not less than three tests per day per bridge. Additional tests may be required if atmospheric conditions change and retest of the substrate moisture content is warranted.

The membrane system shall not be installed on substrate with a moisture content greater than that recommended by the system's manufacturer, but shall not be greater than 6%, whichever is less.

(b) Random tests for adequate tensile bond strength shall be conducted on the substrate using an adhesion tester in accordance with the requirements of ASTM D4541. The minimum frequency shall be one test per 5,000 s.f. but not less than three adhesion tests per bridge.

Adequate surface preparation will be indicated by tensile bond strengths of primer to the substrate greater than or equal to 150 psi or failure in a concrete surface and greater than or equal to 300 psi for steel surfaces.

If the tensile bond strength is lower than the minimum specified, the Engineer may request additional substrate preparation. Any primer not adequately applied shall be removed and a new primer applied at the Contractor's expense, as directed by Engineer.

(c) Cracks and grouted joints shall be treated in accordance with the Manufacturer's recommendations, as approved or directed by the Engineer.

6. Application:

(a) The System shall be applied in four distinct steps as follows:

1) Substrate preparation and gap/joint bridging preparation
2) Priming
3) Membrane application
4) Membrane with aggregate

(b) Immediately prior to the application of any components of the System, the surface shall be dry (see Section 5a of this specification) and any remaining dust or loose particles shall be removed using clean, dry oil-free compressed air or industrial vacuum.

(c) Where the area to be treated is bound by a vertical surface (e.g., curb or wall), the membrane system may be continued up the vertical, as shown on the plans or as directed by the Engineer.

(d) The handling, mixing and addition of components shall be performed in a safe manner to achieve the desired results, in accordance with the Manufacturer's recommendations or as approved or directed by the Engineer.

(e) A neat finish with well-defined boundaries and straight edges shall be provided by the Applicator.

(f) Primer: The primer shall consist of one coat with an overall coverage rate of 125 to 175 s.f./gal unless otherwise recommended in the manufacturer's written instructions.

All components shall be measured and mixed in accordance with the Manufacturer's recommendations.

The primer shall be spray applied using a single component spray system approved for use by the Manufacturer. If required by site conditions and allowed by the manufacturer, brush or roller application will be allowed.

The primer shall be allowed to cure tack-free for a minimum of 30 minutes or as required by the Manufacturer's instructions, whichever time is greater, prior to application of the first lift of waterproofing membrane.

Porous concrete (brick) may require a second coat of primer should the first coat be absorbed.

(g) Membrane: The waterproofing membrane shall consist of one or two coats for a total dry film thickness of 80 mils. If applied in two coats, the second coat shall be of a contrasting color to aid in quality assurance and inspection.

The membrane shall be comprised of Components A and B and a hardener powder which is to be added to Component B in accordance with the Manufacturer's recommendations.

The substrate shall be coated in a methodical manner.

Thickness checks: For each layer, checks for wet film thickness using a gauge pin or standard comb-type thickness gauge shall be carried out typically once every 100 s.f. Where rapid set time of the membrane does not allow for wet film thickness checks, ultrasonic testing (steel surfaces only), calibrated point-penetrating (destructive) testing, in-situ sampling (cutout of small sections for measuring thicknesses), or other methods approved by the Engineer shall be employed for determination of dry film thickness. The measured thickness of each and every individual test of the membrane shall be greater than or equal to the required thickness.

Bond Strength: Random tests for adequate tensile bond strength shall be conducted on the membrane in accordance with the requirements of ASTM D4541. The minimum test frequency shall be one test per 5,000 s.f. but no less than three adhesion tests per bridge. Adequate adhesion will be indicated by tensile bond strengths of the membrane to the substrate of greater than or equal to 150 psi or failure in a concrete surface and greater than or equal to 300 psi for steel surfaces.

Spark Testing: Following application of the membrane, test for pin holes in the cured membrane system over the entire application area in accordance with ASTM D4787 "Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates." Conduct the test at voltages recommended by the manufacturer to prevent damage to the membrane.

Repair the membrane system following destructive testing and correct any deficiencies in the membrane system or substrate noted during quality-control testing in accordance with the manufacturer's recommendations to the satisfaction of the Engineer at no additional cost to the State.

(h) Repairs: If an area is left untreated or the membrane becomes damaged, a patch repair shall be carried out to restore the integrity of the system. The damaged areas shall be cut back to sound materials and wiped with solvent (e.g., acetone) up to a width of at least four inches on the periphery, removing any contaminants unless otherwise recommended by the manufacturer. The substrate shall be primed as necessary, followed by the membrane. A continuous layer shall be obtained over the substrate with a 4-inch overlap onto existing membrane.

Where the membrane is to be joined to existing cured material, the new application shall overlap the existing by at least four inches. Cleaning and surface preparation on areas to be lapped shall be as recommended in the manufacturer's written instructions.

(i) Aggregated Finish:

1) Apply an additional 40 mil thick layer of the membrane material immediately followed by an aggregate coating, before the membrane cures, at a rate to fully cover the exposed area. The membrane and aggregate shall be fully integrated after the aggregate has been applied and the membrane cured.
2) Localized areas not fully coated shall be touched-up with additional membrane and aggregate as needed.
3) Remove loose and excess aggregate from the surface to the satisfaction of the Engineer and dispose of properly after application prior to allowing traffic onto finished surface or application of tack coat.

(j) Tack Coat: Prior to application of a bituminous concrete overlay, the aggregated finish shall be coated with tack coat in accordance with Section 4.06.

7. Final Review: The Engineer and the Applicator shall jointly review the area(s) over which the completed System has been installed. Any irregularities or other items that do not meet the requirements of the Engineer shall be addressed at this time.

Method of Measurement: The quantity to be paid for under this item shall be the number of square yards (square meters) of waterproofed surface completed and accepted.

Basis of Payment: This item will be paid for at the contract unit price per square yard (square meter) of "Membrane Waterproofing (Cold Liquid Elastomeric)," complete in place, which price shall include all surface preparation, furnishing, storing and applying the system, technical representative and quality control tests, and any necessary repairs and remediation work as well as all materials, equipment, tools, labor incidental to this work.

Pay Item	Pay Unit
Membrane Waterproofing (Cold Liquid Elastomeric)	s.y.

ITEM #0950005A – TURF ESTABLISHMENT

Turf Establishment shall be constructed in accordance with Article 9.50, supplemented as follows:

Article 9.50.02 – Materials: *Delete Section M13.04 (a) and replace with the following:*

Coastal Salt Tolerant Seed Mix (New England Wetland Plants, Inc.; 413-548-8000; www.newp.com)

Article 9.50.03 – Construction Methods: *Replace the "calendar dates" in Section 2, Seeding Season, with the following:*

Spring – May 15 to June 15
Fall – August 15 to October 13, 2008

Replace the 1st paragraph in Section 3. Seeding Methods, with the following:

The grass seed mixture conforming Article M.13.04 shall be applied by any agronomically acceptable procedure. The rate of application shall be no less than 35 pounds per acre (1 pound per 1,250 square feet).

ITEM #0950043A - WETLAND GRASS ESTABLISHMENT

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

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

The placement of fertilizer, mulch or bio-degradable erosion control matting will not be allowed within any wetland area.

All wetland seed mixture sources shall be approved by the Engineer prior to purchase.

Three (3) qualified wetland seed mixtures are as follows:

1. **New England Wet Mix (Wetland Seed Mix)**, New England Wetland Plants, Inc. 820 West Street Amherst, MA 01002, or equal. Rate shall be one (1) pound PLS per 2,500 sq. ft.

2. **OBL Wetland Mix,** Ernst Conservation Seeds, Inc. 8884 Mercer Pike, Meadville, PA 16335, or equal. Rate shall be one (1) pound PLS per 2,000 sq. ft.

3. **Vermont Wetland Shrub**, Vermont Wetland Plant Supply, LLC, P.O. Box 153, Orwell, VT 05760, or equal. Rate shall be one (1) pound PLS per 2,420 sq. ft.

All seed mixtures must be reviewed and approved by the Engineer prior to application. All seed Materials Certificates must have seed mixtures that shall not include any invasive species pursuant to Connecticut General Statute Sec. 22a-381d, or any State Threatened or State Endangered species known pursuant to Connecticut General Statute Sec. 26-303 which would be a violation of the Connecticut Endangered Species Act. The seed tags from the bags are to be removed by the Engineer upon delivery and attached to the Materials Certificate. No seeding shall occur if the 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 approved by the Engineer.

Wetland grass establishment seeding for Wetland Mitigation Site(s): Seeding shall occur during the fall season immediately following construction of the wetland site(s). Fall seeding must occur from August 15th to October 31st.

Wetland grass establishment seeding for areas other than the Wetland Mitigation Site(s), when required: Seeding dates shall adhere to Form 817 Section 9.50 – Turf Establishment.

Seeding shall be applied to wetland areas that will not be routinely inundated. 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 based on the information provided on the seed tags at delivery, as determined by the following formula:

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

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

Method of Measurement: This work will be measured for payment by the number of square feet of surface area of established wetland seed mixture, planted, and accepted as specified or by the number of square feet of surface area of seeding actually covered as specified.

Basis of Payment: This work shall be paid at the Contract unit price per square foot for "Wetland Grass Establishment," which price shall include all materials maintenance, equipment, tools, labor, transportation, operations and all 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
Wetland Grass Establishment	s.f.

ITEM NO. 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 "Prosecution and Progress":

Valley Road and Bear Hill Road

Valley Road and Bear Hill Road will be closed during and for the duration of construction operations to replace the bridge. Both Valley Road bridges (Site 1 and Site 2), shall not be closed for construction simultaneously. The Contractor shall detour traffic as shown on the Detour Plans contained in the Contract Plans.

The Contractor shall apply the final course of bituminous concrete for the full width and length of the roadway as a final operation.

The Contractor shall schedule operations so that roadway resurfacing shall be full width across the roadway section at the end of the workday, all transverse pavement height differentials shall be tapered enough to the satisfaction of the Engineer, so as to negate any “bump” to traffic.

All Other Roadways

The Contractor shall maintain and protect a minimum of one lane of traffic in each direction, each lane on a paved travel path not less than 11 feet in width.

Excepted therefrom will be those periods, during the allowable periods, when the Contractor is actively working, at which time the Contractor shall maintain and protect at least an alternating one-way traffic operation, on a paved travel path not less than 11 feet in width. The length of the alternating one-way traffic operation shall not exceed 300 feet and 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 allowed to close said driveways to perform the required work during those periods when the businesses are closed, unless permission is granted from the business owner to close the driveway during business hours. If a temporary closure of a residential driveway is necessary, the Contractor shall coordinate with the owner to determine the time period of the closure.

Article 9.71.03: *Construction Method is supplemented as follows:*

General

Unpaved travel paths will only be permitted for areas requiring full depth and full width reconstruction, in which case, the Contractor will be allowed to maintain traffic on processed

aggregate for a duration not to exceed 10 calendar days. The unpaved section shall be the full width of the road and perpendicular to the travel lanes. Opposing traffic lane dividers shall be used as a centerline.

The Contractor is required to delineate any raised structures within the travel lanes, 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.

The Contractor shall schedule operations so that pavement removal and roadway resurfacing shall be completed full width across a roadway (bridge) section by the end of a workday (work night), or as directed by the Engineer.

When the installation of all intermediate courses of bituminous concrete pavement is completed for the entire roadway, the Contractor shall install the final course of bituminous concrete pavement.

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 workday, if the vertical drop-off exceeds 3 inches, the Contractor shall provide a temporary traversable slope of 4:1 or flatter that is acceptable to the Engineer.

The Contractor, during the course of active construction work on overhead signs and structures, shall close the lanes directly below the work area for the entire length of time overhead work is being undertaken. At no time shall an overhead sign be left partially removed or installed.

If applicable, when an existing sign is removed, it shall be either relocated or replaced by a new sign during the same working day.

The Contractor shall not store any material on-site which would present a safety hazard to motorists or pedestrians (e.g., fixed object or obstruct sight lines).

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

Construction vehicles entering travel lanes at speeds less than the posted speed are interfering with traffic and shall not be allowed without a lane closure. The lane closure shall be of sufficient length to allow vehicles to enter or exit the work area at posted speeds, in order to merge with existing traffic.

Existing Signing

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

Requirements for Winter

The Contractor shall schedule a meeting with representatives from the Department including the offices of Maintenance and Traffic, and the Town/City to determine what interim traffic control measures the Contractor shall accomplish for the winter to provide safety to the 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 the safe and 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. 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 so as to command respect from the motorist.

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.

If a lane reduction taper is required to shift traffic, the entire length of the taper should be installed on a tangent section of roadway so that the entire taper area can be seen by the motorist.

Any existing signs that are in conflict with the traffic control patterns shall be removed, covered, or turned so that they are not readable by oncoming traffic.

When installing a traffic control pattern, a Buffer Area should be provided and this area shall be free of equipment, workers, materials, and parked vehicles.

Typical traffic control plans 19 through 25 may be used for moving operations such as line striping, pothole patching, mowing, or sweeping when it is necessary for equipment to occupy a travel lane.

Traffic control patterns will not be required when vehicles are on an emergency patrol type activity or when a short duration stop is made and the equipment can be contained within the shoulder. Flashing lights and appropriate traffic person shall be used when required.

Although each situation must be dealt with individually, conformity with the typical traffic control plans contained herein is required. In a situation not adequately covered by the typical traffic control plans, the Contractor must contact the Engineer for assistance prior to setting up a traffic control pattern.

PLACEMENT OF SIGNS

Signs must be placed in such a position to allow 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 TRAFFIC CONTROL PLANS

The 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 whenever possible.

The proper application of the traffic control plans and installation of traffic control devices depends on actual field conditions.

Adjustments to the traffic control plans shall be made only at the direction of the Engineer to improve the visibility of the signs and devices and to better control traffic operations. Adjustments to the traffic control plans shall be based on safety of work forces and motorists, abutting property requirements, driveways, side roads, and the vertical and horizontal curvature of the roadway.

The Engineer may require that the traffic control pattern be located significantly in advance of the work area to provide better sight line to the signing and safer traffic operations through the work zone.

Table I indicates the minimum taper length required for a lane closure based on the posted speed limit of the roadway. These taper lengths shall only be used when the recommended taper lengths shown on the traffic control plans cannot be achieved.

TABLE I – MINIMUM TAPER LENGTHS

POSTED SPEED LIMIT MILES PER HOUR	MINIMUM TAPER LENGTH IN FEET FOR A SINGLE LANE CLOSURE
30 OR LESS	180
35	250
40	320
45	540
50	600
55	660
65	780

SECTION 1. WORK ZONE SAFETY MEETINGS

1.a) Prior to the commencement of work, a work zone safety meeting will be conducted with representatives of 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. 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 should include:

- Review Project scope of work and time
- Review Section 1.08, Prosecution and Progress
- Review Section 9.70, Traffic persons
- Review Section 9.71, Maintenance and Protection of Traffic
- Review Contractor's schedule and method of operations.
- Review areas of special concern: ramps, turning roadways, medians, lane drops, etc.
- Open discussion of work zone questions and issues
- Discussion of review and approval process for changes in contract requirements as they relate to work zone areas

SECTION 2. GENERAL

2.a) If the required minimum number of signs and equipment (i.e. one High Mounted Internally Illuminated Flashing Arrow for each lane closed, two TMAs, Changeable Message Sign, etc.) are not available; the traffic control pattern shall not be installed.

2.b) The Contractor shall have back-up equipment (TMAs, High Mounted Internally Illuminated Flashing Arrow, Changeable Message Sign, construction signs, cones/drums, etc.) available at all times in case of mechanical failures, etc. The only exception to this is in the case of sudden equipment breakdowns in which the pattern may be installed but the Contractor must provide replacement equipment 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 loss time.

2.d) In cases of legitimate differences of opinion between the Contractor and the Inspection staff, the Inspection staff shall err on the side of safety. 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.

SECTION 3. INSTALLING AND REMOVING TRAFFIC CONTROL PATTERNS

3.a) Lane Closures shall be installed beginning with the advanced warning signs and proceeding forward toward the work area.

3.b) Lane Closures shall be removed in the reverse order, beginning at the work area, or end of the traffic control pattern, and proceeding back toward the advanced warning signs.

3.c) Stopping traffic may be allowed:

- As per the contract for such activities as blasting, steel erection, etc.
- During paving, milling operations, etc. 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 and traffic should not travel across the longitudinal joint or difference in roadway elevation.
- To move slow moving equipment across live traffic lanes into the work area.

3.d) Under certain situations when the safety of the traveling public and/or that of the workers may be compromised due to conditions such as traffic volume, speed, roadside obstructions, or sight line deficiencies, as determined by the Engineer and/or State Police, traffic may be briefly impeded while installing and/or removing the advanced warning signs and the first ten traffic cones/drums only. Appropriate measures shall be taken to safely slow traffic. If required, traffic slowing techniques may be used and shall include the use of Truck Mounted Impact Attenuators (TMAs) as appropriate, for a minimum of one mile in advance of the pattern starting point. Once the advanced warning signs and the first ten traffic cones/drums are installed/removed, the TMAs and sign crew shall continue to install/remove the pattern as described in Section 4c and traffic shall be allowed to resume their normal travel.

3.e) The Contractor must adhere to using the proper signs, placing the signs correctly, and ensuring the proper spacing of signs.

3.f) 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/exiting with/from the main line traffic. This shall be completed before installing the mainline pattern past the ramp or intersecting roadway.

3.g) Prior to installing a pattern, any conflicting existing signs shall be covered with an opaque material. Once the pattern is removed, the existing signs shall be uncovered.

3.h) On limited access roadways, workers are prohibited from crossing the travel lanes 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.

SECTION 4. USE OF HIGH MOUNTED INTERNALLY ILLUMINATED FLASHING ARROW

4.a) On limited access roadways, one Flashing Arrow shall be used for each lane that is closed. The Flashing Arrow shall be installed concurrently with the installation of the traffic control pattern and its placement shall be as shown on the traffic control plan. For multiple lane closures, one Flashing Arrow is required for each lane closed. If conditions warrant, additional Flashing Arrows should be employed (i.e.: curves, major ramps, etc.).

4.b) On non-limited access roadways, the use of a Flashing Arrow for lane closures is optional. The roadway geometry, sight line distance, and traffic volume should be considered in the decision to use the Flashing Arrow.

4.c) The Flashing Arrow shall not be used on two lane, two-way roadways for temporary alternating one-way traffic operations.

4.d) The Flashing Arrow board display shall be in the “arrow” mode for lane closure tapers and in the “caution” mode (four corners) for shoulder work, blocking the shoulder, or roadside work near the shoulder. The Flashing Arrow shall be in the “caution” mode when it is positioned in the closed lane.

4.e) The Flashing Arrow shall not be used on a multi-lane roadway to laterally shift all lanes of traffic, because unnecessary lane changing may result.

SECTION 5. USE OF TRUCK MOUNTED IMPACT ATTENUATOR VEHICLES (TMAs)

5.a) For lane closures on limited access roadways, a minimum of two TMAs shall be used to install and remove traffic control patterns. If two TMAs are not available, the pattern shall not be installed.

5.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 should be considered in the decision to utilize the TMAs.

5.c) Generally, to establish the advance and transition signing, one TMA shall be placed on the shoulder and the second TMA shall be approximately 1,000 feet ahead blocking the lane. The flashing arrow board mounted on the TMA should be in the "flashing arrow" mode when taking the lane. The sign truck and workers should be immediately 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 Changeable Message Signs, signs, Flashing Arrows, and cones/drums are installed. The flashing arrow board mounted on the TMA should be in the "caution" mode when traveling in the closed lane.

5.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 flashing arrow board mounted on the TMA should be in the "caution" mode when in the closed lane.

5.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 the specification entitled "Type 'D' Portable Impact Attenuation System". 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) should be placed at the beginning of the work area and shall be advanced as the paving or concrete operations proceed.

5.f) TMAs should be paid in accordance with how the unit is utilized. When it is used as a TMA and is in the proper location as specified, and then it should be paid at the specified hourly rate for "Type 'D' Portable Impact Attenuation System". When the TMA is used as a Flashing Arrow, it should be paid at the daily rate for "High Mounted Internally Illuminated Flashing Arrow". If a TMA is used to install and remove a pattern and then is used as a Flashing Arrow, the unit should be paid as a "Type 'D' Portable Impact Attenuation System" for the hours used to install and remove the pattern, typically 2 hours (1 hour to install and 1 hour to remove), and is also paid for the day as a "High Mounted Internally Illuminated Flashing Arrow".

SECTION 6. USE OF TRAFFIC DRUMS AND TRAFFIC CONES

6.a) Traffic drums shall be used for taper channelization on limited-access roadways, ramps, and turning roadways and to delineate raised catch basins and other hazards.

6.b) 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.

6.c) Traffic Cones less than 42 inches in height shall not be used on limited-access roadways or on non-limited access roadways with a posted speed limit of 45 mph and above.

6.d) Typical spacing of traffic drums and/or cones shown on the Traffic Control Plans in the Contract are maximum spacing and may be reduced to meet actual field conditions as required.

SECTION 7. USE OF (REMOTE CONTROLLED) CHANGEABLE MESSAGE SIGNS (CMS)

7.a) For lane closures on limited access roadways, one CMS shall be used in advance of the traffic control pattern. Prior to installing the pattern, the CMS shall be installed and in operation, displaying the appropriate lane closure information (i.e.: Left Lane Closed - Merge Right). The CMS shall be positioned ½ - 1 mile ahead of the lane closure taper. If the nearest Exit ramp is greater than the specified ½ - 1 mile distance, than an additional CMS shall be positioned a sufficient distance ahead of the Exit ramp to alert motorists to the work and therefore offer them an opportunity to take the exit.

7.b) CMS should not be installed within 1000 feet of an existing CMS.

7.c) On non-limited access roadways, the use of CMS for lane closures is optional. The roadway geometry, sight line distance, and traffic volume should be considered in the decision to use the CMS.

7.d) The advance CMS is typically placed off the right shoulder, 5 feet from the edge of pavement. In areas where the CMS cannot be placed beyond the edge of pavement, it may be placed on the paved shoulder with a minimum of five (5) traffic drums placed in a taper in front of it to delineate its position. The advance CMS shall be adequately protected if it is used for a continuous duration of 36 hours or more.

7.e) When the CMS are no longer required, they should be removed from the clear zone and have the display screen cleared and turned 90° away from the roadway.

7.f) The CMS generally should not be used for generic messages (ex: Road Work Ahead, Bump Ahead, Gravel Road, etc.).

7.g) The CMS should be used for specific situations that need to command the motorist's attention which cannot be conveyed with standard construction signs (Examples include: Exit 34 Closed Sat/Sun - Use Exit 35, All Lanes Closed - Use Shoulder, Workers on Road - Slow Down).

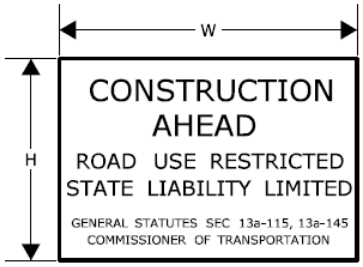
7.h) Messages that need to be displayed for long periods of time, such as during stage construction, should be displayed with construction signs. For special signs, please coordinate with the Office of Construction and the Division of Traffic Engineering for the proper layout/dimensions required.

7.i) The messages that are allowed on the CMS are as follows:

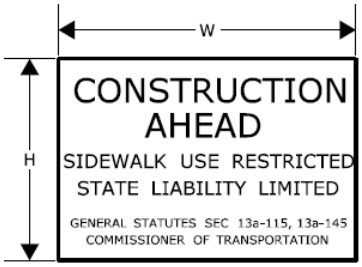
Message No.	Frame 1	Frame 2	Message No.	Frame 1	Frame 2
1	LEFT LANE CLOSED	MERGE RIGHT	9	LANES CLOSED AHEAD	REDUCE SPEED
2	2 LEFT LANES CLOSED	MERGE RIGHT	10	LANES CLOSED AHEAD	USE CAUTION
3	LEFT LANE CLOSED	REDUCE SPEED	11	WORKERS ON ROAD	REDUCE SPEED
4	2 LEFT LANES CLOSED	REDUCE SPEED	12	WORKERS ON ROAD	SLOW DOWN
5	RIGHT LANE CLOSED	MERGE LEFT	13	EXIT XX CLOSED	USE EXIT YY
6	2 RIGHT LANES CLOSED	MERGE LEFT	14	EXIT XX CLOSED USE YY	FOLLOW DETOUR
7	RIGHT LANE CLOSED	REDUCE SPEED	15	2 LANES SHIFT AHEAD	USE CAUTION
8	2 RIGHT LANES CLOSED	REDUCE SPEED	16	3 LANES SHIFT AHEAD	USE CAUTION

For any other message(s), approval must be received from the Office of Construction prior to their use. No more than two (2) displays shall be used within any message cycle.

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"

THE 16-S SIGN 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 TO ALLOW MOTORISTS THE OPPORTUNITY TO AVOID A WORK ZONE. SERIES 16 SIGNS SHALL BE INSTALLED ON ANY MAJOR INTERSECTING ROADWAYS THAT APPROACH THE WORK ZONE. ON LIMITED-ACCESS HIGHWAYS, THESE SIGNS SHALL BE LOCATED IN ADVANCE OF THE NEAREST UPSTREAM EXIT RAMP AND ON ANY ENTRANCE RAMPS PRIOR TO OR WITHIN THE WORK ZONE LIMITS.

THE LOCATION OF SERIES 16 SIGNS CAN BE FOUND ELSEWHERE IN THE PLANS OR INSTALLED AS DIRECTED BY THE ENGINEER.

SIGNS 16-E AND 16-H SHALL BE POST-MOUNTED.

SIGN 16-E SHALL BE USED ON ALL 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.

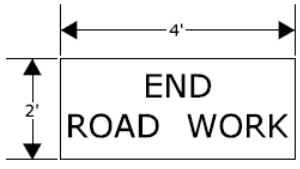
REGULATORY SIGN "ROAD WORK AHEAD, FINES DOUBLED"

THE REGULATORY SIGN "ROAD WORK AHEAD FINES DOUBLED" SHALL BE INSTALLED FOR ALL WORK ZONES THAT OCCUR ON ANY STATE HIGHWAY IN CONNECTICUT WHERE THERE ARE WORKERS ON THE HIGHWAY OR WHEN THERE IS OTHER THAN EXISTING TRAFFIC OPERATIONS.

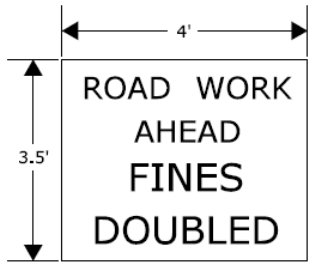
THE "ROAD WORK AHEAD FINES DOUBLED" REGULATORY SIGN SHALL BE PLACED AFTER THE SERIES 16 SIGN AND IN ADVANCE OF THE "ROAD WORK AHEAD" SIGN.

"END ROAD WORK" SIGN

THE LAST SIGN IN THE PATTERN MUST BE THE "END ROAD WORK" SIGN.



80-9612



31-1906

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

REQUIRED SIGNS

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED

Charles S. Harlow
2012.06.05 11:35:43-04'00'

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 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. IF THIS PLAN REMAINS IN CONTINUOUS OPERATION FOR MORE THAN 36 HOURS, THEN TRAFFIC DRUMS SHALL BE USED IN PLACE OF TRAFFIC CONES.

5. ANY LEGAL SPEED LIMIT 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 36 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 DURING THE HOURS OF DARKNESS, INSTALL BARRICADE WARNING LIGHTS - HIGH INTENSITY ON ALL POST-MOUNTED DIAMOND SIGNS IN THE ADVANCE WARNING AREA.

9. A CHANGEABLE MESSAGE SIGN SHALL BE INSTALLED ONE HALF 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' (55m)
35	250' (75m)
40	320' (100m)
45	540' (165m)
50	600' (180m)
55	660' (200m)
65	780' (240m)

METRIC CONVERSION CHART (1" = 25mm)

ENGLISH	METRIC	ENGLISH	METRIC	ENGLISH	METRIC
12"	300mm	42"	1050mm	72"	1800mm
18"	450mm	48"	1200mm	78"	1950mm
24"	600mm	54"	1350mm	84"	2100mm
30"	750mm	60"	1500mm	90"	2250mm
36"	900mm	66"	1650mm	96"	2400mm

SCALE: NONE

CONSTRUCTION TRAFFIC CONTROL PLAN

NOTES

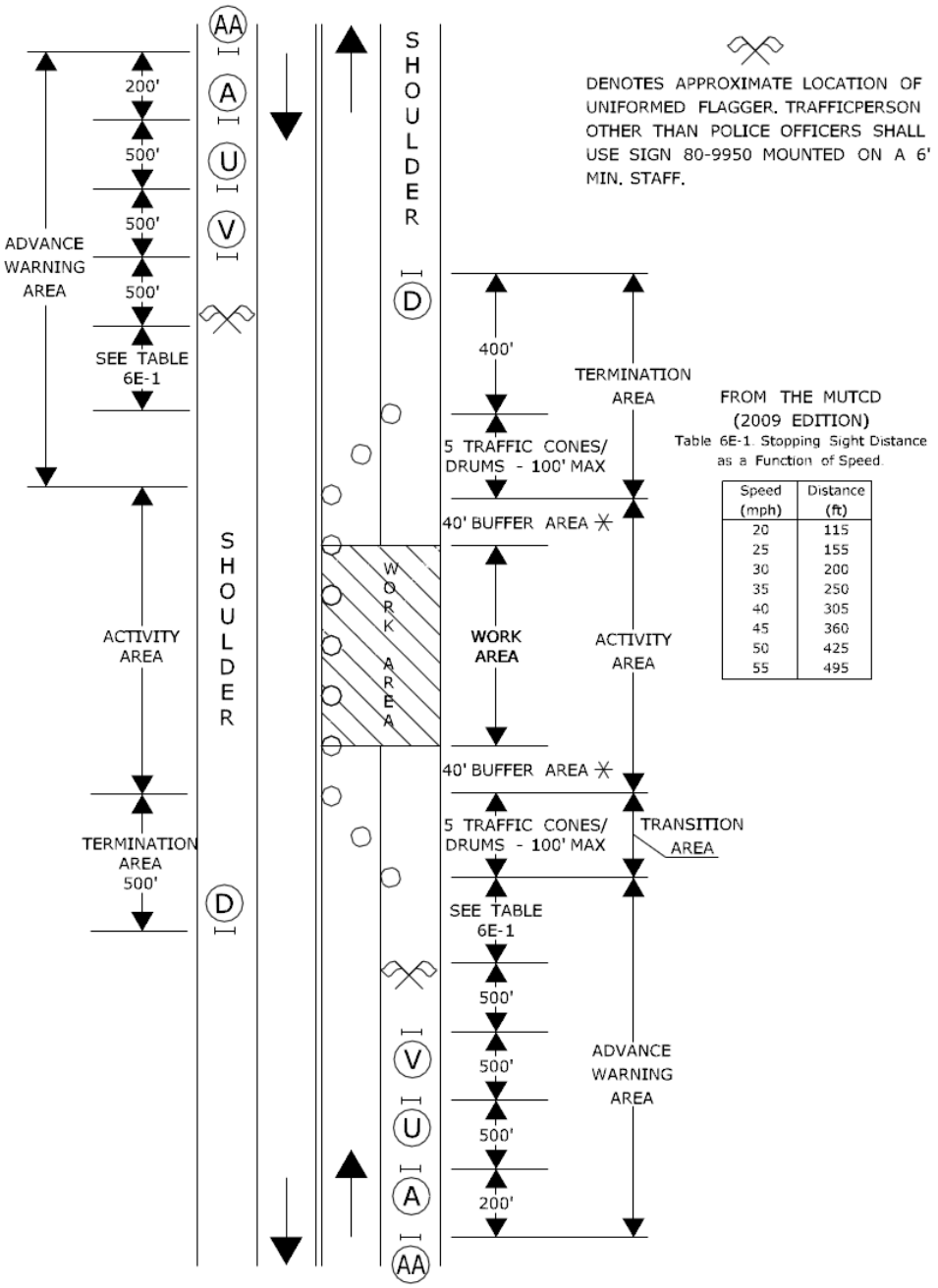
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.06.05 15:50:35-04'00'

PRINCIPAL ENGINEER

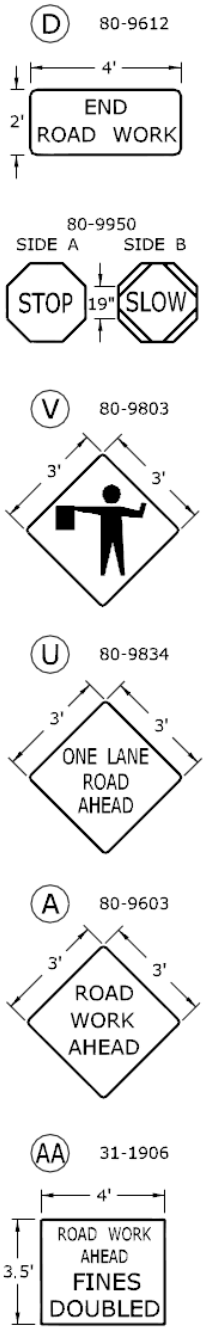
WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY
ALTERNATING ONE-WAY TRAFFIC OPERATIONS

SIGN FACE
108 SQ. FT (MIN.)



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



○ 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

APPROVED Charles S. Harlow 2012.06.05 15:55:23-04'00'
PRINCIPAL ENGINEER

ITEM #0971001A

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

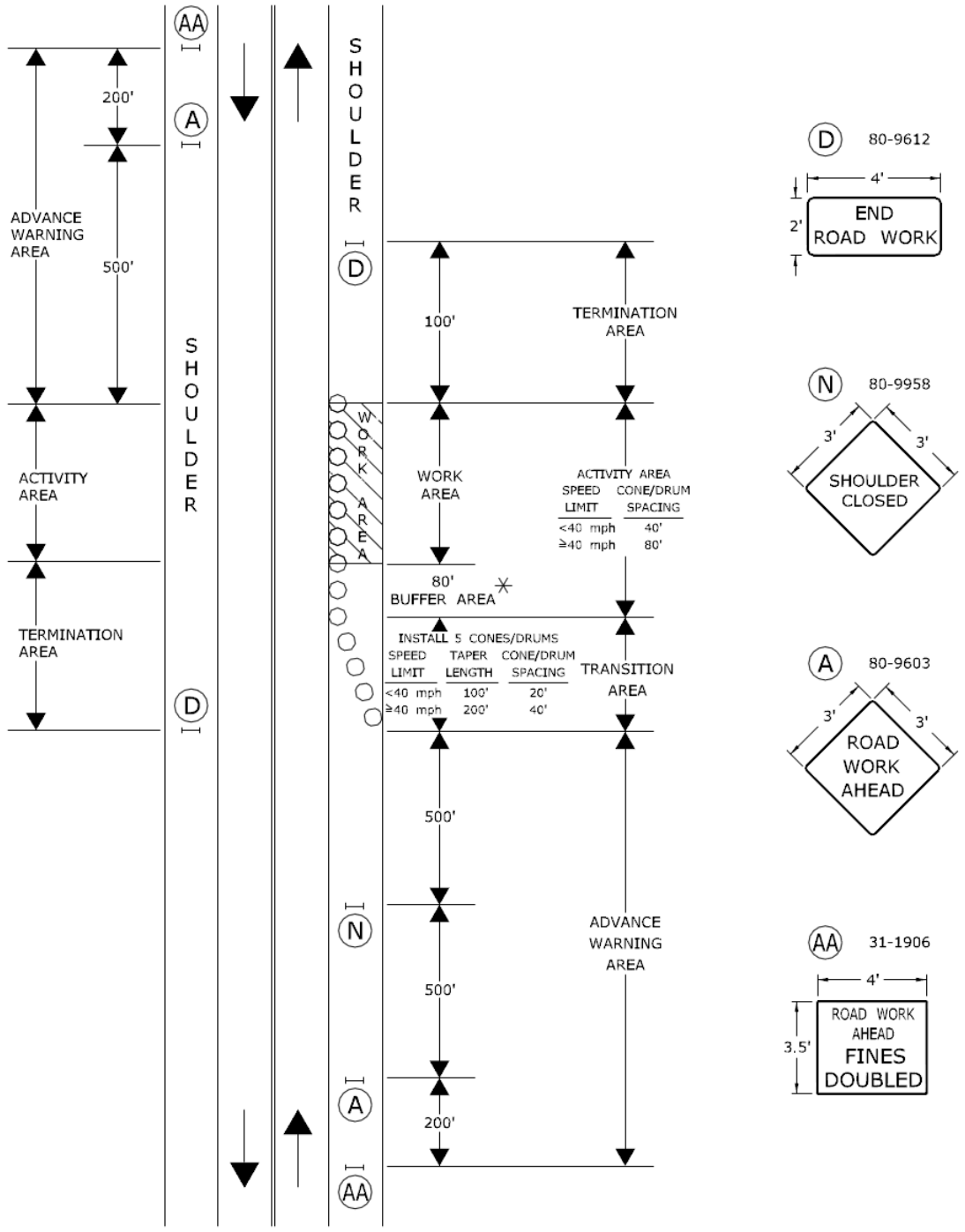
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.06.05 15:55:45-04'00'
PRINCIPAL ENGINEER

ITEM #0971001A

WORK IN SHOULDER - TWO LANE HIGHWAY

SIGN FACE
71 SQ. FT (MIN.)



D 80-9612

N 80-9958

A 80-9603

AA 31-1906

○ 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

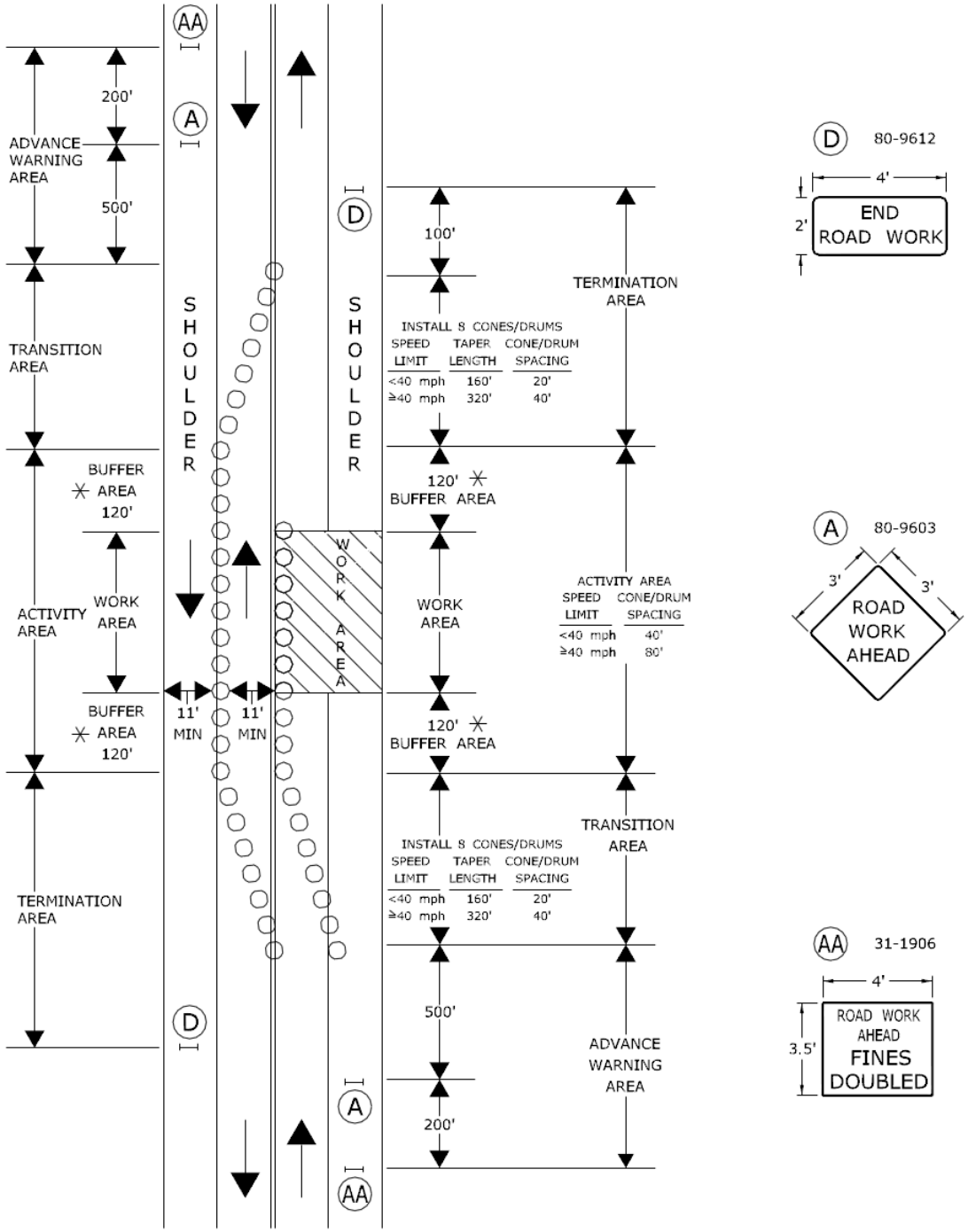
CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.06.05 15:56:09-04'00'
PRINCIPAL ENGINEER

ITEM #0971001A

WORK IN TRAVEL LANE AND SHOULDER
TWO LANE HIGHWAY

SIGN FACE
62 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 15

SEE NOTES 1, 2, 4, 6, 7, 8

CONNECTICUT DEPARTMENT OF TRANSPORTATION
BUREAU OF ENGINEERING & CONSTRUCTION

APPROVED Charles S. Harlow 2012.06.05 15:56:29-04'00'
PRINCIPAL ENGINEER

ITEM #0971001A

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 #0980001A – CONSTRUCTION STAKING

Description: The work under this item shall consist of construction layout and reference staking necessary for the proper control and satisfactory completion of all work on the project.

Materials: All stakes used for control staking shall be of quality suitable for the intended purpose.

Construction Methods: The Town will furnish the Contractor such control points, benchmarks, and other data as may be necessary for the construction staking and layout by qualified engineering or surveying personnel as noted elsewhere herein.

The Contractor shall be responsible for the placement and preservation of adequate ties to all control points, necessary for the accurate re-establishment of all base lines, center lines, and all critical grades as shown on the plans.

All stakes, references, and batter boards which may be required for construction operations, signing and traffic control shall be furnished, set and properly referenced by the Contractor. The Contractor shall be solely and completely responsible for the accuracy of the line and grade of all features of the work. Any errors or apparent discrepancies found in previous surveys, plans, specifications, or special provisions shall be called to the Engineer's attention immediately for correction or interpretation prior to proceeding with the work.

During roadway construction (or site work), the Contractor shall provide and maintain for the periods needed, as determined by the Engineer, reference stakes at 100-foot intervals outside the slope limits. Further, the Contractor shall provide and maintain reference stakes at 50-foot intervals immediately prior to and during the formation of subgrade and the construction of all subsequent pavement layers. These stakes shall be properly marked as to station and offset and shall be referenced to the proposed grade, even if laser or GPS machine controls are used.

The Contractor shall provide and maintain reference stakes at drainage structures, including reference stakes for the determination of the structure alignments as may be needed for the proper construction of the drainage structure. The reference stakes shall be placed immediately prior to and maintained during the installation of the drainage structure. These stakes shall be properly marked as to station and offset and shall be referenced to the proposed grade.

The Contractor shall furnish copies of data used in setting and referencing stakes and other layout markings used by the Contractor after completion of each operation.

The Contractor shall provide safe facilities for convenient access to control points, batter boards, and references.

All staking shall be performed by qualified engineering or surveying personnel who are trained, experienced and skilled in construction layout and staking of the type required under the contract. Prior to start of work, the Contractor shall submit for review and comment the

qualifications of personnel responsible for construction staking on the project. Surveying shall be performed under the direct supervision of a Professional Surveyor licensed in the State of Connecticut. The submission shall include a description of the experience and training which the proposed staff possesses and a list of state projects the personnel have worked on previously. All field layout and staking required for the project shall be performed under the direct supervision of a person, or persons, of engineering background experienced in the direction of such work and acceptable to the Engineer. If the personnel responsible for construction staking change during the course of the project, then a revised submittal will be required.

The Town may check the control of the work, as established by the Contractor, at any time as the work progresses. The Contractor will be informed of the results of these checks, but the Town by so doing in no way relieves the Contractor of responsibility for the accuracy of the layout work.

The Contractor shall correct or replace, at the Contractor's own expense, any deficient layout and construction work which may be the result of the inaccuracies in the Contractor's staking operations or the failure to report such inaccuracies, or the Contractor's failure to report inaccuracies found in work done by the Town or by others. If, as a result of these inaccuracies, the Town is required to make further studies, redesign, or both, all expenses incurred by the Town due to such inaccuracies will be deducted from any monies due the Contractor.

The Contractor shall furnish all necessary personnel, engineering equipment and supplies, materials, transportation, and work incidental to the accurate and satisfactory completion of this work.

Method of Measurement: Construction staking will not be measured but shall be at the Contract lump sum for "Construction Staking."

Basis of Payment: Construction staking will be paid for at the Contract lump sum price for "Construction Staking," which price shall include all materials, tools, equipment, labor, and work incidental thereto. A schedule of values for payment shall be submitted to the Department for review and comment prior to payment.

Pay Item	Pay Unit
Construction Staking	l.s.

ITEM #1507000A – PROTECTION AND SUPPORT OF EXISTING UTILITIES

Description: Work under this item shall consist of protecting and providing temporary support to or relocating existing utilities located within and around the work zones of the new structure, as necessary, during excavation, and construction of the concrete box culverts and wingwalls, and as required or indicated on the plans.

Work under this item shall also include coordination with the utility owners, determination of actual location of the utilities, and assessment of actual condition of the utilities to determine required protection and appropriate temporary support for the existing utilities.

Construction Methods: The Contractor shall design and construct the temporary support system for the utilities necessary to complete the new structure and shall be solely responsible for the adequacy of his design and erection scheme. Should the Contractor propose to relocate utilities as an alternative in lieu of providing temporary support, the Contractor shall coordinate with and obtain full approval from the utility company. The relocation of the existing utilities will be accomplished in coordination with the utility company. The Contractor shall obtain all necessary permits for the performance of the work and shall assume all liabilities in connection therewith.

The Contractor shall coordinate all other construction activities with the utility company and allow them adequate time to perform whatever work, if any, is required of them. The Contractor shall insure that the utility service remains uninterrupted if and as required by the utility company.

The Contractor shall prepare and submit to the Engineer or any regulatory agency, working drawings showing the plan for construction of temporary support system or the plan for relocating utilities. Working drawings shall be developed and submitted in accordance with Article 1.05.02. These drawings shall bear the seal and signature of a Professional Engineer registered in the State of Connecticut. No work pertaining to the protection and temporary support or relocation of utilities shall be started until approval from the Engineer and the utility company has been obtained. Approval from the Engineer or the utility company shall not serve to relieve the Contractor of any responsibility for the adequacy and safety of the proposed means and method, and to carry out the work in full accordance with the plans and specifications.

All parts of any temporary structure(s) used in this work shall be removed and properly disposed of off the site after work requiring its use is completed.

Method of Measurement: Work on this item will be paid for on a lump sum basis and will not be measured for payment.

Basis of Payment: This work will be paid for at the contract lump sum price for "Protection and Support of Existing Utilities," which price shall include all coordination, materials, equipment, tools, labor, and work incidental thereto for the protection and temporary support or relocation of

affected utilities during construction of the new structure. Work shall also include removal and proper disposal of any and all components of the constructed temporary support structures.

PERMITS AND/OR REQUIRED PROVISIONS

The following Permits and/or Required Provisions following this page are hereby made part of this Contract.

- **Permits and/or Permit Applications**

  - CT DEEP USACE CT GP – Pre-Construction Notification Approval
    License No. 202065396-PCN Approved on March 4, 2022
    202065402-PCN Approved on May 12, 2022
    202065399-PCN Approved on June 2, 2022

  - US Army Corp of Engineers CT General Permit #19
    File No.: NAE-2021-00302 Approved on August 9, 2022
    NAE-2021-00304 Approved on August 9, 2022
    NAE-2021-00306 Approved on August 10, 2022

  - CT DEEP NDDB Final Determination No. 202000471
    Issued on January 22, 2020

- **Geotechnical Report**

  - Freeman Companies Geotechnical Engineering Report – Bridge 68-002 dated October 24, 2022.
  - Freeman Companies Geotechnical Engineering Report – Bridge 68-003 dated October 24, 2022.
  - Freeman Companies Geotechnical Engineering Report – Bridge 68-009 dated October 24, 2022.

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: Kevin Kotelly, Chief, Permits and Enforcement Branch B

Re: 202065396-PCN, Concurrence of Eligibility
NAE-2021-00302
Valley Road over Mashentuck Brook, Killingly, CT 06239

Dear Mr. Kotelly:

The above-referenced Pre-Construction Notification ("PCN") was submitted to the Connecticut Department of Energy and Environmental Protection ("DEEP") on January 19, 2021 by The Town of Killingly and made complete on February 8, 2022, 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 *"Construction Plans for Replacement of Bridge No. 68-002 Valley Road over Mashentuck Brook,"* 13 sheets, prepared by Freeman Companies and title sheet dated September 4, 2018, sheet EX-1.1 dated December 15, 2017, sheets S-1.1, S-1.2, S-1.4, WL-1 dated February 3, 2020, sheets PRO-1.1, HWY-1.1, and C-1 through C-5 dated June 14, 2019:

1. Replace an existing 24' long, 12'9" span with a 37' long, 13' wide and 8' high box culvert filled with 1' of natural streambed material;
2. Temporarily install cofferdams for water handling; and
3. Temporarily install two 48" bypass pipes and associated temporary rip rap at the inlet and outlets as depicted on plan sheet S-1.4 for water handling.

	Waterway	Wetland	Total
Temporary:	1,700 sf	0 sf	1,700 sf
Permanent:	850 sf	0 sf	850 sf
Total:	2,550 sf	0 sf	2,550 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. **Time-of-Year Restriction.** Unconfined in-water work is prohibited between June 1st and September 30th, inclusive, of any year in order to protect fisheries resources in the area.
2. **Road Barricade and Flood Warnings.** The Project Proponent shall post signage at both crossing approaches, warning that the road is subject to flooding. In the event that a significant storm event is forecast that is likely to cause road overtopping, the Project Proponent shall make provisions for barricading the road.

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 Farrah Ashe at 860-424-3169 or Farrah.Ashe@ct.gov.

Jeff Caiola

Jeff Caiola, Assistant Director
Land and Water Resources Division
Bureau of Water Protection and Land Reuse

03/04/2022
Date

CC (via email):
David Capacchione, dcapacchione@killinglyct.gov
Jeff LeBeau, jlebeau@freemancos.com

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.

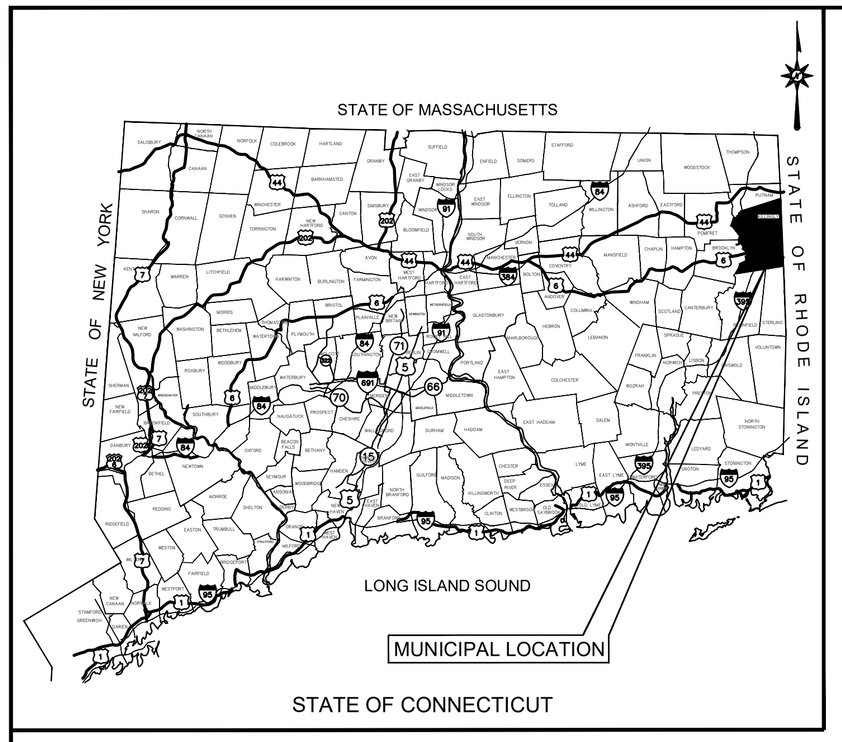
8. **Certification of Documents.** Any document, including but not limited to any notice, which is required to be submitted to the Commissioner under this certificate shall be signed by the permittee, a responsible corporate officer of the permittee, a general partner of the permittee, or a duly authorized 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



LOCATION MAP

N.T.S.

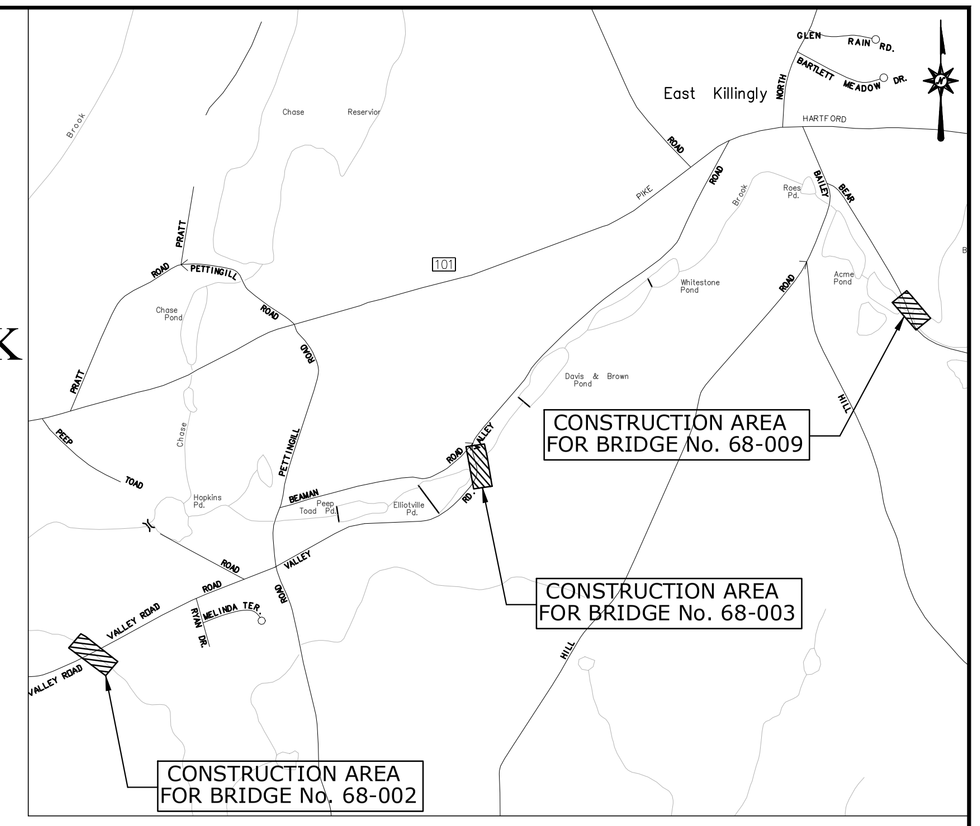
CONSTRUCTION PLANS

FOR

REPLACEMENT OF BRIDGE NO.68-002 VALLEY ROAD OVER MASHENTUCK BROOK
REPLACEMENT OF BRIDGE NO.68-003 VALLEY ROAD OVER WHETSTONE BROOK
REPLACEMENT OF BRIDGE NO.68-009 BEAR HILL ROAD OVER UNNAMED BROOK

TOWN OF KILLINGLY, CT

FINAL DESIGN PLANS



VICINITY MAP

SCALE: 1"=1000'

GENERAL NOTES:

CONNECTICUT DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION, FORM 817, DATED 2016;SUPPLEMENTAL SPECIFICATIONS, DATED JANUARY 2015; AND SPECIAL PROVISIONS.

ALL HORIZONTAL GEOMETRY ON THIS PROJECT IS BASED ON HORIZONTAL DATUM NAD83.

ALL ELEVATIONS ON THIS PROJECT BASED ON NAVD88.

DESIGN STANDARDS:

TOWN OF KILLINGLY DESIGN STANDARDS

CONNECTICUT DEPARTMENT OF TRANSPORTATION HIGHWAY DESIGN MANUAL, 2003 EDITION.

A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS 2011 EDITION, PUBLISHED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO).

CONNECTICUT DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL, 2003 EDITION.

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

CONTENTS

PREPARED FOR:

TOWN OF KILLINGLY
172 MAIN STREET
KILLINGLY, CONNECTICUT 06239

PREPARED BY:

FREEMAN COMPANIES
LAND DEVELOPMENT | ENGINEERING DESIGN | CONSTRUCTION SERVICES

LAND DEVELOPMENT ENGINEERING DESIGN CONSTRUCTION SERVICES

36 JOHN STREET
HARTFORD, CONNECTICUT 06106
(860) 251-9550
(860) 986 -7161 Fax

TOWN OF KILLINGLY, CONNECTICUT
APPROVED BY:

DAVID CAPACCHIONE, P.E.
TOWN ENGINEER

DATE

DESIGN BY: FREEMAN COMPANIES

DENNIS M. QUINIT, P.E.
CT. PROFESSIONAL ENGINEER REG. NO. 19106

DATE: 9/4/2018

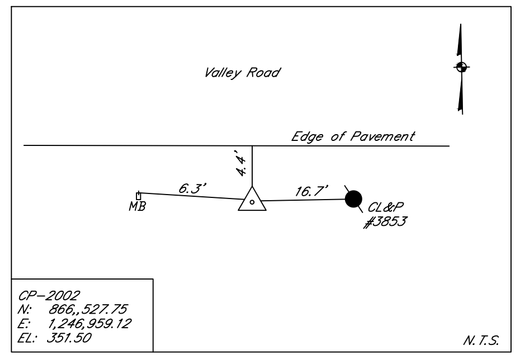
STATE OF CONNECTICUT · DENNIS M. QUINIT · No. 19106 · LICENSED PROFESSIONAL ENGINEER

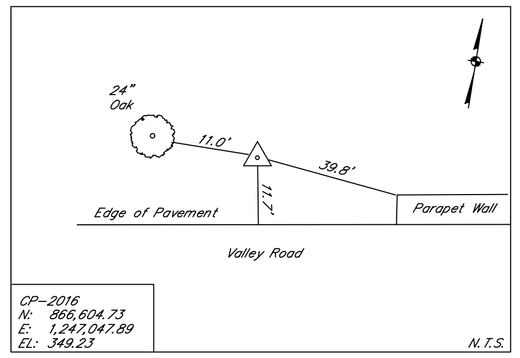
SUBCONSULTANTS:

GIBSON ENVIRONMENTAL SERVICES

DATES

ISSUE DATE: SEPTEMBER 04, 2018
REVISION:





SURVEY NOTES

THIS SURVEY HAS BEEN PREPARED BY FREEMAN COMPANIES, LLC. IN ACCORDANCE WITH THE REGULATIONS OF CONNECTICUT STATE AGENCIES, SECTIONS 20-300b-1 THRU 20-300b-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996.

THE TYPE OF SURVEY IS A TOPOGRAPHIC SURVEY AND IS INTENDED TO DEPICT THE EXISTING CONDITIONS AND TOPOGRAPHIC FEATURES OF THE PROJECT SITE.

THE SURVEY ACCURACY CONFORMS TO HORIZONTAL CLASS A-2, AND TOPOGRAPHIC ACCURACY CLASS T-2. PROPERTY LINES CONFORM TO HORIZONTAL CLASS D.

PROPERTY LINES DEPICTED ON THIS PLAN ARE COMPILED FROM OTHER MAPS, RECORD RESEARCH OR OTHER SOURCES OF INFORMATION.

NORTH ARROW REFERS TO THE CONNECTICUT COORDINATE SYSTEM (NAD83) AND IS BASED UPON GPS OBSERVATIONS PERFORMED BY FREEMAN COMPANIES.

ELEVATIONS REFER TO NAVD88 AND ARE BASED ON GPS OBSERVATIONS PERFORMED BY FREEMAN COMPANIES.

THE UNDERGROUND FEATURES DEPICTED HEREON ARE THE RESULT OF COMPILATION OF EXISTING MAPPING AND LOCATION OF UTILITY PAINT. ACTUAL LOCATION OF UNDERGROUND UTILITIES IS TO BE CONSIDERED TO BE APPROXIMATE AT BEST. OTHER UTILITIES MAY EXIST WHICH FREEMAN COMPANIES ARE UNAWARE OF. VERIFY INFORMATION IN THE FIELD. BEFORE ANY DIGGING OR SITE EXCAVATION CALL " CALL BEFORE YOU DIG" 1-800-922-4455.

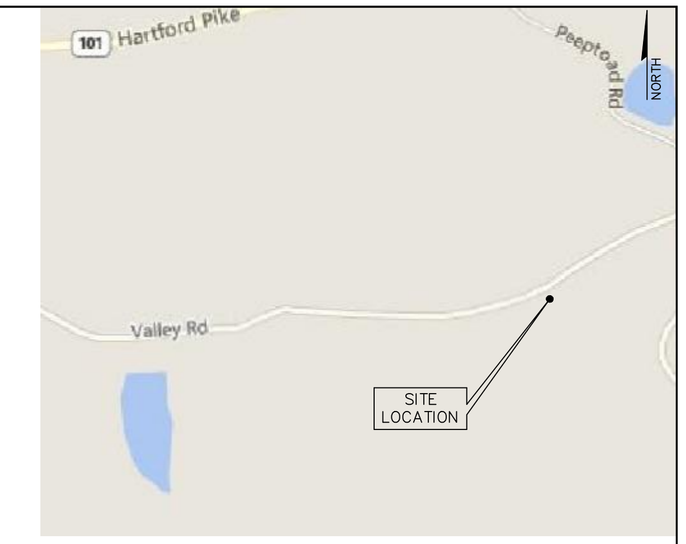
STREET SURFACE IS LOCATED IN FLOOD HAZARD AREA ZONE A2 'AREAS OF 100-YEAR FLOOD; BASE FLOOD ELEVATIONS AND FLOOD HAZARD FACTORS ARE DETERMINED', AS DEPICTED ON FLOOD INSURANCE RATE MAP FOR THE TOWN OF KILLINGLY, COMMUNITY PANEL NUMBER 090136 0016 B, PANEL 16 OF 30, EFFECTIVE DATE: JANUARY 3, 1985.

MAP REFERENCES

1. CONNECTICUT STATE HIGHWAY DEPARTMENT RIGHT OF WAY MAP
TOWN OF KILLINGLY
ELMVILLE-EAST KILLINGLY ROAD FROM COOK ROAD EASTERLY ABOUT 7700 Feet.
NUMBER 68-19 JUNE 30 1939

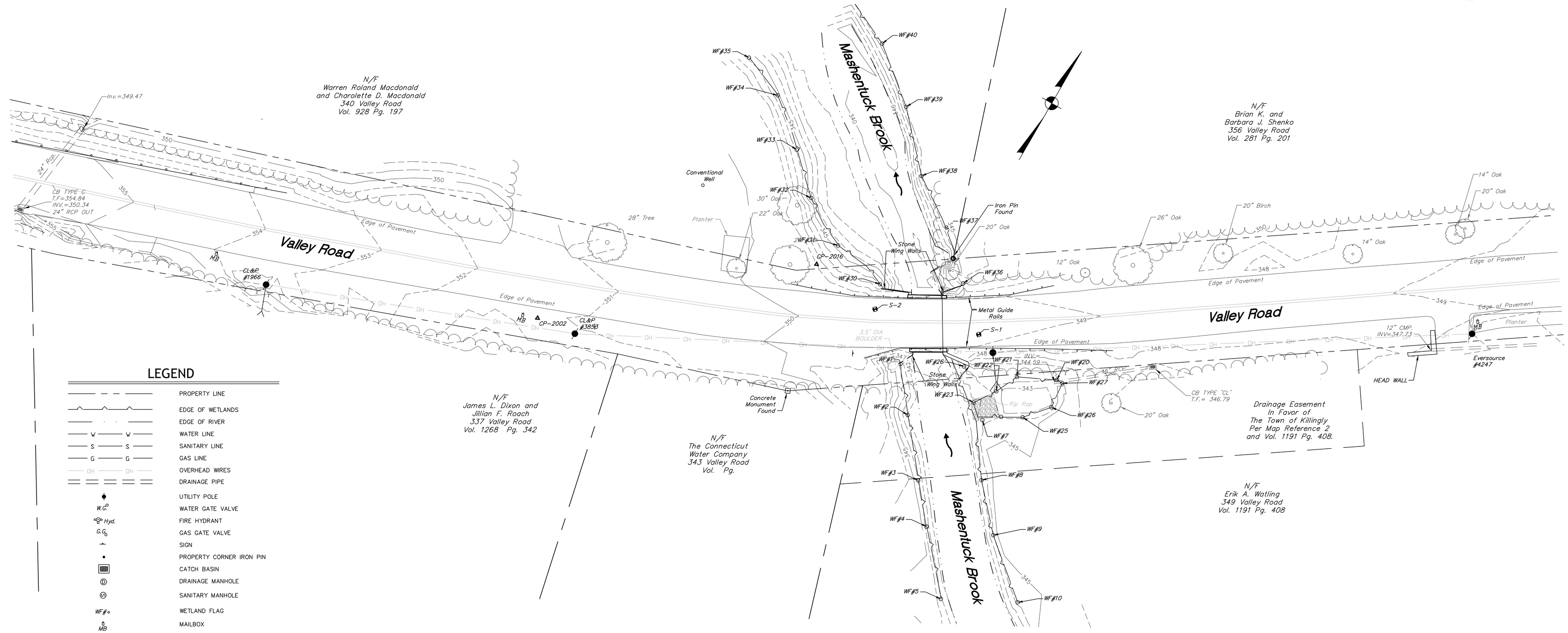
2. PLAN TITLED (OAK VALLEY CREEK) DATED AUG. 20, 1984 SCALE 1"=20'

3. PLAN TITLED (EASTWOOD HILLS SUBDIVISION KILLINGLY CONNECTICUT) DATED MARCH 2007 SCALE 1"=100'



LOCATION MAP

NOT TO SCALE



LEGEND

- PROPERTY LINE
- EDGE OF WETLANDS
- EDGE OF RIVER
- WATER LINE
- SANITARY LINE
- GAS LINE
- OVERHEAD WIRES
- DRAINAGE PIPE
- UTILITY POLE
- WATER GATE VALVE
- FIRE HYDRANT
- GAS GATE VALVE
- SIGN
- PROPERTY CORNER IRON PIN
- CATCH BASIN
- DRAINAGE MANHOLE
- SANITARY MANHOLE
- WETLAND FLAG
- MAILBOX
- BORING
- BUSH
- DECIDUOUS TREE

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

TO MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

MICHAEL J. GARON L.S. #70366

NO CERTIFICATION IS EXPRESSED OR IMPLIED UNLESS THIS MAP BEARS THE ORIGINAL SIGNATURE AND EMBOSSED SEAL OF THE ABOVE NAMED LAND SURVEYOR.

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TOWN OF KILLINGLY
BEAR HILL ROAD
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CONNECTICUT 06239

OWNER FOR
TOWN OF KILLINGLY
BEAR HILL ROAD
KILLINGLY,
CONNECTICUT 06239

STATE OF CONNECTICUT · DENNIS M. QUINN · 19106 · REGISTERED PROFESSIONAL ENGINEER

DENNIS M.QUINT, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-002
VALLEY ROAD OVER MASHENTUCK BROOK
KILLINGLY, CONNECTICUT

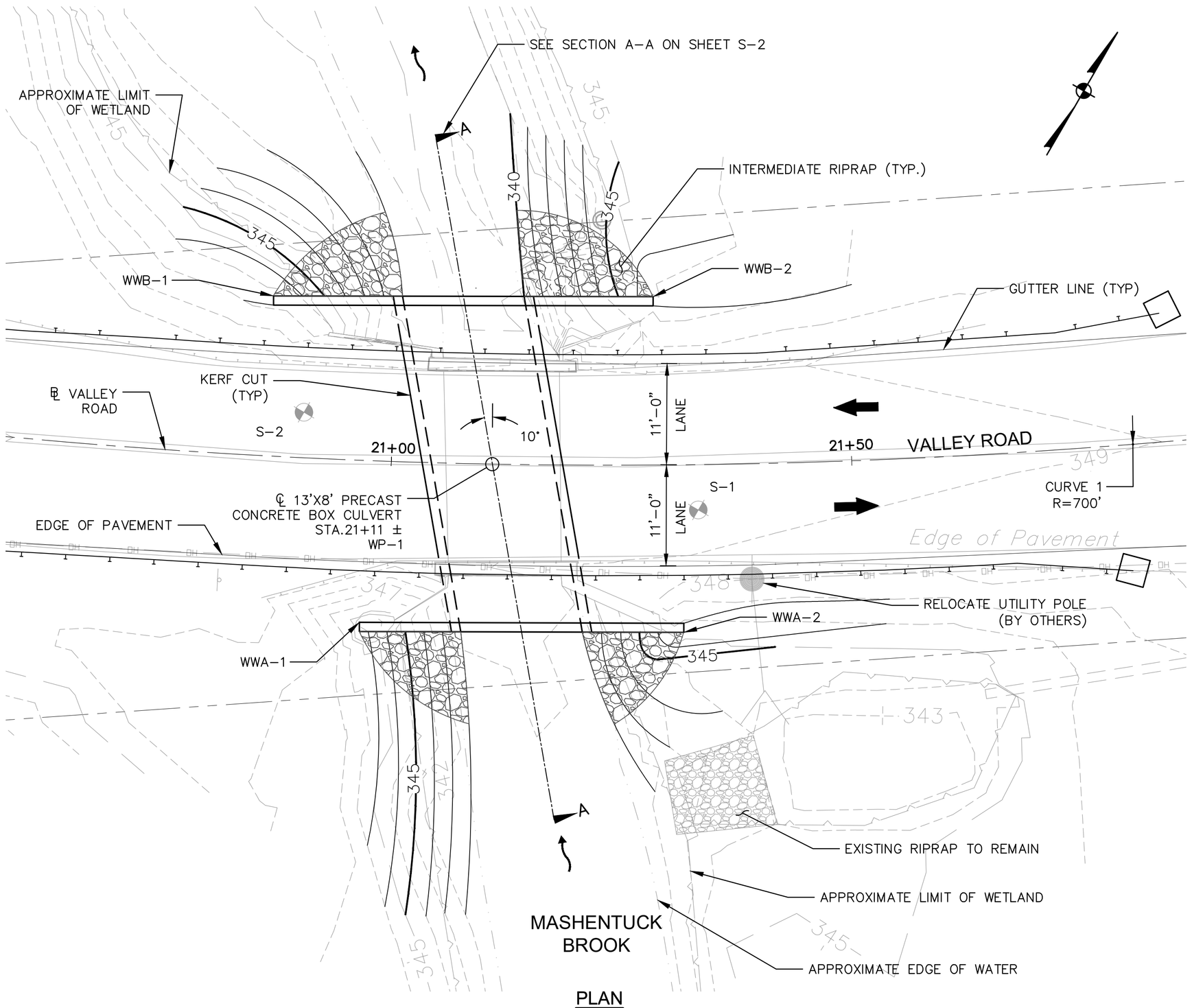
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

SURVEYED:	R.J.C/N.I.C
DRAFTED:	R.J.C
CHECKED:	RG
APPROVED:	M.J.G
SCALE:	1" = 20'
PROJECT NO.:	2017-0507
DATE:	12/15/2017
CAD: 2017-0507 MASHENTUCK EX	

TITLE:
TOPOGRAPHIC SURVEY

SHEET NUMBER:
EX-1.1



PLAN

SCALE: 1/8" = 1'–0"

UTILITY NOTES

1. THIS PROJECT INVOLVES THE PRESENCE OF OVERHEAD UTILITY LINES WITHIN THE LIMITS AND FOOTPRINT OF THE PROJECT. WHILE NO WORK INVOLVING OR IMPACTING THESE UTILITIES ARE ANTICIPATED, THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL WORK WITH THE APPROPRIATE UTILITY COMPANY (EVERSOURCE) AND FOR PROVIDING TEMPORARY PROTECTION AND/OR SUPPORT OF THESE FACILITIES IF AND AS REQUIRED BY THE UTILITY COMPANY.
2. THE CONTRACTOR SHALL DEVELOP ITS ERECTION SCHEME IN CONFORMANCE WITH LIMITATIONS AND RESTRICTIONS ASSOCIATED WITH THE OVERHEAD UTILITY LINES AND AS REQUIRED BY THE APPROPRIATE UTILITY COMPANY.
3. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANY WITH REGARDS TO POTENTIAL RELOCATION OR TEMPORARY SUPPORT OF THEIR FACILITIES. THE CONTRACTOR SHALL IDENTIFY POTENTIAL UTILITY IMPACTS ASSOCIATED WITH THEIR WORK, IF ANY, PRIOR TO START OF CONSTRUCTION AND NOTIFY THE APPROPRIATE UTILITY COMPANY ACCORDINGLY.

NOTICE TO BRIDGE INSPECTORS

IT IS RECOMMENDED THAT CONNDOT'S BRIDGE SAFETY PROCEDURES BE FOLLOWED WHEN INSPECTING THIS BRIDGE FOR, BUT NOT LIMITED TO, ALL APPROPRIATE COMPONENTS INDICATED IN THE GOVERNING MANUALS FOR BRIDGE INSPECTION. ATTENTION MUST BE GIVEN TO INSPECTING THE FOLLOWING SPECIAL COMPONENTS AND DETAILS. (THE LISTING OF COMPONENTS FOR SPECIFIC ATTENTION SHALL NOT BE CONSTRUED TO REDUCE THE IMPORTANCE OF INSPECTION OF ANY OTHER COMPONENT OF THE STRUCTURE.) THE FREQUENCY OF INSPECTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE GOVERNING MANUALS FOR BRIDGE INSPECTION, UNLESS OTHERWISE DIRECTED BY THE MANAGER OF BRIDGE SAFETY AND EVALUATIONS.

COMPONENT OR DETAIL	STRUCTURE SHEET REFERENCE
NONE	–
	–

BORING LEGEND

S–1 APPROXIMATE BORING LOCATION

GENERAL NOTES

SPECIFICATIONS: CONNECTICUT DEPARTMENT OF TRANSPORTATION FORM 817, INCLUDING SUPPLEMENTAL SPECIFICATIONS DATED JANUARY, 2018 AND SPECIAL PROVISIONS.

DESIGN SPECIFICATIONS: AASHTO LRFD SPECIFICATIONS FOR HIGHWAY BRIDGES, 8TH EDITION AS SUPPLEMENTED BY THE CONNECTICUT DEPARTMENT OF TRANSPORTATION BRIDGE MANUAL (2003) EDITION WITH REVISIONS UP TO AND INCLUDING 2011.

ALLOWABLE DESIGN STRESSES:

CLASS "A" CONCRETE:	f'c =	3,000	psi
CLASS "50" CONCRETE:	f'c =	5,000	psi
REINFORCEMENT (ASTM 615 GRADE 60)	fy =	60,000	psi

LIVE LOAD:

STANDARD DESIGN VEHICLE:	AASHTO HL–93
PERMIT (OVERLOAD) VEHICLES:	CONNDOT P204 (8–AXLE)
	CONNDOT P380 (19–AXLE)

SALVAGE: NONE

DIMENSIONS AND ELEVATIONS: WHEN DECIMAL DIMENSIONS AND ELEVATIONS ARE GIVEN TO LESS THAN THREE DECIMAL PLACES, THE OMITTED DIGITS SHALL BE ASSUMED TO BE ZERO. ALL ELEVATIONS ARE GIVEN IN DECIMAL FEET AND ARE BASED ON NAVD 88.

EXISTING DIMENSIONS: DIMENSIONS OF THE EXISTING STRUCTURE SHOWN ON THESE PLANS ARE FOR GENERAL REFERENCE ONLY AND ARE NOT GUARANTEED. THE CONTRACTOR SHALL TAKE ALL FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF THE FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY. WHEN SHOP DRAWINGS BASED ON FIELD MEASUREMENTS ARE SUBMITTED FOR APPROVAL, THE FIELD MEASUREMENTS SHALL ALSO BE SUBMITTED FOR REFERENCE BY THE REVIEWER.

UTILITIES: THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES LOCATED WITHIN THE VICINITY OF THE SITE DURING CONSTRUCTION. THE METHOD OF SUPPORTING AND PROTECTING UTILITIES SELECTED BY THE CONTRACTOR MUST BE APPROVED BY THE UTILITY COMPANY. UTILITY MODIFICATIONS SHALL BE MADE BY THE RESPECTIVE UTILITY COMPANIES EXCEPT WHERE NOTED OTHERWISE.

CONCRETE NOTES

CLASS "A" CONCRETE: CLASS "A" CONCRETE SHALL BE USED FOR THE CUT–OFF WALLS, RETURN WALLS, HEADWALLS AND WINGWALL FOOTINGS.

CLASS "50" CONCRETE: CLASS "50" CONCRETE SHALL BE USED FOR THE PRECAST CONCRETE BOX CULVERT AND PRECAST CONCRETE WINGWALL STEMS.

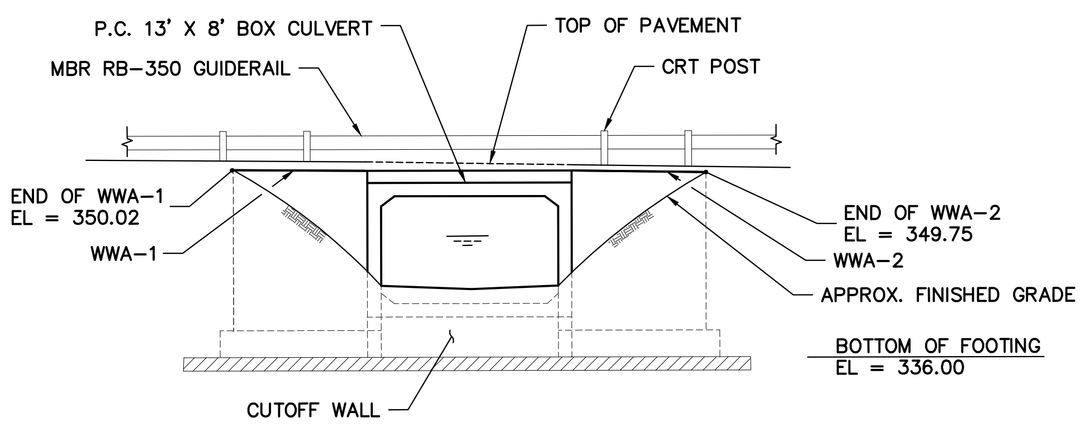
REINFORCEMENT: ALL REINFORCEMENT SHALL BE ASTM A615 GRADE 60.

EXPOSED EDGES: EXPOSED EDGES OF CONCRETE SHALL BE BEVELED 1" X 1", UNLESS DIMENSIONED OTHERWISE.

EPOXY COATED REINFORCEMENT BARS: ALL REINFORCEMENT IN THE PRECAST CONCRETE BOX CULVERT SHALL BE EPOXY COATED AND INCLUDED IN THE PAY ITEM "13'X8' PRECAST CONCRETE BOX CULVERT". ALL REINFORCEMENT IN THE PRECAST CONCRETE WINGWALLS SHALL BE EPOXY COATED AND INCLUDED IN THE PAY ITEM "PRECAST CONCRETE WINGWALLS". ALL REINFORCEMENT IN THE CUT–OFF WALLS, AND RETURN WALLS SHALL BE PAID FOR IN THE PAY ITEM "DEFORMED STEEL BARS". ALL REINFORCEMENT IN THE HEADWALLS SHALL BE EPOXY COATED AND PAID FOR UNDER THE ITEM "DEFORMED STEEL BARS (EPOXY COATED)".

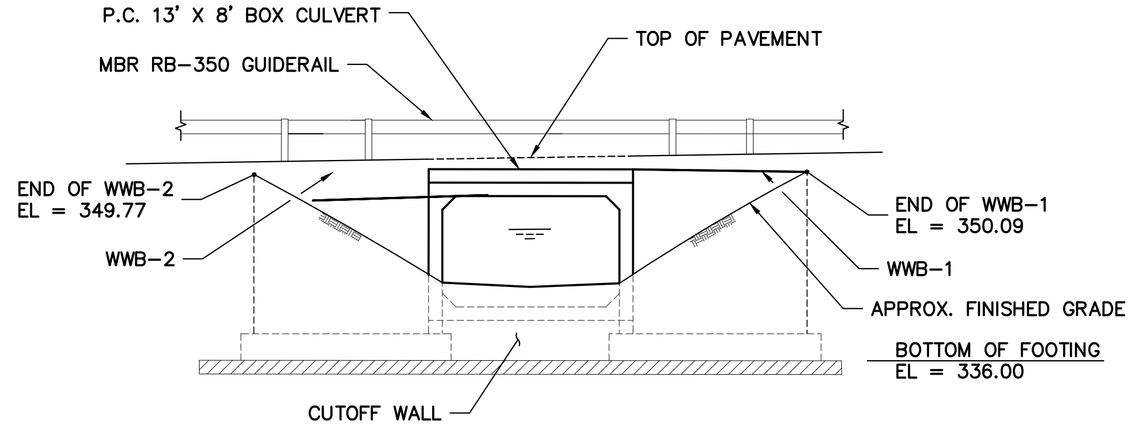
CONCRETE COVER: ALL REINFORCEMENT SHALL HAVE 2" COVER UNLESS DIMENSIONED OTHERWISE.

PREFORMED EXPANSION JOINT FILLER: THE COST OF FURNISHING AND INSTALLING PREFORMED EXPANSION JOINT FILLERS SHALL BE INCLUDED IN THE ITEM "CLASS 'A' CONCRETE".



UPSTREAM ELEVATION

SCALE: 1/8" = 1'–0"



DOWNSTREAM ELEVATION

SCALE: 1/8" = 1'–0"

HYDRAULIC DATA	
HYDRAULIC AREA	4.1 SQ MI
DESIGN FREQUENCY	100 YEAR
DESIGN DISCHARGE	920 CFS
AVERAGE DAILY FLOW	7.5 CFS
AVERAGE DAILY FLOW ELEVATION	341.69
UPSTREAM DESIGN WATER SURFACE ELEVATION	349.38
DOWN STREAM DESIGN WATER SURFACE ELEVATION	345.01
2 YEAR DESIGN STORM WATER ELEVATION	343.37

TRANSPORTATION DATA

MEMBER	SHIPPING LENGTH	SHIPPING HEIGHT	SHIPPING WIDTH	SHIPPING WEIGHT
BOX CULVERT	15'–0"	10'–0"	8–0"	55,800 lbs
WINGWALL	15'–0"	10'–0"	8'–0"	24,000 lbs

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STATE OF CONNECTICUT · DENNIS M. QUINT · 19106 · REGISTERED PROFESSIONAL ENGINEER
DENNIS M.QUINT, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-002
VALLEY ROAD OVER MASHENTUCK BROOK
KILLINGLY, CONNECTICUT

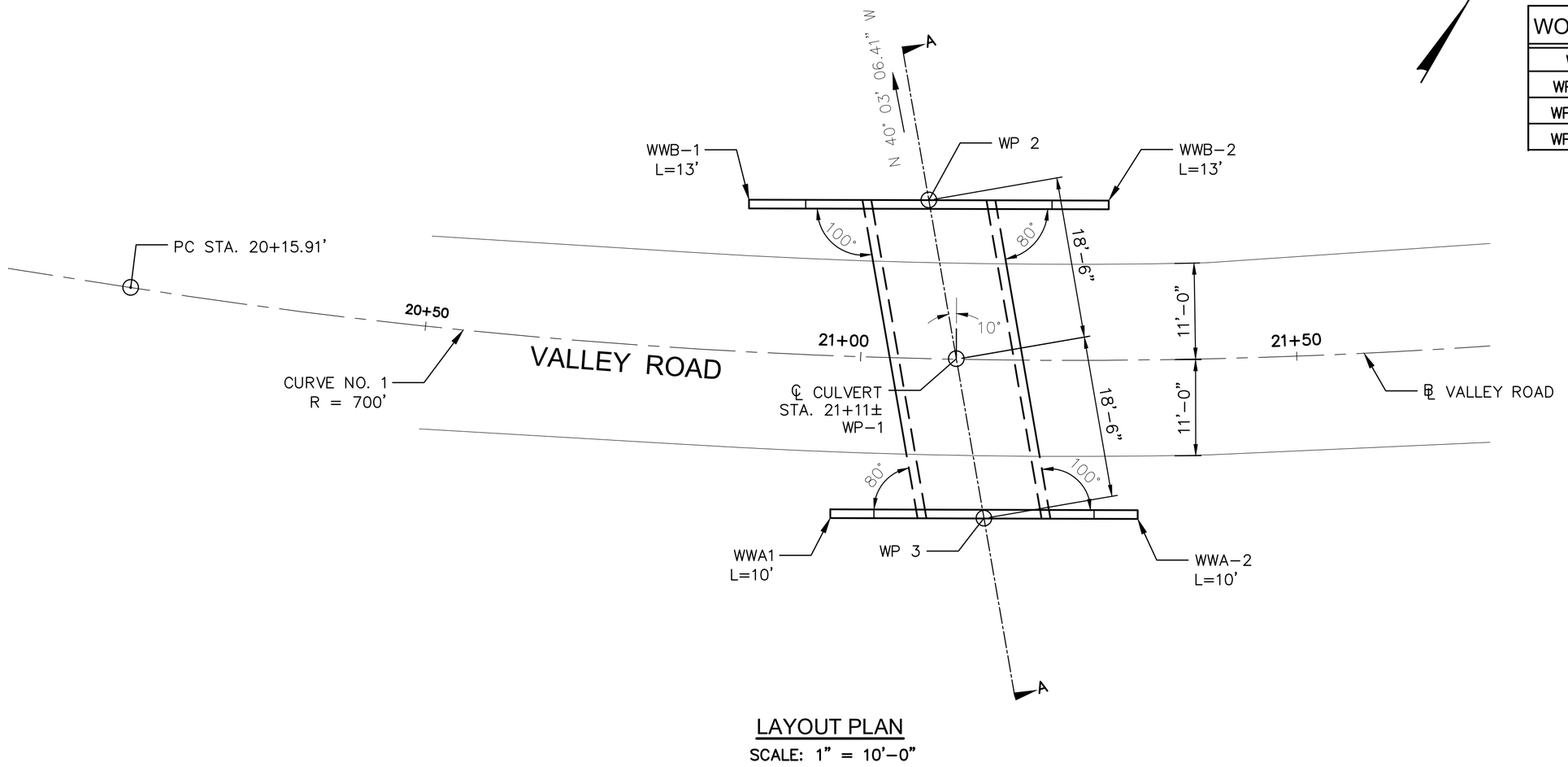
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017–0507
DATE:	02/03/2020
CAD:	HW_MSH_2017_0507_BRG002_GEN

TITLE: GENERAL PLAN

SHEET NUMBER: S-1.1



LAYOUT PLAN

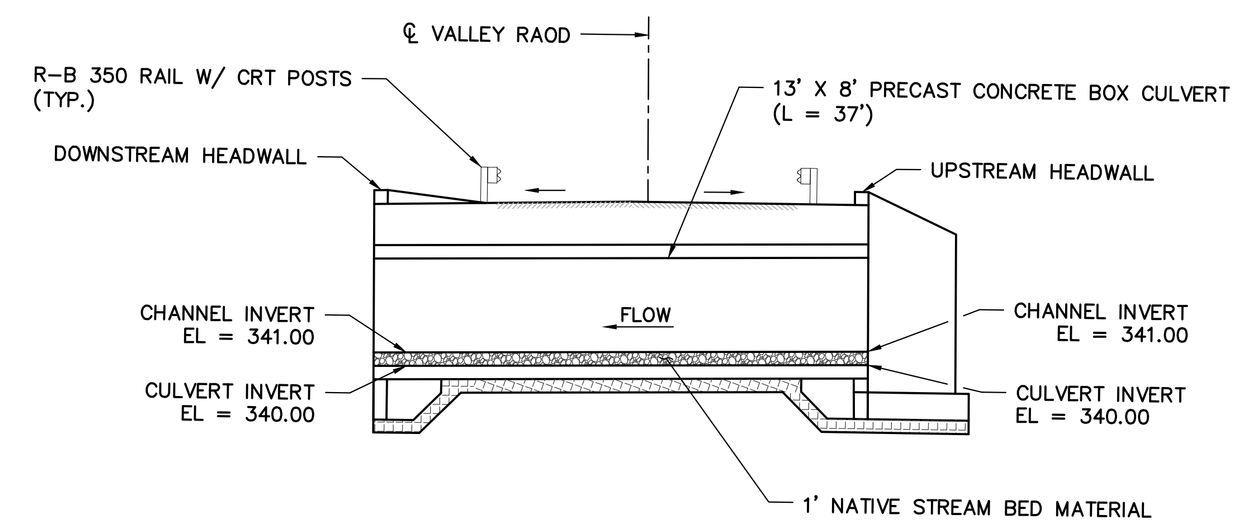
SCALE: 1" = 10'–0"

WORKING POINT COORDINATES		
WP	NORTHING	EASTING
WP–1	126971.8336	1513318.9746
WP–2	126953.6666	1513322.1783
WP–3	126935.3957	1513325.3999

NOTES:

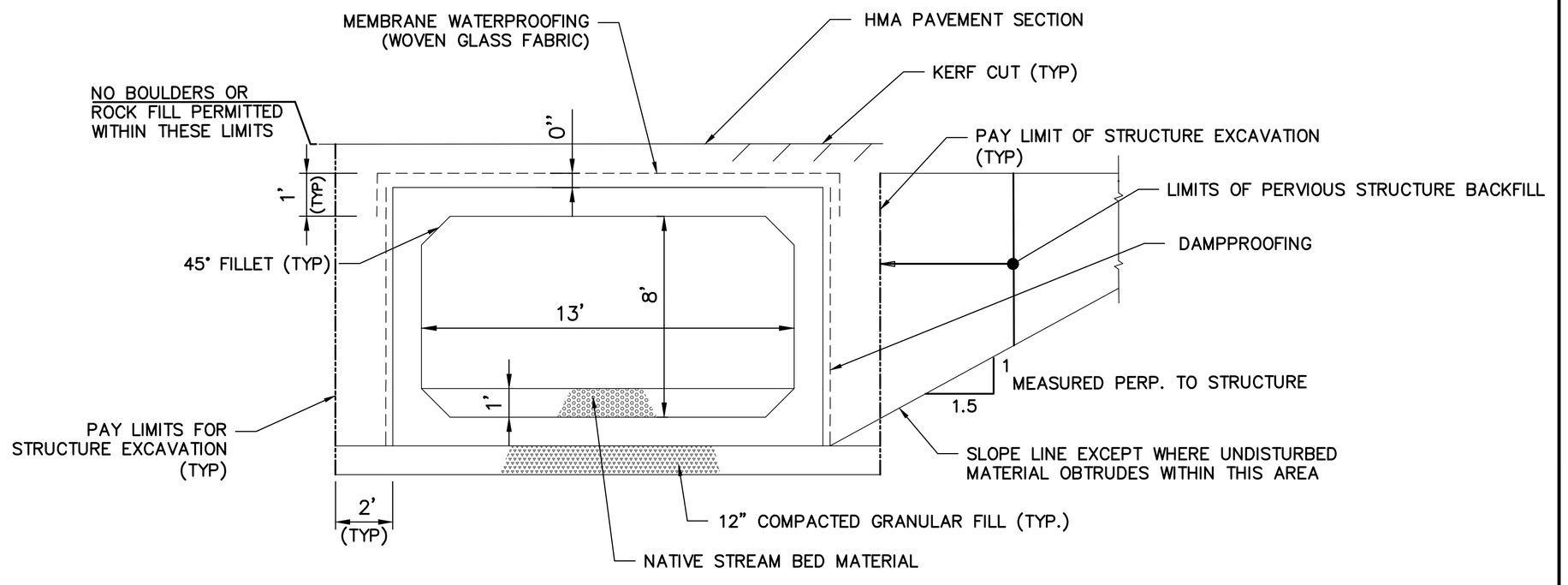
1. FOR COMPLETE BASELINE GEOMETRY, SEE SHEET NO. HWY–1.
2. ROADWAY PROFILE TO MATCH EXISTING.
3. FOR WINGWALL SECTION DETAILS SEE SHEET MDS–3.
4. CUT BITUMINOUS OVERLAY WITH $\frac{3}{8}$" WIDE BY $1\frac{1}{4}$" DEEP KERF AND FILL WITH POURABLE SEALANT. TO BE PAID FOR UNDER THE ITEM "SAWING AND SEALING JOINTS IN BITUMINOUS PAVEMENT.

QUANTITIES		
ITEM	UNITS	TOTALS
STRUCTURE EXCAVATION – EARTH (COMPLETE)	CY	450
STRUCTURE EXCAVATION – ROCK (COMPLETE)	CY	6
HANDLING WATER	LS	1
COMPACTED GRANULAR FILL	CY	30
PERVIOUS STRUCTURE BACKFILL	CY	375
SEDIMENTATION CONTROL SYSTEM	LF	100
SAWING AND SEALING JOINTS IN BIT. CONC. PAVEMENT	LF	70
REMOVAL OF EXISTING CULVERT	LS	1
CLASS 'A' CONCRETE	CY	14
PRECAST CONCRETE WINGWALL	EA	4
13' X 8' PRECAST CONCRETE BOX CULVERT	LF	37
DEFORMED STEEL BARS	LB	1,700
DEFORMED STEEL BARS (EPOXY COATED)	LB	500
DRILLING HOLES AND GROUTING DOWELS	EA	52
MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC)	SY	75
DAMPPROOFING	SY	175



SECTION A-A

SCALE: 1/8" = 1'–0"



TYPICAL CULVERT SECTION

N.T.S.

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DENNIS M.QUINT, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-002
VALLEY ROAD OVER MASHENTUCK BROOK
KILLINGLY, CONNECTICUT

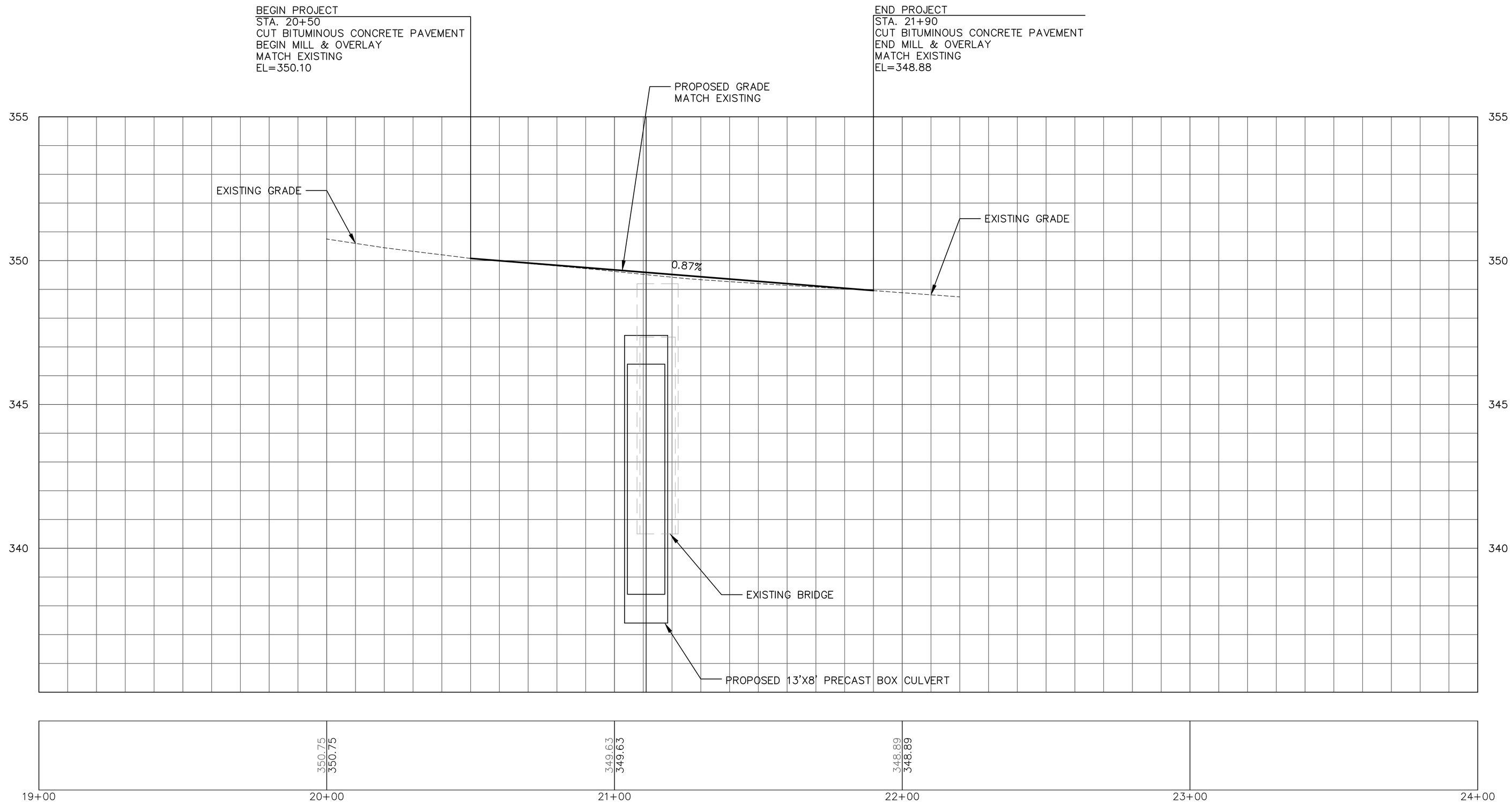
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017–0507
DATE:	02/03/2020
CAD:	HW_MSH_2017_0507_BRG002_ALN

TITLE: LAYOUT PLAN

SHEET NUMBER: S-1.2



VALLEY ROAD PROFILE

H: 1"=10'
V: 1"=2'

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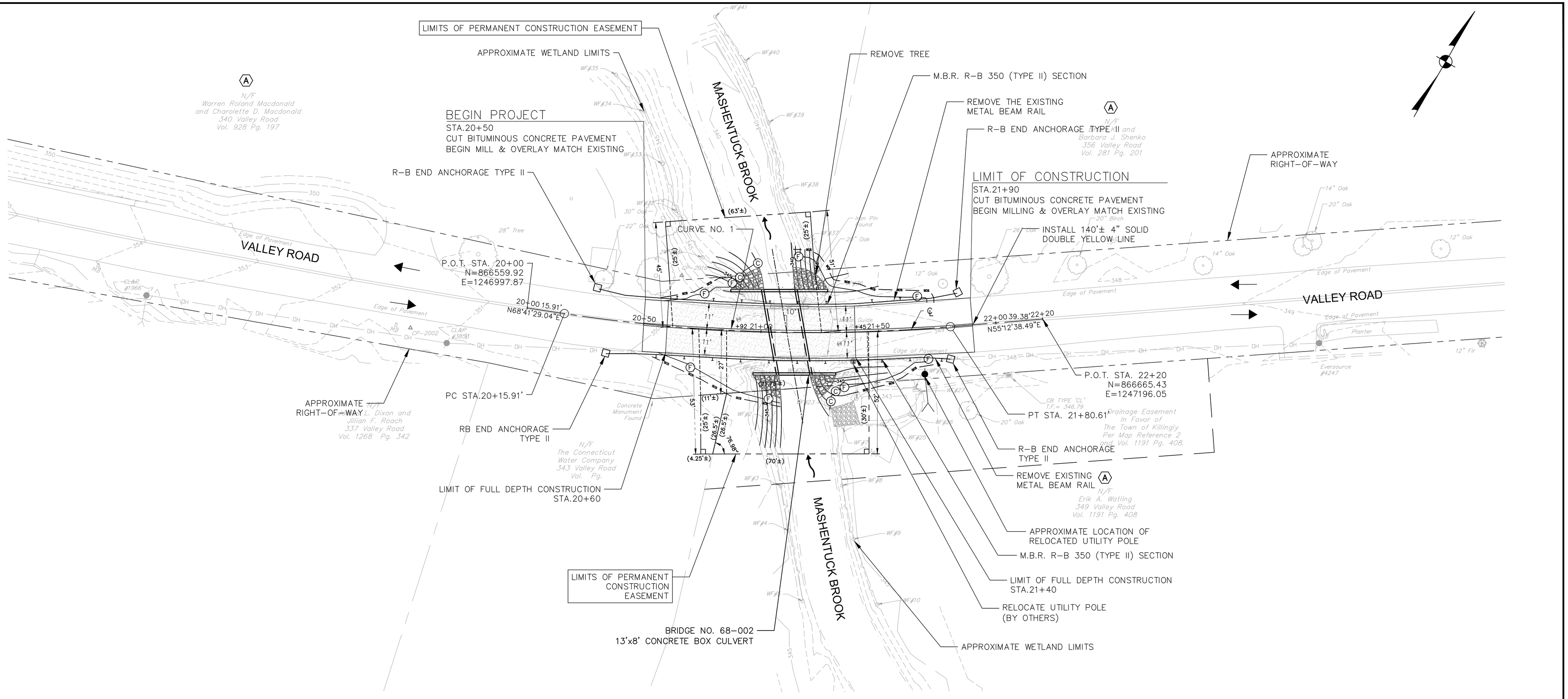
REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	06/14/2019
CAD:	HW_MSH_2017_0507_BRG002_PRO

TITLE: ROADWAY PROFILE

SHEET NUMBER: PRO-1.1



NOTES

1. ALL SOIL DISTURBANCES SHALL BE TREATED WITH 4" TOP SOIL & TURF ESTABLISHMENT.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND ELEVATIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH THE ENGINEER REGARDING THE LIMITS OF RESTORATION TO ENSURE A SMOOTH TRANSITION FROM NEW CONSTRUCTION TO EXISTING CONDITIONS.
4. CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" (CBYD) 1-800-922-4455 PRIOR TO COMMENCING CONSTRUCTION.
5. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE PLANS OR AS DIRECTED BY THE ENGINEER.
6. REFER TO STRUCTURAL (S SERIES) DRAWINGS FOR PROPOSED CULVERT DETAILS, GRADING, AND METAL BEAM RAIL POST DETAILS.
7. COST OF REMOVAL OF TREES AND OTHER VEGETATION SHALL BE INCLUDED IN THE COST OF THE ITEM "CLEARING AND GRUBBING".

CURVE DATA

No.		Northing	Easting	Delta(Δ)	Length	Radius
CURVE NO. 1	PC	866592.32	1247000.55	N13°28'51"E	164.70'	700.0'
	PI	866631.50	1247071.44			
	PT	866643.05	1247157.66			

SCHEDULE OF RIGHTS & EASEMENTS

(A) CONSTRUCTION EASEMENT

LEGEND

- FULL DEPTH PAVEMENT RECONSTRUCTION / PROPOSED WIDENING
- FILL/CUT APPROXIMATE SLOPE LIMITS
- SCS — SEDIMENTATION CONTROL SYSTEM
- APPROXIMATE WETLAND LIMITS
- EASEMENT LINE

GRAPHIC SCALE
20 10 0 20
SCALE IN FEET

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DENNIS M.QUINT, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-002
VALLEY ROAD OVER MASHENTUCK BROOK
KILLINGLY, CONNECTICUT

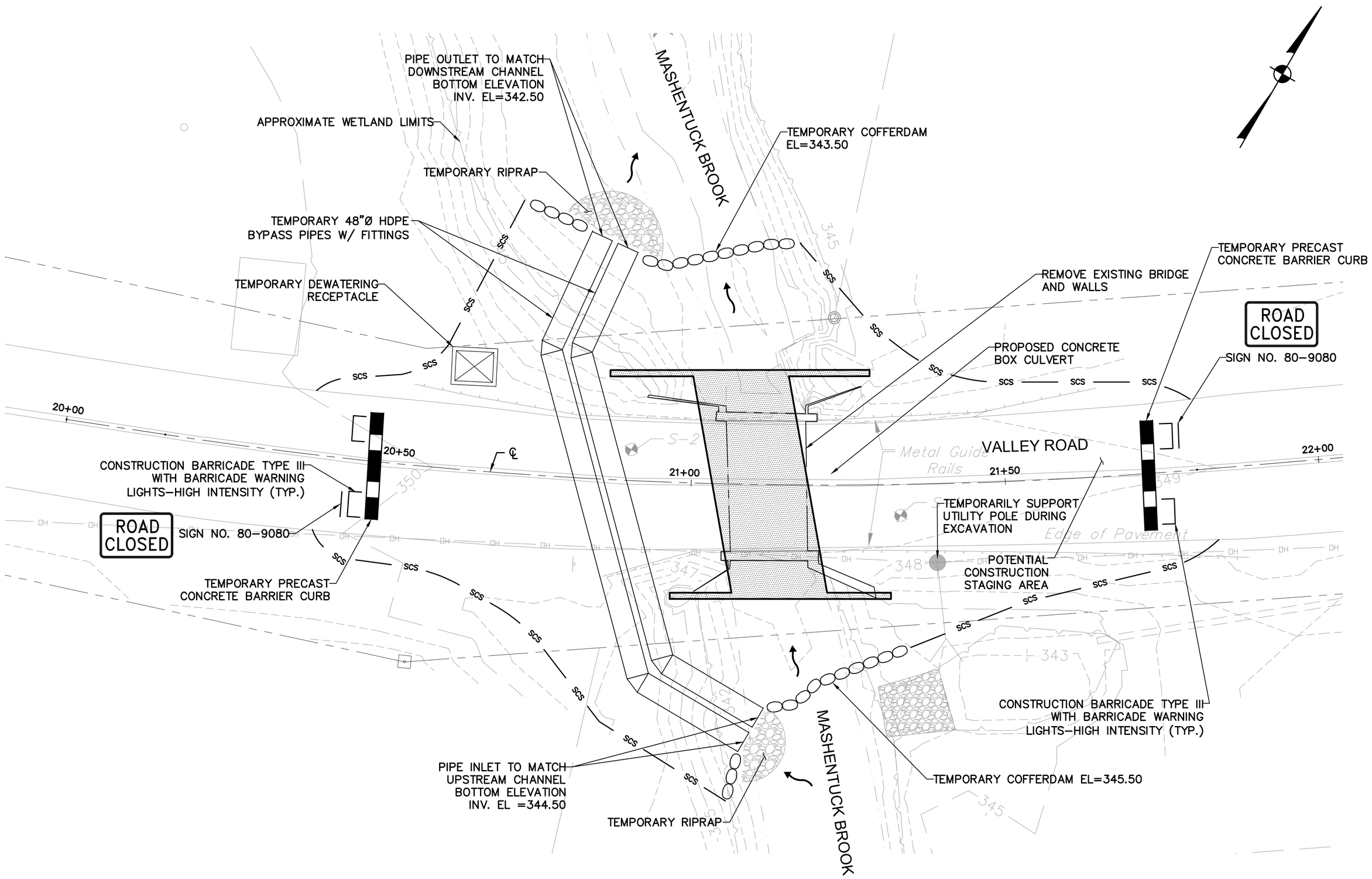
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	06/14/2019
CAD:	HW_MSH_2017_0507_BRG002_HWY

TITLE: ROADWAY PLAN

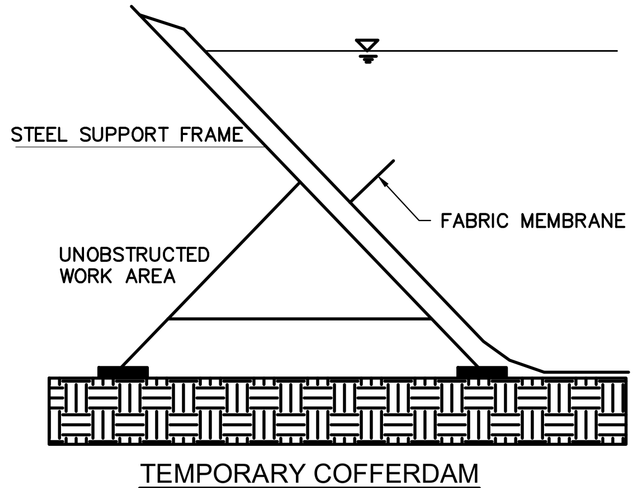
SHEET NUMBER: HWY-1.1



STAGE 1
SCALE: 1" = 10'-0"

LEGEND	
	– PROPOSED CULVERT
SCS	– SEDIMENTATION CONTROL SYSTEM
	– TEMPORARY COFFERDAM

TEMPORARY HYDRAULIC DATA	
TEMPORARY DESIGN FREQUENCY	2–YEAR
TEMPORARY DESIGN DISCHARGE	184 CFS
AVERAGE DAILY FLOW	7.5 CFS
AVERAGE DAILY FLOW ELEVATION	341.69 FT
TEMPORARY WSEL UPSTREAM	345.03 FT
TEMPORARY WSEL DOWNSTREAM	343.08 FT



TEMPORARY COFFERDAM
SCALE: N.T.S.

NOTES:

TEMPORARY COFFERDAM SHOWN ABOVE BASED ON PORTADAM SYSTEM. THE CONTRACTOR MAY CHOOSE TO PROVIDE A DIFFERENT TEMPORARY COFFERDAM SYSTEM AS APPROVED BY THE ENGINEER.

VALLEY ROAD OVER MASHENTUCK WATER HANDLING PLAN

GENERAL NOTES

1. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A DETAILED PLAN AND NARRATIVE DESCRIBING ITS PROPOSED CONSTRUCTION SEQUENCE INCLUDING DETAILED INFORMATION RELATING TO THE WATER HANDLING.
2. BEST MANAGEMENT PRACTICES (BMP) SHALL BE UTILIZED AS APPROPRIATE AND SHALL BE CONSISTENT WITH THE CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENTATION CONTROL.
3. CONSTRUCTION ACTIVITIES SHALL CONFORM TO SECTION 1.10, ENVIRONMENTAL COMPLIANCE OF THE STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS, BRIDGES, AND INCIDENTAL CONSTRUCTION, FORM 817.
4. DEWATERING, IF AND AS NEEDED, SHALL UTILIZE BMP'S AS APPLICABLE AND AS APPROVED AND ACCEPTABLE BY THE ENGINEER AND THE TOWN OF KILLINGLY.
5. BASE STREAM FLOWS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. PROVISIONS TO ALLOW SAFE PASSAGE OF A 2–YEAR STORM EVENT SHALL ALSO BE IMPLEMENTED AS REQUIRED.
6. MATERIAL EXCAVATED FROM THE RIVERBED SHALL BE STOCKPILED AND USED AS BACKFILL MATERIAL DURING RESTORATION OF THE RIVERBED.
7. THE CONTRACTOR MAY PUMP THE BASE FLOW OF THE EXISTING WATERCOURSE AS DEPICTED ON THE PLANS OR INSTALL A GRAVITY FED BYPASS PIPE TO CONVEY FLOW.
8. THE CONTRACTOR IS REQUIRED TO SUBMIT A PLAN AND EQUIPMENT SPECIFICATIONS FOR THE PUMP OR BYPASS PIPE FOR APPROVAL BY THE ENGINEER.
9. REGARDLESS OF WATER HANDLING METHOD UTILIZED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AND PROVIDING SAFE PASSAGE OF FLOW AT ALL TIMES INCLUDING INCLEMENT WEATHER.
10. DETOUR SHALL BE ESTABLISHED BY THE TOWN.
11. ALL MATERIAL EQUIPMENT AND PROCEDURES SHALL BE PRE APPROVED BY THE ENGINEER AND THE TOWN.

SUGGESTED SEQUENCE OF CONSTRUCTION

PRE–CONSTRUCTION STAGE

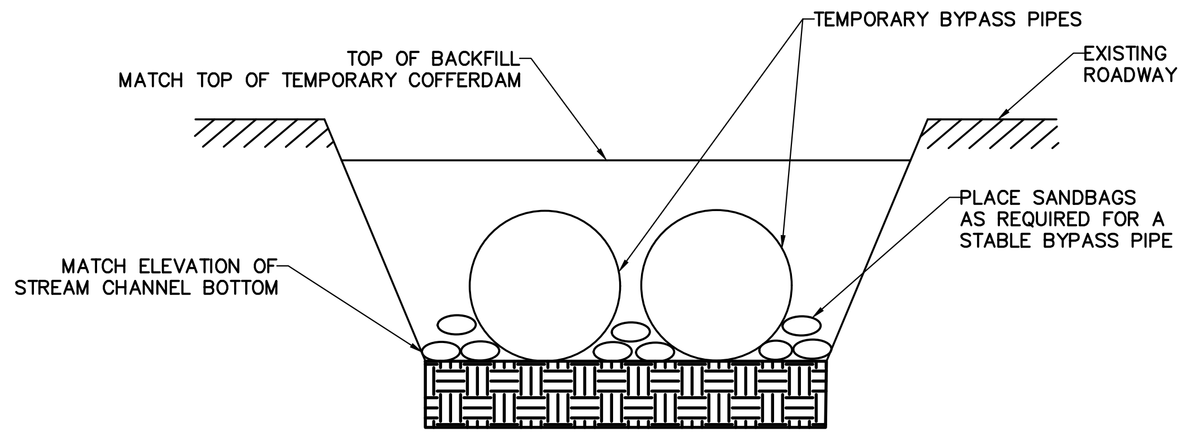
1. CONTACT "CALL–BEFORE–YOU–DIG" AND PERFORM UTILITY MARK–OUTS IF AND AS NECESSARY.
2. CLOSE VALLEY ROAD, INSTALL CONSTRUCTION BARRICADES AND DETOUR TRAFFIC OVER TO LOCAL STREETS.
3. INSTALL SEDIMENTATION AND EROSION CONTROL MEASURES AS REQUIRED.
4. INSTALL TEMPORARY BYPASS PIPES.
5. INSTALL TEMPORARY COFFERDAMS AROUND PROPOSED CULVERT AND INSTALL TEMPORARY DEWATERING RECEPTACLES AS SHOWN.

STAGE 1

1. EXCAVATE SITE AND REMOVE EXISTING BRIDGE. DEWATER AS NECESSARY.
2. CONSTRUCT CUT–OFF WALLS AND RETURN WALLS.
3. INSTALL CONCRETE BOX CULVERT, PRECAST CONCRETE WINGWALLS, AND CONSTRUCT HEADWALLS.
4. APPLY MEMBRANE WATERPROOFING OVER TOP SLAB TO LIMITS SHOWN.
5. BACKFILL STRUCTURE AS SHOWN ON THE PLANS AND PER SPECIFICATIONS.
6. COMPLETE GRADE AROUND THE CULVERT AS SHOWN AND INSTALL RIPRAP TO LIMITS SHOWN ON THE PLANS.

STAGE 2

1. REMOVE TEMPORARY COFFERDAM AND DIVERT WATER FLOW INTO NEW CULVERT.
2. REMOVE BYPASS PIPE AND BACKFILL.
3. CONSTRUCT ROADWAY APPROACHES AND OTHER ROADWAY ITEMS TO LIMITS SHOWN.
4. REPAVE VALLEY ROAD AND RE–ESTABLISH TURF.
5. REMOVE SEDIMENTATION AND EROSION CONTROL MEASURES.
6. PERFORM SITE CLEAN–UP, REMOVE CONSTRUCTION BARRICADES, AND OPEN ROAD TO TRAFFIC.



TEMPORARY BYPASS PIPES
SCALE: N.T.S.

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DENNIS M.QUINT, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-002
VALLEY ROAD OVER MASHENTUCK BROOK
KILLINGLY, CONNECTICUT

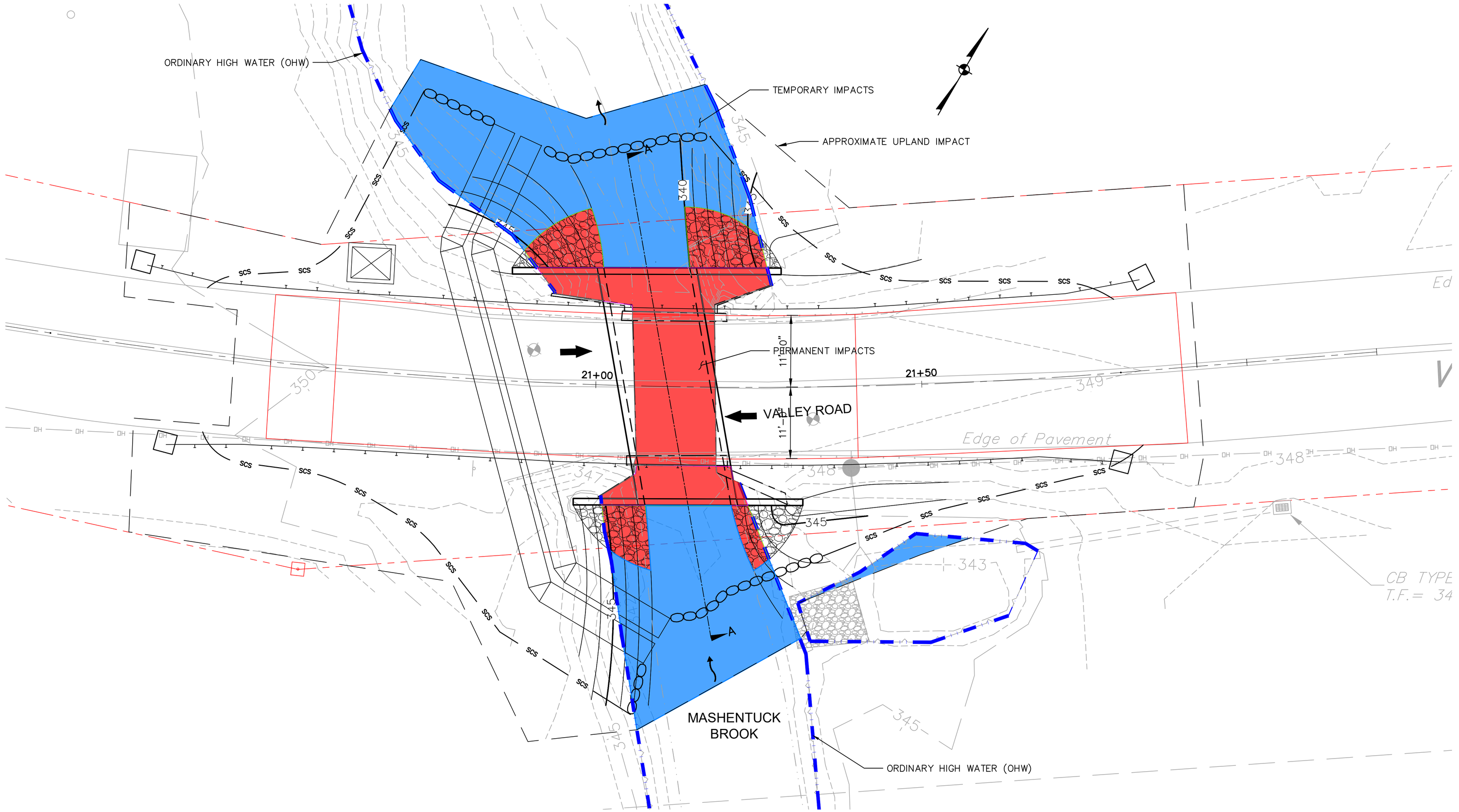
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017–0507
DATE:	02/03/2020
CAD:	SB_MSH_2017_0507_BRG002_STG

TITLE: WATER HANDLING PLAN

SHEET NUMBER: S-1.4



PLAN

SCALE: 1/8" = 1'-0"

PERMANENT IMPACTS	
WETLAND AREA	0 S.F.
WATERCOURSE AREA	850 S.F.
TOTAL:	850 S.F.

TEMPORARY IMPACTS	
WETLAND AREA	0 S.F.
WATERCOURSE AREA	1,700 S.F.
TOTAL:	1,700 S.F.

UPLANDS IMPACTS	
TOTAL:	8,050 S.F.

LEGEND

- PERMANENT IMPACTS
- TEMPORARY IMPACTS
- LIMIT OF DISTURBANCE
- ORDINARY HIGH WATER (OHW)

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STATE OF CONNECTICUT · DENNIS M. QUINST · 19108 · LICENSED PROFESSIONAL ENGINEER

DENNIS M.QUINST, PE NO. 19108

REPLACEMENT OF BRIDGE No. 68-002
VALLEY ROAD OVER MASHENTUCK BROOK
KILLINGLY, CONNECTICUT

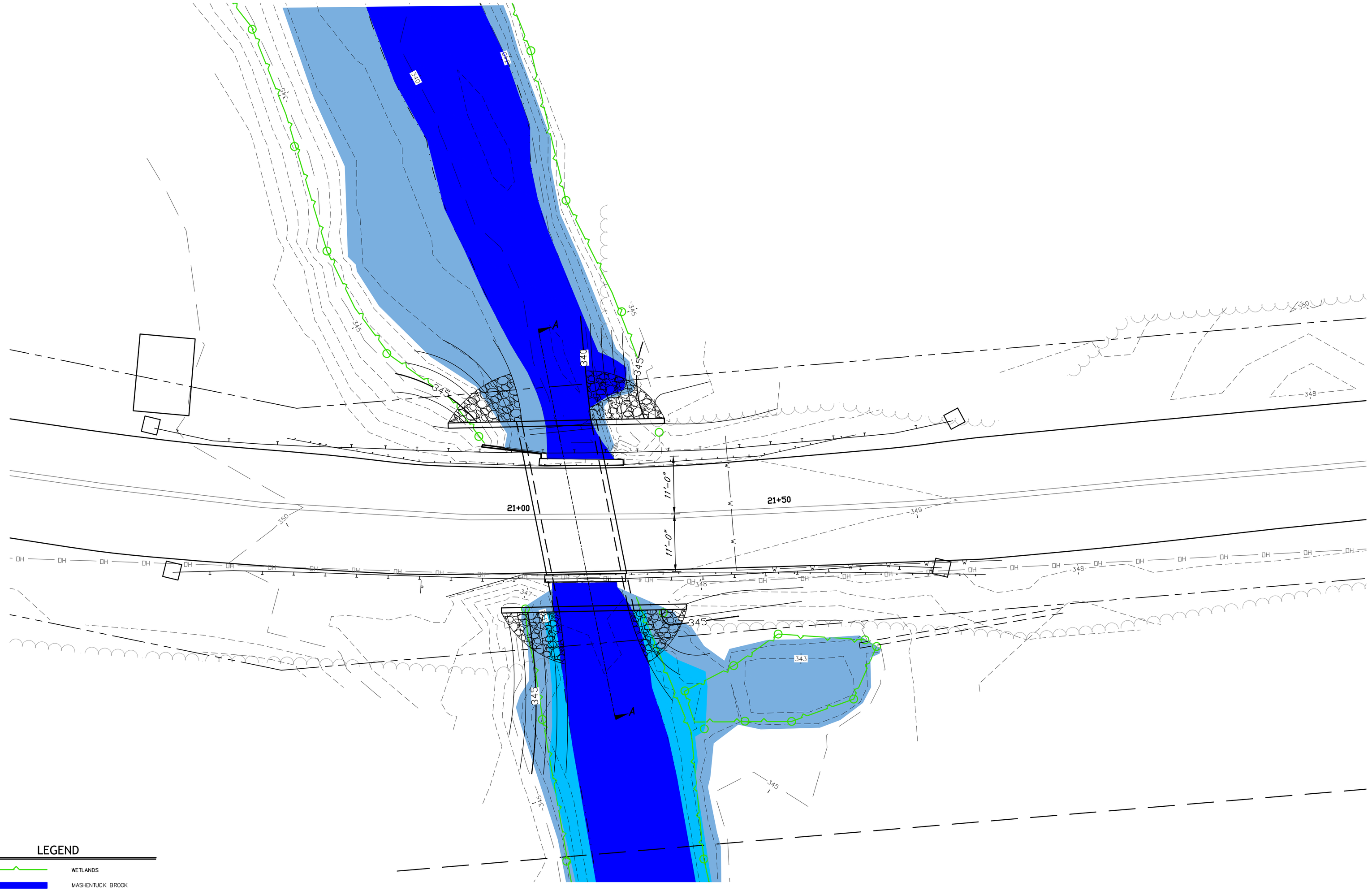
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	02/03/2020
CAD:	HW_MSH_2017_0507_BRG002_GEN (impacts)

TITLE: IMPACTS

SHEET NUMBER: WL-1



LEGEND

- WETLANDS
- MASHENTUCK BROOK
- PROPOSED DESIGN – LAND UNDER WATER
- EXISTING CONDITION – LAND UNDER WATER

2 YEAR STORM CONDITIONS

SCALE: 1" = 10'–0"

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DENNIS M.QUINT, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-002
VALLEY ROAD OVER MASHENTUCK BROOK
KILLINGLY, CONNECTICUT

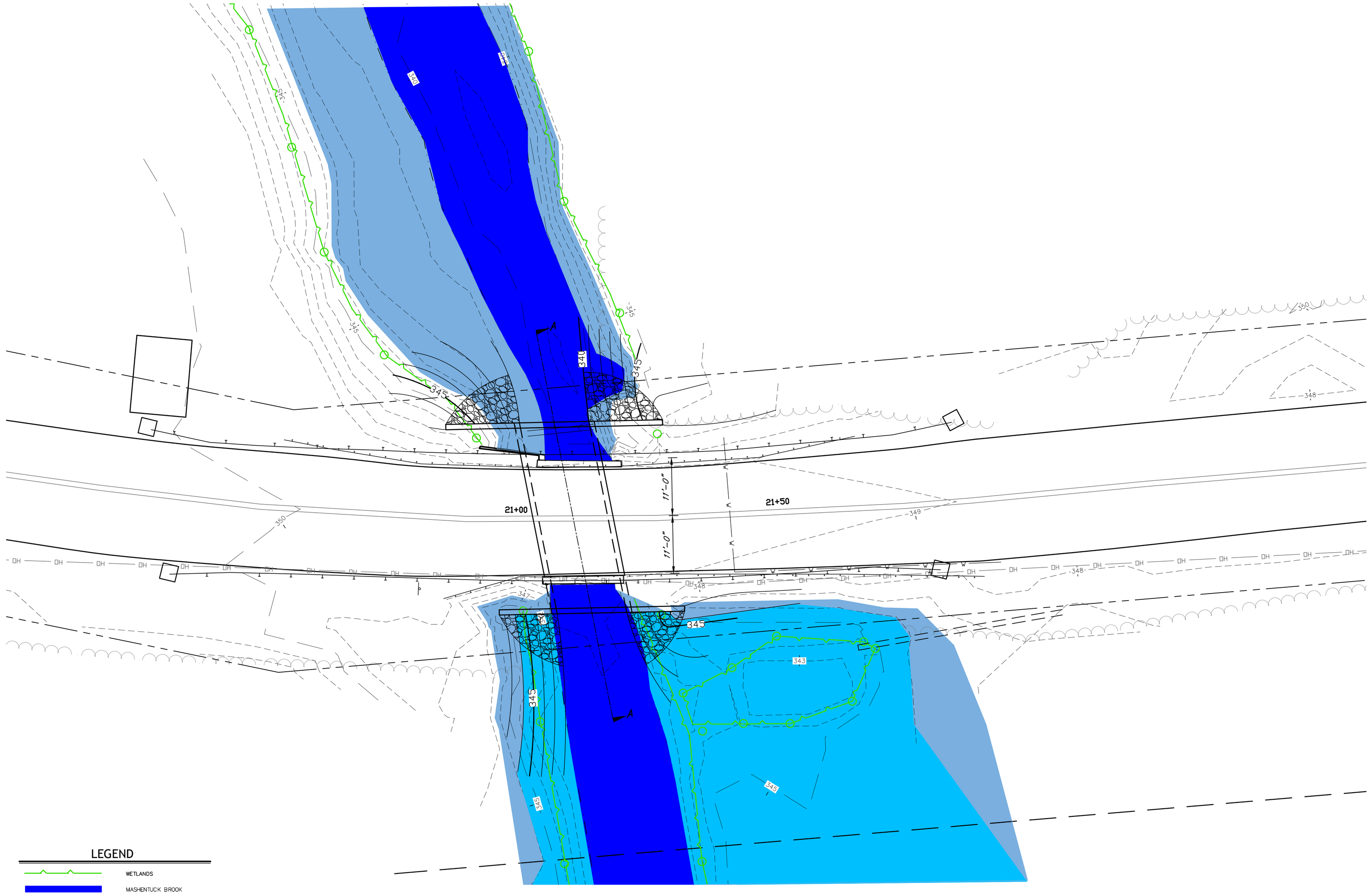
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	NOT TO SCALE
PROJECT NO.:	2017–0507
DATE:	06/14/2019
CAD:	2017–0507 MASHENTUCK_HYDRAULIC2

TITLE: HYDRAULIC DATA

SHEET NUMBER: C–1



LEGEND

- WETLANDS
- MASHENTUCK BROOK
- PROPOSED DESIGN – LAND UNDER WATER
- EXISTING CONDITION – LAND UNDER WATER

10 YEAR STORM CONDITIONS

SCALE: 1" = 10'–0"

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REVISIONS

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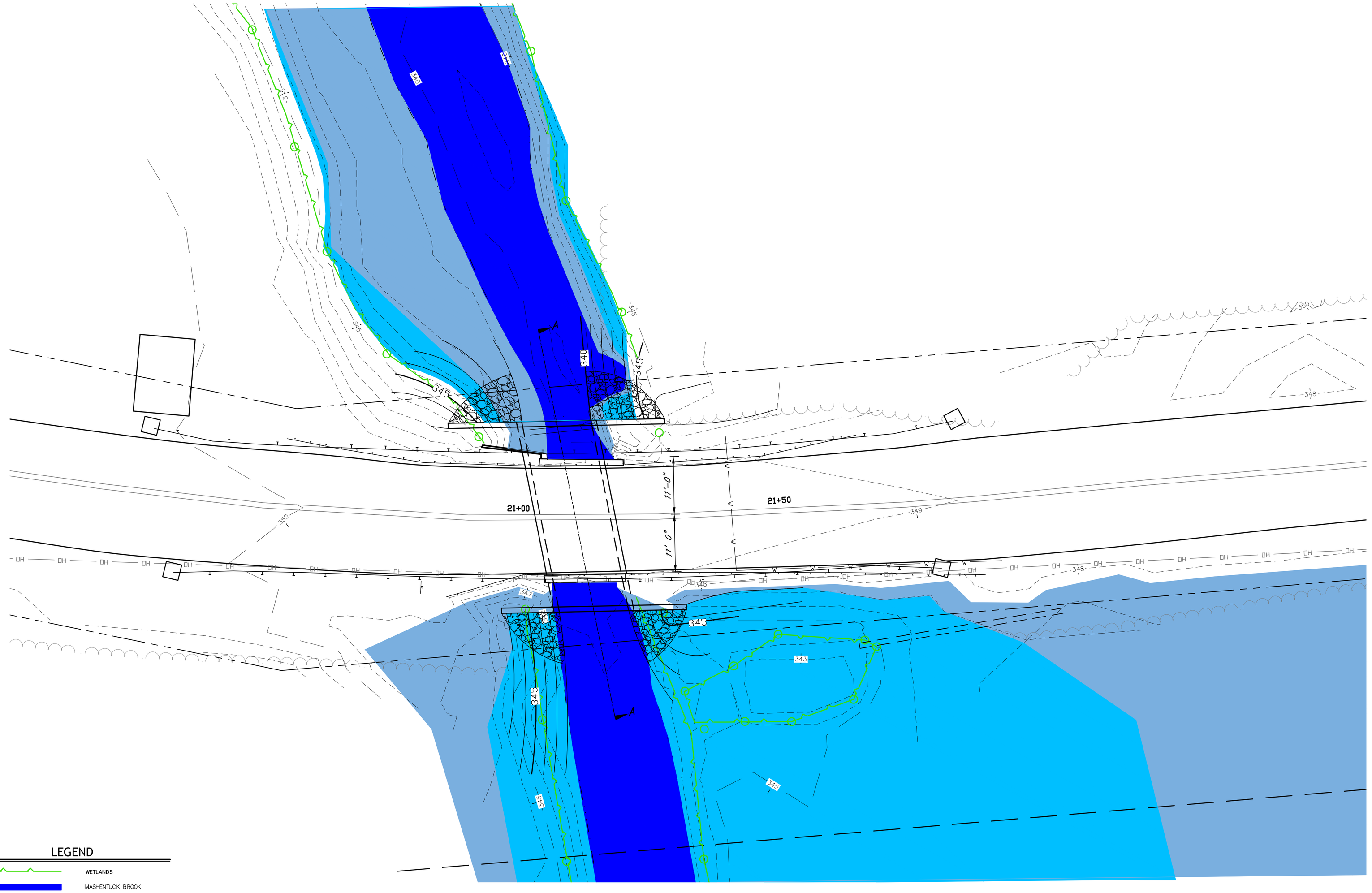
CHECKED:	DQ
APPROVED:	PAR
SCALE:	NOT TO SCALE
PROJECT NO.:	2017–0507
DATE:	06/14/2019
CAD:	2017–0507 MASHENTUCK_HYDRAULIC2

TITLE: HYDRAULIC DATA

SHEET NUMBER: C–2



LEGEND

- WETLANDS
- MASHENTUCK BROOK
- PROPOSED DESIGN – LAND UNDER WATER
- EXISTING CONDITION – LAND UNDER WATER

25 YEAR STORM CONDITIONS

SCALE: 1" = 10'–0"

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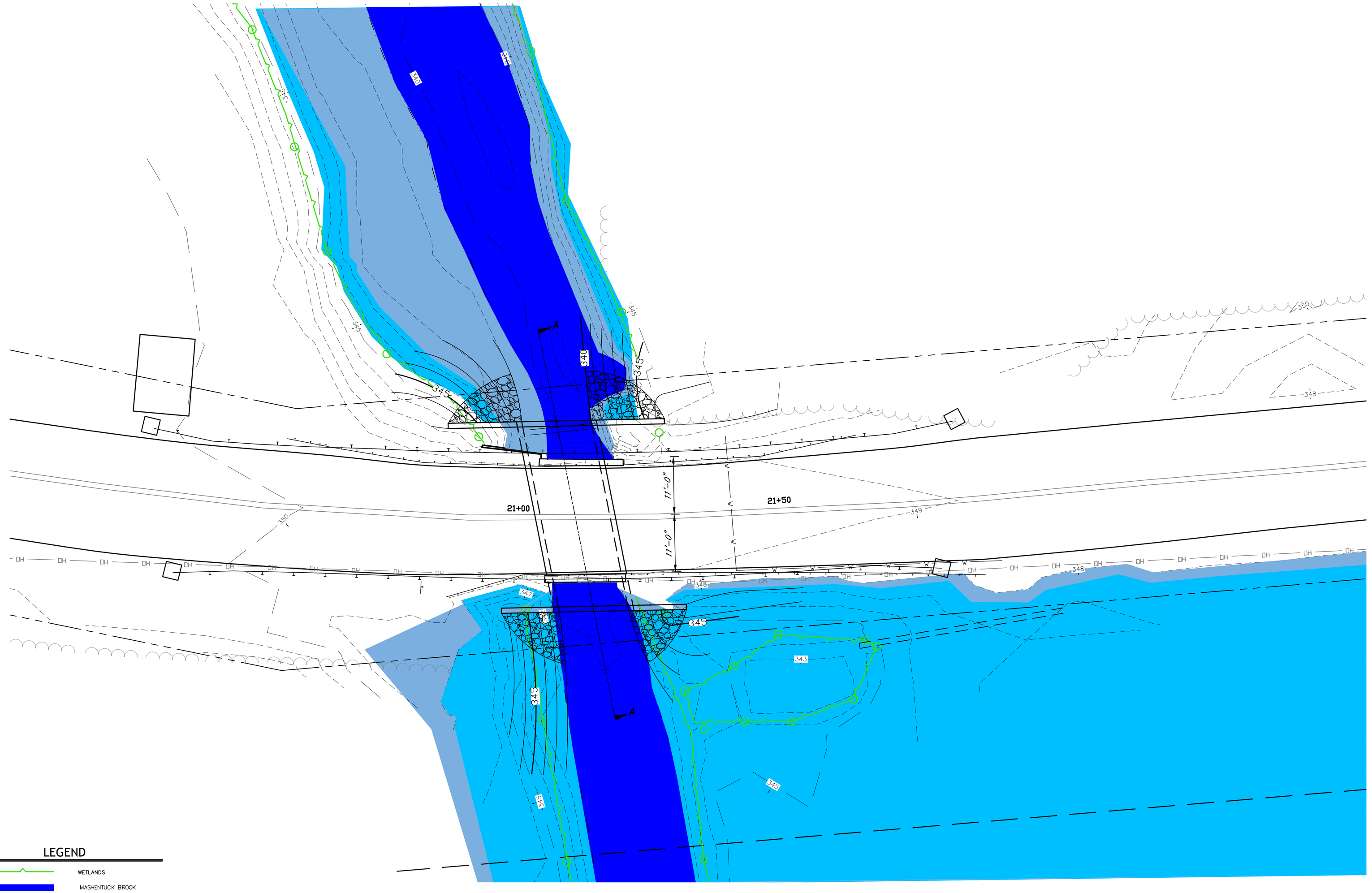
PROJECT NO.:	2017–0507
DATE:	06/14/2019
CAD:	2017–0507 MASHENTUCK_HYDRAULIC2

TITLE: HYDRAULIC DATA

SHEET NUMBER: C–3

Freeman Companies, LLC - R:\2017\2017-0507 Killingly Bridges\DWG\BRIDGE 68-002\2017-0507 MASHENTUCK_HYDRAULIC2.dwg Dec 29, 2020-11:33am Plotted By: LBuchell



LEGEND

- WETLANDS
- MASHENTUCK BROOK
- PROPOSED DESIGN – LAND UNDER WATER
- EXISTING CONDITION – LAND UNDER WATER

50 YEAR STORM CONDITIONS

SCALE: 1" = 10'–0"

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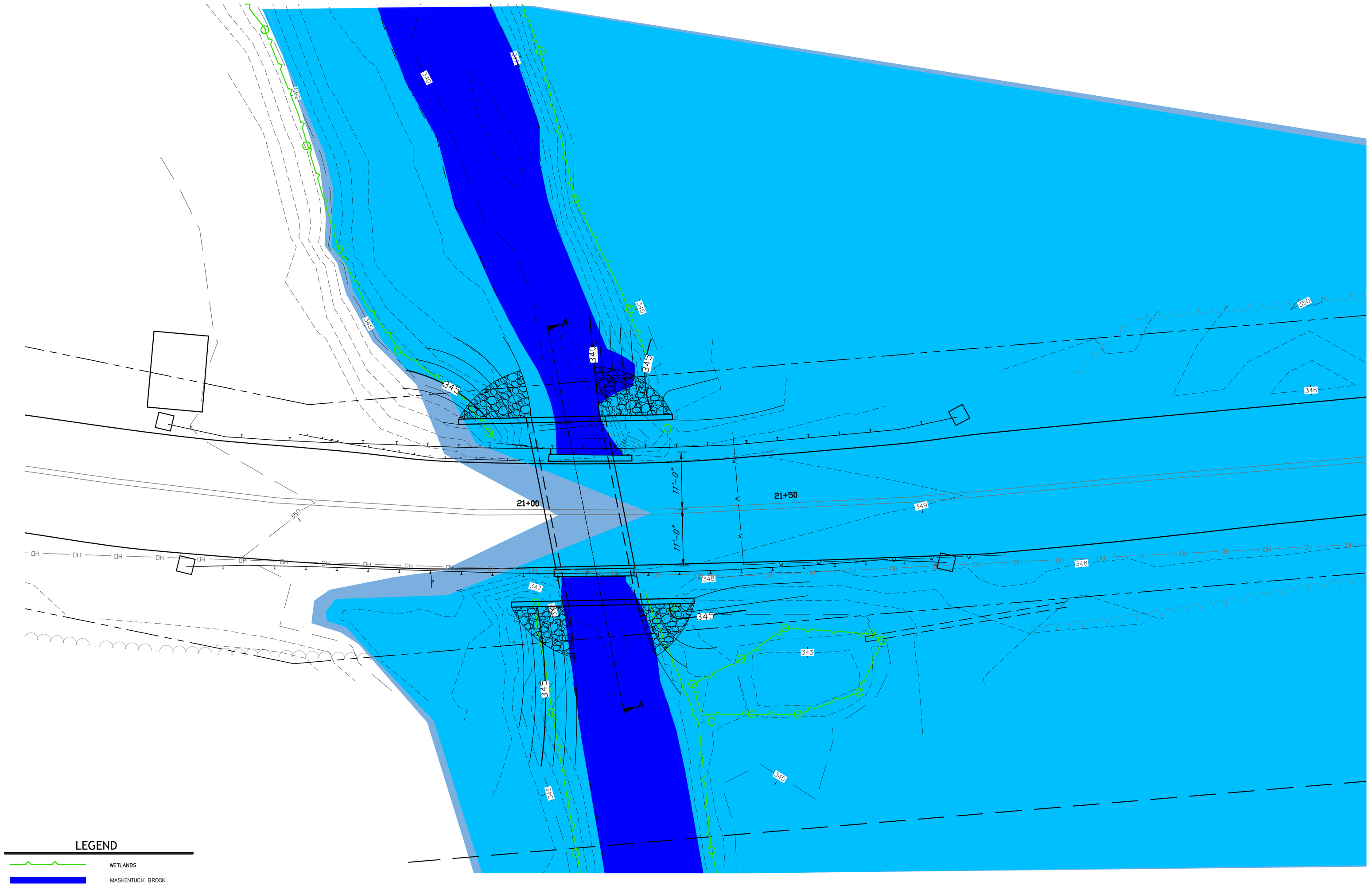
PROJECT NO.:	2017–0507
DATE:	06/14/2019
CAD:	2017–0507 MASHENTUCK_HYDRAULIC2

TITLE: HYDRAULIC DATA

SHEET NUMBER: C–4

Freeman Companies, LLC - R:\2017\2017-0507 Killingly Bridges\DWG\BRIDGE 68-002\2017-0507 MASHENTUCK_HYDRAULIC2.dwg Dec 29, 2020-11:34am Plotted By: LBuchell



LEGEND

- WETLANDS
- MASHENTUCK BROOK
- PROPOSED DESIGN – LAND UNDER WATER
- EXISTING CONDITION – LAND UNDER WATER

100 YEAR STORM CONDITIONS

SCALE: 1" = 10'–0"

FREEMAN COMPANIES
LAND DEVELOPMENT · ENGINEERING DESIGN · CONSTRUCTION SERVICES
DBE | DAS | MBE | GIMBDC CERTIFIED
CIVIL | GEOTECHNICAL | SURVEY | ENVIRONMENTAL
FREEMAN COMPANIES, LLC
36 JOHN STREET
HARTFORD, CT 06106
WWW.FREEMANCOS.COM
(860)251-9550
TOLL FREE:1(800)404-5141
FAX:(860)986-7161
ELEVATE YOUR EXPECTATIONS

PREPARED FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

OWNER FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

STATE OF CONNECTICUT · DENNIS M. QUINN · LICENSED PROFESSIONAL ENGINEER

DENNIS M.QUINN, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-002
VALLEY ROAD OVER MASHENTUCK BROOK
KILLINGLY, CONNECTICUT

NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	NOT TO SCALE
PROJECT NO.:	2017–0507
DATE:	06/14/2019
CAD:	2017–0507 MASHENTUCK_HYDRAULIC2

TITLE:
HYDRAULIC DATA

SHEET NUMBER:
C–5

Freeman Companies, LLC - R:\2017\2017-0507 Killingly Bridges\DWG\BRIDGE 68-002\2017-0507 MASHENTUCK_HYDRAULIC2.dwg Dec 29, 2020-11:38am Plotted By: LBucheli

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: Kevin Kotelly, Chief Permits and Enforcement Branch B

Re: 202065402-PCN, Concurrence of Eligibility
NAE-2021-00304
Valley Road over Whetstone Brook, Killingly, CT 06241

Dear Mr. Kotelly:

The above-referenced Pre-Construction Notification ("PCN") was submitted to the Connecticut Department of Energy and Environmental Protection ("DEEP") on January 19, 2021 and made complete on March 9, 2022 by the Town of Killingly, 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 *"Construction Plans for Replacement of Bridge No. 68-003 Valley Road over Whetstone Brook Town of Killingly, CT Final Design Plans,"* 13 sheets, dated September 4, 2018, sheets S-2.1, S-2.2, and S-2.4 revised February 18, 2022, sheet HWY-2.1 and PRO-2.1 revised June 14, 2019, sheets WL-2, C-1, C-2, C-3, C-4, and C-5 revised October 5, 2020, and prepared by Freeman Companies:

1. Replace an existing 20' long and 18" clear span with wingwalls with twin 35.5' long, 10' wide by 7' high box culverts filled with 1' of natural streambed material with four (4) new wingwalls; and
2. Temporarily install cofferdams for water handling.

	Waterway	Wetland	Total
Temporary:	2,275 sf	0 sf	2,275 sf
Permanent:	750 sf	0 sf	750 sf
Total:	3,025 sf	0 sf	3,025 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. **Time-of-Year Restriction.** Any unconfined instream work within Whetstone Brook shall be restricted to the period from June 1 to September 30, inclusive.
2. **Road Barricade and Flood Warnings.** The Project Proponent shall post signage at both crossing approaches, warning that the road is subject to flooding. In the event that a significant storm event is forecast that is likely to cause road overtopping, the Project Proponent shall make provisions for barricading the road.
3. **Stormwater Maintenance.** Prior to the commencement of the proposed activities, the Project Proponent shall clear the stormwater drainage outlet directly upstream of the crossing on the eastern bank of the brook such that it is functioning as designed and free of debris and excess sediment.

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 #6 & 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 Farrah Ashe at 860-424-3169 or Farrah.Ashe@ct.gov.

Jeff Caiola

5-12-2022

Jeff Caiola, Assistant Director
Land and Water Resources Division
Bureau of Water Protection and Land Reuse

Date

CC (via email):
David Capacchione, Town of Killingly, dcapacchione@killinglyct.gov
Jeffery LeBeau, Freeman Companies, jlebeau@freemancos.com
Dennis Quinit, Freeman Companies, dquinit@freemancos.com
Peter Olmstead, USACE, Peter.D.Olmstead@usace.army.mil
Stacy Pappano, CT DEEP, Stacy.Pappano@ct.gov

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.

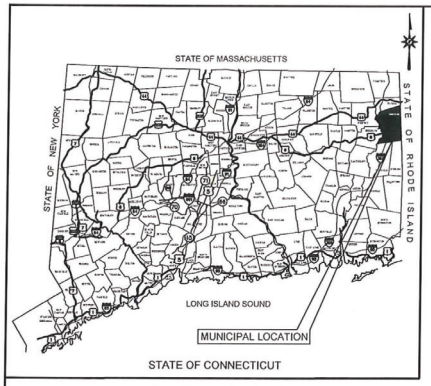
8. **Certification of Documents.** Any document, including but not limited to any notice, which is required to be submitted to the Commissioner under this certificate shall be signed by the permittee, a responsible corporate officer of the permittee, a general partner of the permittee, or a duly authorized 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



LOCATION MAP

N.T.S.

CONSTRUCTION PLANS

FOR

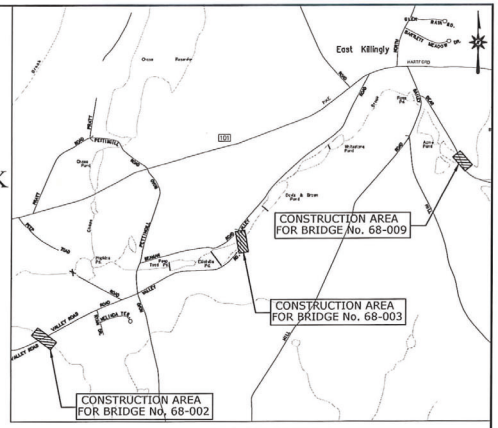
REPLACEMENT OF BRIDGE NO.68-002 VALLEY ROAD OVER MASHENTUCK BROOK
REPLACEMENT OF BRIDGE NO.68-003 VALLEY ROAD OVER WHETSTONE BROOK
REPLACEMENT OF BRIDGE NO.68-009 BEAR HILL ROAD OVER UNNAMED BROOK

TOWN OF KILLINGLY, CT

FINAL DESIGN PLANS

PREPARED FOR:

TOWN OF KILLINGLY
172 MAIN STREET
KILLINGLY, CONNECTICUT 06239



VICINITY MAP

SCALE: 1"=1000'

GENERAL NOTES:

CONNECTICUT DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION, FORM 817, DATED 2016; SUPPLEMENTAL SPECIFICATIONS, DATED JANUARY 2015; AND SPECIAL PROVISIONS.

ALL HORIZONTAL GEOMETRY ON THIS PROJECT IS BASED ON HORIZONTAL DATUM NAD83.

ALL ELEVATIONS ON THIS PROJECT BASED ON NAVD88.

DESIGN STANDARDS:

TOWN OF KILLINGLY DESIGN STANDARDS

CONNECTICUT DEPARTMENT OF TRANSPORTATION HIGHWAY DESIGN MANUAL, 2003 EDITION.

A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS 2011 EDITION, PUBLISHED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO).

CONNECTICUT DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL, 2003 EDITION.

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

CONTENTS

STANDARD STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION DETAILS

PREPARED BY:

FREEMAN COMPANIES
LAND DEVELOPMENT | ENGINEERING DESIGN | CONSTRUCTION SERVICES

LAND DEVELOPMENT ENGINEERING DESIGN CONSTRUCTION SERVICES

36 JOHN STREET
HARTFORD, CONNECTICUT 06106
(860) 251-9550
(860) 986 -7161 Fax

TOWN OF KILLINGLY, CONNECTICUT

APPROVED BY:

DAVID CAPACCHIONE, P.E.
TOWN ENGINEER

DATE

DESIGN BY: FREEMAN COMPANIES

DENNIS M. QUINIT, P.E.
CT. PROFESSIONAL ENGINEER REG. NO. 19106

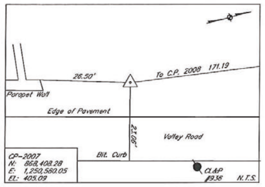
DATE: 9/4/2018

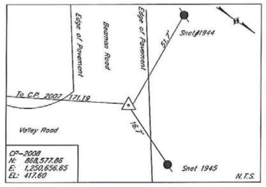
SUBCONSULTANTS:

GIBSON ENVIRONMENTAL SERVICES

DATES

ISSUE DATE: SEPTEMBER 04, 2018
REVISION:





SURVEY NOTES

THIS SURVEY HAS BEEN PREPARED BY FREEMAN COMPANIES, LLC. IN ACCORDANCE WITH THE REGULATIONS OF CONNECTICUT STATE AGENCIES, SECTIONS 20-300b-1 THRU 20-300b-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996.

THE TYPE OF SURVEY IS TOPOGRAPHIC SURVEY AND IS INTENDED TO DEPICT THE EXISTING CONDITIONS AND TOPOGRAPHIC FEATURES OF THE PROJECT SITE.

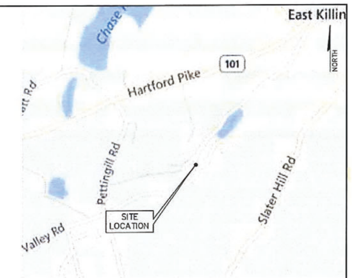
THE SURVEY ACCURACY CONFORMS TO HORIZONTAL CLASS A-2, TOPOGRAPHIC ACCURACY CLASS T-2.

NORTH ARROW REFERS TO THE CONNECTICUT COORDINATE SYSTEM (NAD83) AND IS BASED UPON GPS OBSERVATIONS PERFORMED BY FREEMAN COMPANIES.

ELEVATIONS REFER TO NAVD88 AND ARE BASED ON GPS OBSERVATIONS PERFORMED BY FREEMAN COMPANIES.

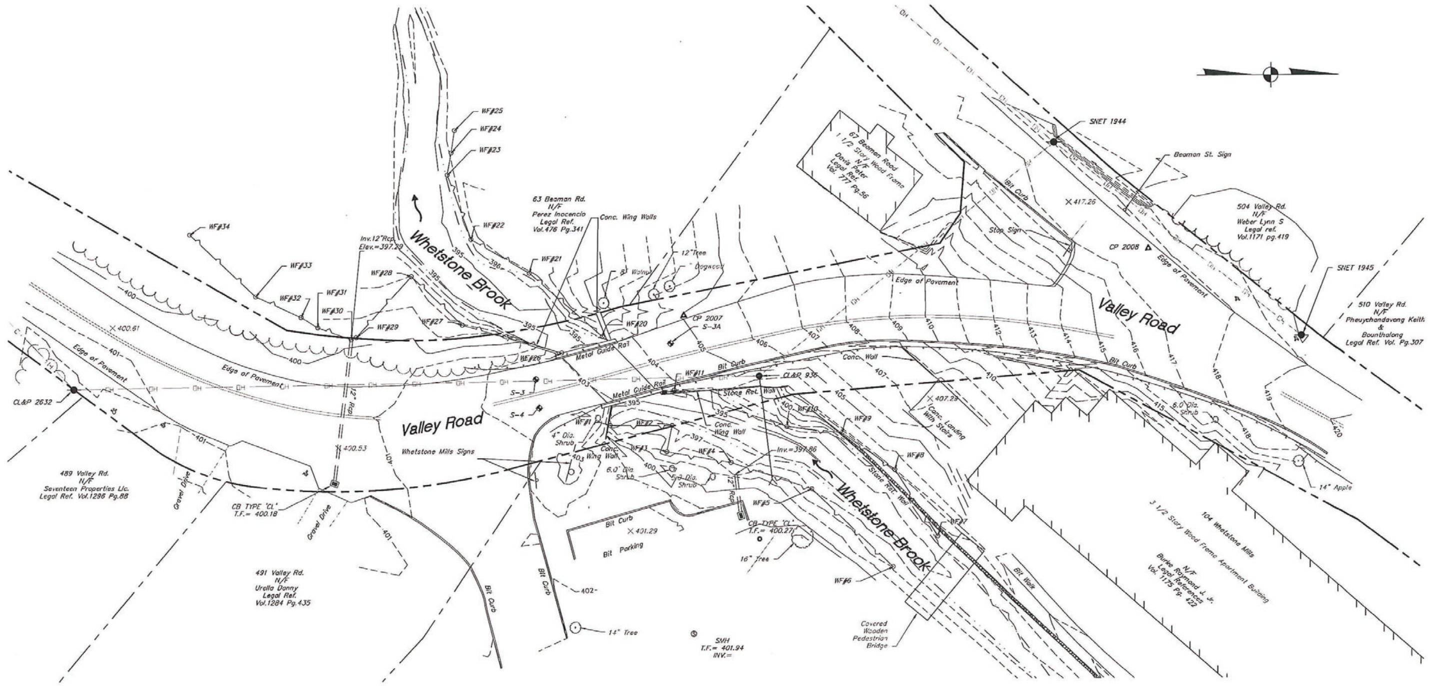
THE UNDERGROUND FEATURES DEPICTED HEREON ARE THE RESULT OF COMPILATION OF EXISTING MAPPING AND LOCATION OF UTILITY PAINT. ACTUAL LOCATION OF UNDERGROUND UTILITIES IS TO BE CONSIDERED TO BE APPROXIMATE AT BEST. OTHER UTILITIES MAY EXIST WHICH FREEMAN COMPANIES ARE UNAWARE OF. VERIFY INFORMATION IN THE FIELD. BEFORE ANY DIGGING OR SITE EXCAVATION CALL " CALL BEFORE YOU DIG" 1-800-922-4455.

A PORTION OF THE PROJECT AREA IS LOCATED IN FLOOD HAZARD ZONE 'A', AREAS OF 100-YEAR FLOOD BASE ELEVATIONS. FLOOD HAZARD FACTORS HAVE NOT BEEN DETERMINED .a PORTION OF THIS PROJECT IS LOCATED IN FLOOD HAZARD ZONE 'C', AREAS OF MINIMAL FLOODING . A VISUAL INSPECTION OF THE FEMA MAP PANEL 20 OF 30 COMMUNITY-PANEL NUMBER 090136 0020 B



LOCATION MAP

NOT TO SCALE



LEGEND

	PROPERTY LINE
	EASEMENT LINE
—o—	CHAIN LINK FENCE
	EDGE OF WETLANDS
	EDGE OF RIVER
—W—	WATER LINE
—S—	SANITARY LINE
—G—	GAS LINE
—OH—	OVERHEAD WIRES
	DRAINAGE PIPE
	UTILITY POLE
W.G.	WATER GATE VALVE
Hyd.	FIRE HYDRANT
G.G.	GAS GATE VALVE
	SIGN
•	PROPERTY CORNER IRON PIN
	CATCH BASIN
	SANITARY MANHOLE
WF# o	WETLAND FLAG
MB	MAILBOX
	BORING
	BUSH
10"	DECIDUOUS TREE
SYL	SINGLE YELLOW LINE
x 210.02	SPOTGRADE
VOL.	VOLUME
PG.	PAGE

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

TO MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

MICHAEL J. GARON L.S. #70366

NO CERTIFICATION IS EXPRESSED OR IMPLIED UNLESS THIS MAP BEARS THE ORIGINAL SIGNATURE AND EMBOSSED SEAL OF THE ABOVE NAMED LAND SURVEYOR.

FREEMAN COMPANIES

DBE | DAS | MBE | GNMSDC CERTIFIED
CIVIL | GEOTECHNICAL | SURVEY | ENVIRONMENTAL

FREEMAN COMPANIES, LLC
36 JOHN STREET
HARTFORD, CT 06106
WWW.FREEMANCOS.COM
(860)251-9550
TOLL FREE (800)604-5141
FAX (860)906-7151

ELEVATE YOUR EXPECTATIONS

PREPARED FOR

TOWN OF KILLINGLY
BEAR HILL ROAD
KILLINGLY,
CONNECTICUT 06239

OWNER FOR

TOWN OF KILLINGLY
BEAR HILL ROAD
KILLINGLY,
CONNECTICUT 06239

STATE OF CONNECTICUT — DENNIS M. QUINT — LICENSED PROFESSIONAL ENGINEER

DENNIS M.QUINT, PE NO. 19108

REPLACEMENT OF BRIDGE No. 68-003
VALLEY ROAD OVER WHETSTONE BROOK
KILLINGLY, CONNECTICUT

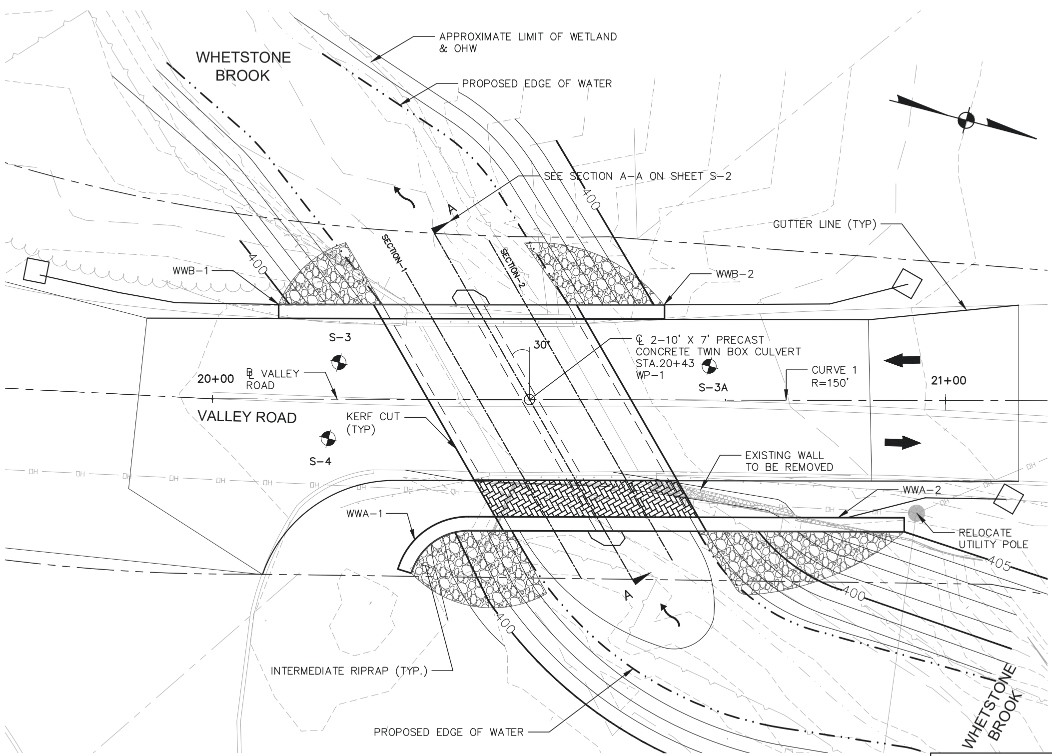
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

SURVEYED:	R.J.C/N.I.C
DRAFTED:	R.J.C
CHECKED:	RG
APPROVED:	M.J.G
SCALE:	1" = 20'
PROJECT NO.:	2017-0507
DATE:	12/15/2017
CAD: 2017-0507	WHETSTONE EX

TITLE: TOPOGRAPHIC SURVEY

SHEET NUMBER: EX-2.1



PLAN

SCALE: 1/8" = 1'-0"

UTILITY NOTES

1. THIS PROJECT INVOLVES THE PRESENCE OF OVERHEAD UTILITY LINES WITHIN THE LIMITS AND FOOTPRINT OF THE PROJECT. WHILE NO WORK INVOLVING OR IMPACTING THESE UTILITIES ARE ANTICIPATED, THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL WORK WITH THE APPROPRIATE UTILITY COMPANY (EVER SOURCE) AND FOR PROVIDING TEMPORARY PROTECTION AND/OR SUPPORT OF THESE FACILITIES IF AND AS REQUIRED BY THE UTILITY COMPANY.
2. THE CONTRACTOR SHALL DEVELOP ITS ERECTION SCHEME IN CONFORMANCE WITH LIMITATIONS AND RESTRICTIONS ASSOCIATED WITH THE OVERHEAD UTILITY LINES AND AS REQUIRED BY THE APPROPRIATE UTILITY COMPANY.
3. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANY WITH REGARDS TO POTENTIAL RELOCATION OR TEMPORARY SUPPORT OF THEIR FACILITIES. THE CONTRACTOR SHALL IDENTIFY POTENTIAL UTILITY IMPACTS ASSOCIATED WITH THEIR WORK, IF ANY, PRIOR TO START OF CONSTRUCTION AND NOTIFY THE APPROPRIATE UTILITY COMPANY ACCORDINGLY.

NOTICE TO BRIDGE INSPECTORS

IT IS RECOMMENDED THAT CTDOT'S BRIDGE SAFETY PROCEDURES BE FOLLOWED WHEN INSPECTING THIS BRIDGE FOR, BUT NOT LIMITED TO, ALL APPROPRIATE COMPONENTS INDICATED IN THE GOVERNING MANUALS FOR BRIDGE INSPECTION. ATTENTION MUST BE GIVEN TO INSPECTING THE FOLLOWING SPECIAL COMPONENTS AND DETAILS. (THE LISTING OF COMPONENTS FOR SPECIFIC ATTENTION SHALL NOT BE CONSTRUED TO REDUCE THE IMPORTANCE OF INSPECTION OF ANY OTHER COMPONENT OF THE STRUCTURE.) THE FREQUENCY OF INSPECTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE GOVERNING MANUALS FOR BRIDGE INSPECTION, UNLESS OTHERWISE DIRECTED BY THE MANAGER OF BRIDGE SAFETY AND EVALUATIONS.

COMPONENT OR DETAIL	STRUCTURE SHEET REFERENCE
NONE	–
	–

HYDRAULIC DATA

HYDRAULIC DATA	
HYDRAULIC AREA	5.7 SQ MI
DESIGN FREQUENCY	100 YEAR
DESIGN DISCHARGE	1180 CFS
AVERAGE DAILY FLOW	10.4 CFS
AVERAGE DAILY FLOW ELEVATION	395.63
UPSTREAM DESIGN WATER SURFACE ELEVATION	402.49
DOWN STREAM DESIGN WATER SURFACE ELEVATION	399.70
2 YEAR DESIGN STORM WATER ELEVATION	397.59

TRANSPORTATION DATA

MEMBER	SHIPPING LENGTH	SHIPPING HEIGHT	SHIPPING WIDTH	SHIPPING WEIGHT
BOX CULVERT SECTION–1	12'–0"	8'–0"	9'–0"	46,500 lbs
BOX CULVERT SECTION–2	12'–0"	9'–0"	9'–0"	34,900 lbs
WINGWALL	13'–0"	7'–0"	9'–0"	37,000 lbs

BORING LEGEND

S–1 APPROXIMATE BORING LOCATION

GENERAL NOTES

SPECIFICATIONS: CONNECTICUT DEPARTMENT OF TRANSPORTATION FORM 817, INCLUDING SUPPLEMENTAL SPECIFICATIONS DATED JANUARY, 2018 AND SPECIAL PROVISIONS.

DESIGN SPECIFICATIONS: AASHTO LRFD SPECIFICATIONS FOR HIGHWAY BRIDGES, 8TH EDITION AS SUPPLEMENTED BY THE CONNECTICUT DEPARTMENT OF TRANSPORTATION BRIDGE MANUAL (2003) EDITION WITH REVISIONS UP TO AND INCLUDING 2011.

ALLOWABLE DESIGN STRESSES:

CLASS "A" CONCRETE: f'c = 3,000 psi
CLASS "50" CONCRETE: f'c = 5,000 psi
REINFORCEMENT (ASTM 615 GRADE 60) fy = 60,000 psi

LIVE LOAD:

STANDARD DESIGN VEHICLE: AASHTO HL–93
PERMIT (OVERLOAD) VEHICLES: CONNDOT P204 (8–AXLE)
CONNDOT P380 (19–AXLE)

SALVAGE: NONE

DIMENSIONS AND ELEVATIONS: WHEN DECIMAL DIMENSIONS AND ELEVATIONS ARE GIVEN TO LESS THAN THREE DECIMAL PLACES, THE OMITTED DIGITS SHALL BE ASSUMED TO BE ZERO. ALL ELEVATIONS ARE GIVEN IN DECIMAL FEET AND ARE BASED ON NAVD 88.

EXISTING DIMENSIONS: DIMENSIONS OF THE EXISTING STRUCTURE SHOWN ON THESE PLANS ARE FOR GENERAL REFERENCE ONLY AND ARE NOT GUARANTEED. THE CONTRACTOR SHALL TAKE ALL FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF THE FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY. WHEN SHOP DRAWINGS BASED ON FIELD MEASUREMENTS ARE SUBMITTED FOR APPROVAL, THE FIELD MEASUREMENTS SHALL ALSO BE SUBMITTED FOR REFERENCE BY THE REVIEWER.

UTILITIES: THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES LOCATED WITHIN THE VICINITY OF THE SITE DURING CONSTRUCTION. THE METHOD OF SUPPORTING AND PROTECTING UTILITIES SELECTED BY THE CONTRACTOR MUST BE APPROVED BY THE UTILITY COMPANY. UTILITY MODIFICATIONS SHALL BE MADE BY THE RESPECTIVE UTILITY COMPANIES EXCEPT WHERE NOTED OTHERWISE.

CONCRETE NOTES

CLASS "A" CONCRETE: CLASS "A" CONCRETE SHALL BE USED FOR THE CUT–OFF WALLS, RETURN WALLS, HEADWALLS AND WINGWALL FOOTINGS.

CLASS "50" CONCRETE: CLASS "50" CONCRETE SHALL BE USED FOR THE PRECAST CONCRETE BOX CULVERT AND PRECAST CONCRETE WINGWALL STEMS.

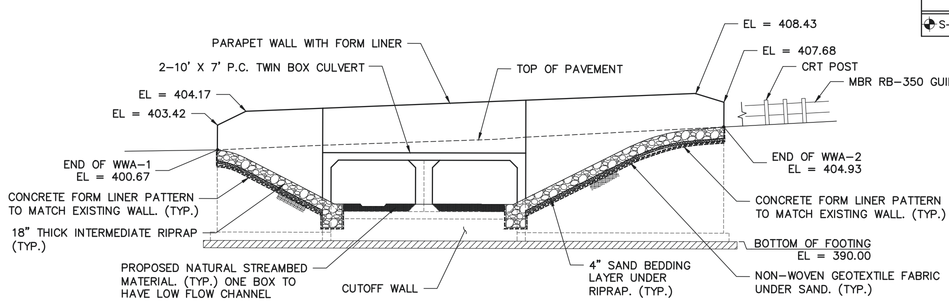
REINFORCEMENT: ALL REINFORCEMENT SHALL BE ASTM A615 GRADE 60.

EXPOSED EDGES: EXPOSED EDGES OF CONCRETE SHALL BE BEVELED 1" X 1", UNLESS DIMENSIONED OTHERWISE.

EPOXY COATED REINFORCEMENT BARS: ALL REINFORCEMENT IN THE PRECAST CONCRETE BOX CULVERT SHALL BE EPOXY COATED AND INCLUDED IN THE PAY ITEM "20'X7' PRECAST CONCRETE BOX CULVERT". ALL REINFORCEMENT IN THE PRECAST CONCRETE WINGWALLS SHALL BE EPOXY COATED AND INCLUDED IN THE PAY ITEM "PRECAST CONCRETE WINGWALLS". ALL REINFORCEMENT IN THE CUT–OFF WALLS, AND RETURN WALLS SHALL BE PAID FOR IN THE PAY ITEM "DEFORMED STEEL BARS". ALL REINFORCEMENT IN THE HEADWALLS SHALL BE EPOXY COATED AND PAID FOR UNDER THE ITEM "DEFORMED STEEL BARS (EPOXY COATED)".

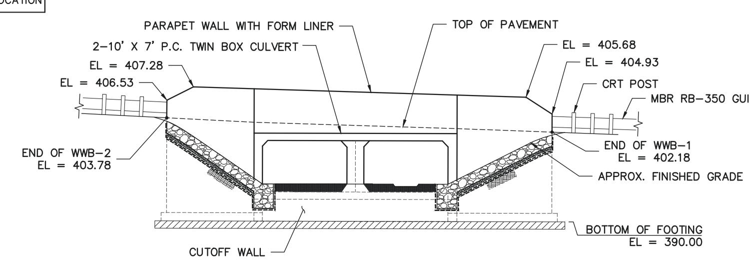
CONCRETE COVER: ALL REINFORCEMENT SHALL HAVE 2" COVER UNLESS DIMENSIONED OTHERWISE.

PREFORMED EXPANSION JOINT FILLER: THE COST OF FURNISHING AND INSTALLING PREFORMED EXPANSION JOINT FILLERS SHALL BE INCLUDED IN THE ITEM "CLASS 'A' CONCRETE".



UPSTREAM ELEVATION

SCALE: 1/8" = 1'-0"



DOWNSTREAM ELEVATION

SCALE: 1/8" = 1'-0"

REPLACEMENT OF BRIDGE No. 68-003
VALLEY ROAD OVER WHETSTONE BROOK
KILLINGLY, CONNECTICUT

FREEMAN COMPANIES
DBE | DAS | MBE | GNMSDC CERTIFIED
CIVIL | GEOTECHNICAL | SURVEY | ENVIRONMENTAL
FREEMAN COMPANIES, LLC
36 JOHN STREET
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(860)251-9550
TOLL FREE:(800)604-5141
FAX:(860)986-7161
ELEVATE YOUR EXPECTATIONS

PREPARED FOR: TOWN OF KILLINGLY, VALLEY ROAD, KILLINGLY, CONNECTICUT 06239

OWNER FOR: TOWN OF KILLINGLY, VALLEY ROAD, KILLINGLY, CONNECTICUT 06239

DENNIS M.QUINT, PE NO. 19106

NO.	DATE	DESCRIPTION
1	02/18/22	ADDED CROSS-SECTION DATA & REVISED HYDRAULIC DATA

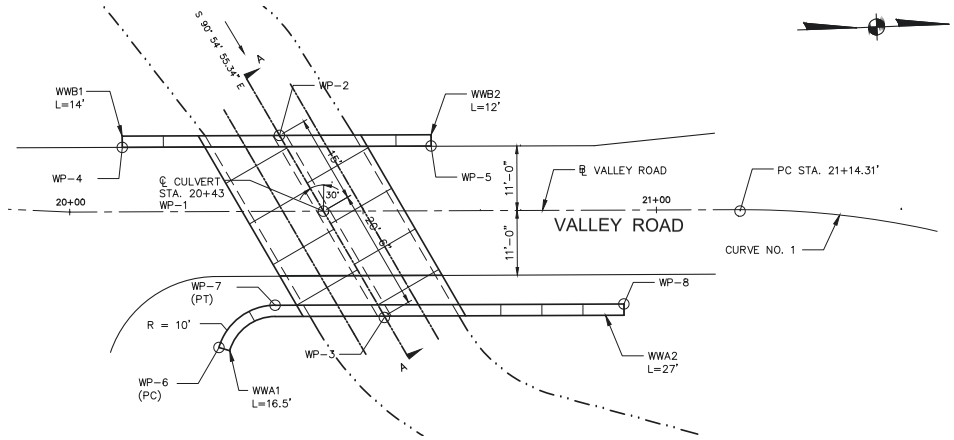
REVISIONS

DESIGNED:	YL
DRAFTED:	KM
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	10/05/2020
CAD:	HW_MSH_2017_0507_BRG003_GEN

TITLE: GENERAL PLAN

SHEET NUMBER: S-2.1

Freeman Companies, LLC : R:\2017\2017-0507 Killingly Bridges\DWG\BRIDGE 68-003\Archive\HW_MSH_2017_0507_BRG003_GEN.dwg Feb 18, 2022-11:11am Plotted By: JLeBeau



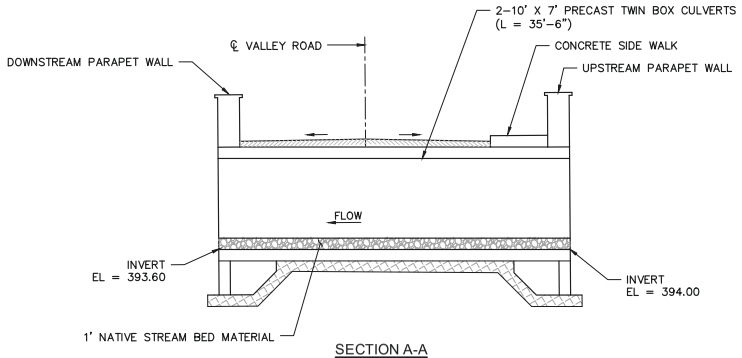
LAYOUT PLAN
SCALE: 1" = 10'-0"

WORKING POINT COORDINATES		
WP	NORTHING	EASTING
WP-1	868379.2226	1250594.5198
WP-2	868370.3781	1250590.4256
WP-3	868395.5243	1250615.5987
WP-4	868344.9940	1250599.2626
WP-5	868395.8103	1250585.5193
WP-6	868377.0778	1250618.5760
WP-7	868369.6815	1250627.9522
WP-8	868434.3781	1250603.1484

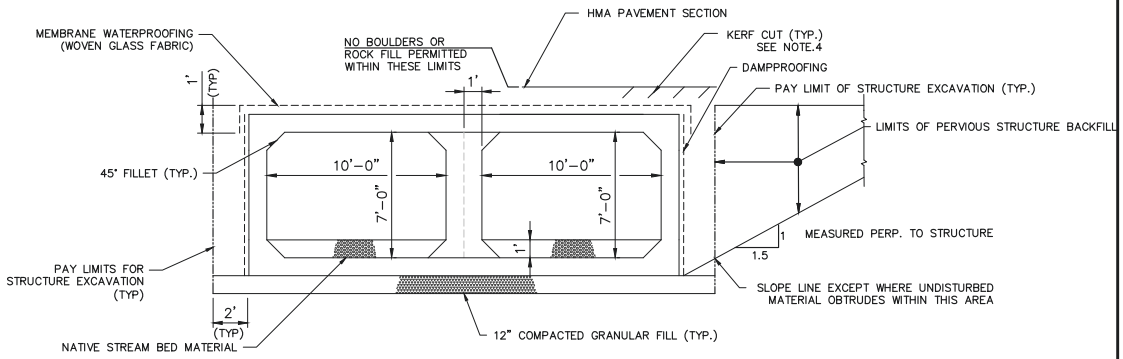
NOTES:

1. FOR COMPLETE BASELINE GEOMETRY, SEE SHEET NO. HWY-1.
2. ROADWAY PROFILE TO MATCH EXISTING.
3. FOR WINGWALL SECTION DETAILS SEE SHEET MDS-3.
4. CUT BITUMINOUS OVERLAY WITH ⅜" WIDE BY 1¼" DEEP KERF AND FILL WITH POURABLE SEALANT. TO BE PAID FOR UNDER THE ITEM "SAWING AND SEALING JOINTS IN BITUMINOUS PAVEMENT.

QUANTITIES		
ITEM	UNITS	TOTALS
STRUCTURE EXCAVATION - EARTH (COMPLETE)	CY	300
STRUCTURE EXCAVATION - ROCK (COMPLETE)	CY	14
HANDLING WATER	LS	1
COMPACTED GRANULAR FILL	CY	40
PERVIOUS STRUCTURE BACKFILL	CY	380
SAWING AND SEALING JOINTS IN BIT. CONC. PAVEMENT	LF	100
REMOVAL OF EXISTING CULVERT	LS	1
CLASS 'A' CONCRETE	CY	20
CLASS 'F' CONCRETE	CY	25
PRECAST CONCRETE WINGWALL	EA	4
2-10' X 7' PRECAST CONCRETE BOX CULVERTS	LF	35.5
DEFORMED STEEL BARS	LB	2,000
DEFORMED STEEL BARS (EPOXY COATED)	LB	1500
DRILLING HOLES AND GROUTING DOWELS	EA	36
MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC)	SY	125
DAMPPROOFING	SY	175
CONCRETE FORM LINER	SF	1350



SECTION A-A
N.T.S.



TYPICAL CULVERT SECTION
N.T.S.

FREEMAN COMPANIES
DBE | DAS | MBE | GMBDC CERTIFIED
CIVIL | GEOTECHNICAL | SURVEY | ENVIRONMENTAL
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TOLL FREE (800)438-1141
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ELEVATE YOUR EXPECTATIONS

PREPARED FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

OWNER FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

STATE OF CONNECTICUT
DENNIS W. QUIGNET
REGISTERED PROFESSIONAL ENGINEER

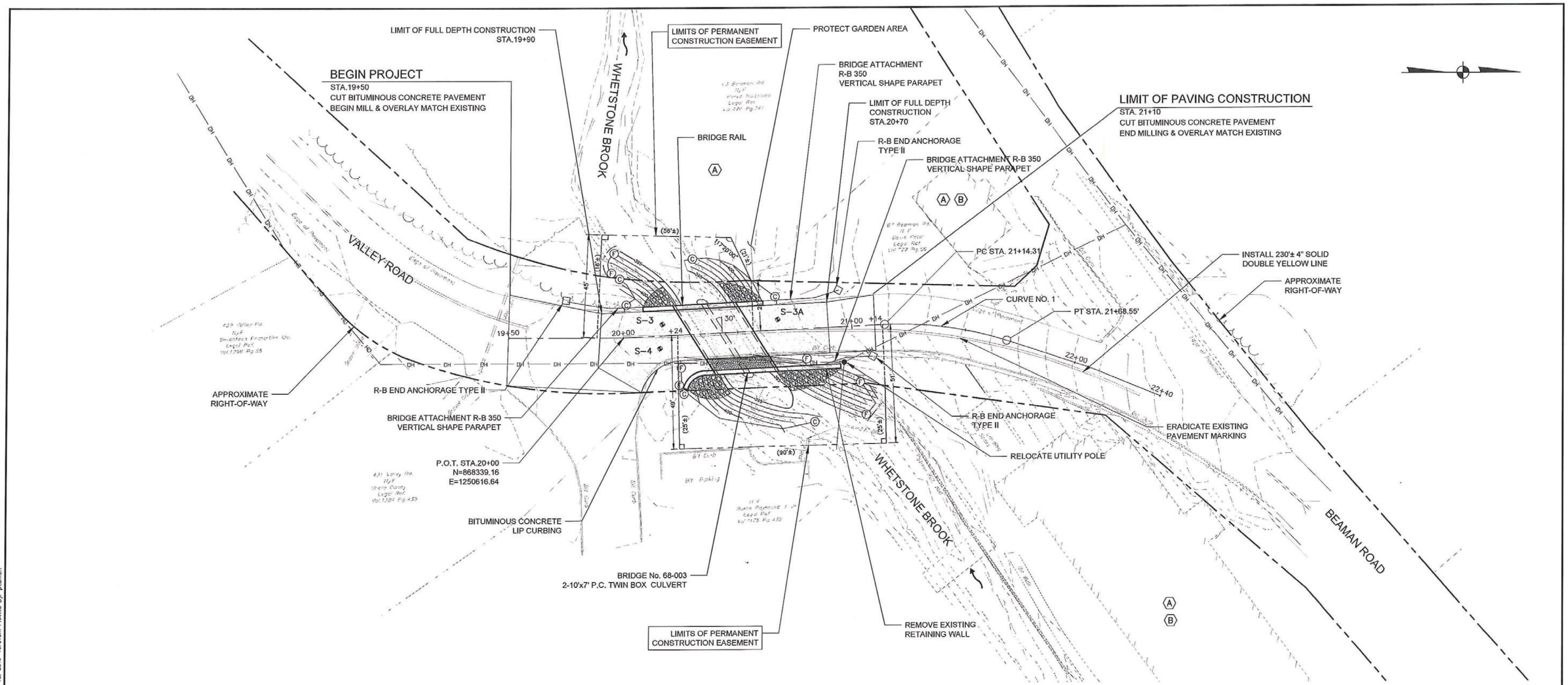
DENNIS W.QUIGNET, PE NO. 19158

REPLACEMENT OF BRIDGE No. 68-003
VALLEY ROAD OVER WHETSTONE BROOK
KILLINGLY, CONNECTICUT

NO.	DATE	REVISIONS
1	02/18/22	ADDED CROSS-SECTION DATA & REVISED HYDRAULIC DATA

DESIGNED: YL
DRAFTED: KM
CHECKED: DQ
APPROVED: PAR
SCALE: AS NOTED
PROJECT NO.: 2017-0507
DATE: 10/05/2020
CAD: HW_MSH_2017_0507_BRG003_ALN

TITLE: LAYOUT PLAN
SHEET NUMBER: S-2.2



NOTES

1. ALL SOIL DISTURBANCES SHALL BE TREATED WITH 4" TOP SOIL & TURF ESTABLISHMENT.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND ELEVATIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH THE ENGINEER REGARDING THE LIMITS OF RESTORATION TO ENSURE A SMOOTH TRANSITION FROM NEW CONSTRUCTION TO EXISTING CONDITIONS.
4. CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" (CBYD) 1-800-922-4455 PRIOR TO COMMENCING CONSTRUCTION.
5. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE PLANS OR AS DIRECTED BY THE ENGINEER.
6. REFER TO STRUCTURAL (S SERIES) DRAWINGS FOR PROPOSED CULVERT DETAILS, GRADING, AND METAL BEAM RAIL POST DETAILS.
7. COST OF REMOVAL OF TREES AND OTHER VEGETATION SHALL BE INCLUDED IN THE COST OF THE ITEM "CLEARING AND GRUBBING".

CURVE DATA

No.		Northing	Easting	Delta(Δ)	Length	Radius
CURVE NO. 1	PC	868449.54	1250582.50	N20°43'0"E	53.94'	150.0'
	PI	868476.02	1250575.37			
	PT	868503.30	1250578.07			

SCHEDULE OF RIGHTS & EASEMENTS

(A) CONSTRUCTION EASEMENT

(B) EASEMENT TO INSTALL, CONSTRUCT & MAINTAIN METAL BEAM RAIL END ANCHORAGE

LEGEND

FULL DEPTH PAVEMENT RECONSTRUCTION / PROPOSED WIDENING

FILL/CUT APPROXIMATE SLOPE LIMITS

SEDIMENTATION CONTROL SYSTEM

APPROXIMATE WETLAND LIMITS

EASEMENT LINE

GRAPHIC SCALE
20 10 0 20
SCALE IN FEET

FREEMAN COMPANIES
FREEMAN COMPANIES, LLC
ELEVATE YOUR EXPECTATIONS
PREPARED FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY, CONNECTICUT 06239
OWNER FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY, CONNECTICUT 06239

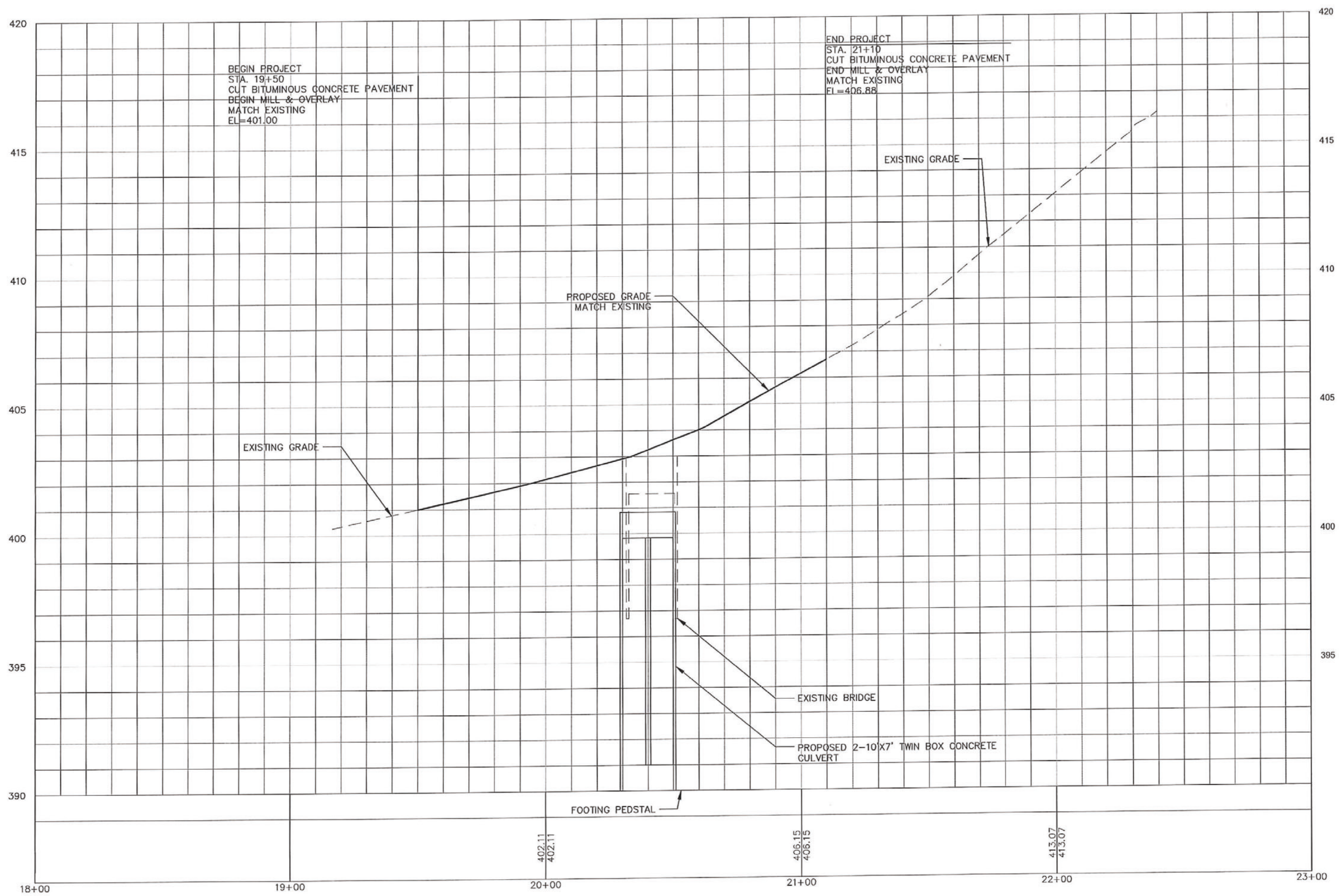
REPLACEMENT OF BRIDGE No. 68-003
VALLEY ROAD OVER WHETSTONE BROOK
KILLINGLY, CONNECTICUT

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	05/14/2019
CAD:	HW_MSH_2017_0507_BRG003_HWY

NO. DATE DESCRIPTION
REVISIONS

TITLE: ROADWAY PLAN

SHEET NUMBER: HWY-2.1



VALLEY ROAD PROFILE

H: 1"=10'
V: 1"=2'

FREEMAN COMPANIES

FREEMAN COMPANIES, LLC

ELEVATE YOUR EXPECTATIONS

PREPARED FOR: TOWN OF KILLINGLY, VALLEY ROAD, KILLINGLY, CONNECTICUT 06239

OWNER FOR: TOWN OF KILLINGLY, VALLEY ROAD, KILLINGLY, CONNECTICUT 06239

REPLACEMENT OF BRIDGE No. 68-003
VALLEY ROAD OVER WHETSTONE BROOK
KILLINGLY, CONNECTICUT

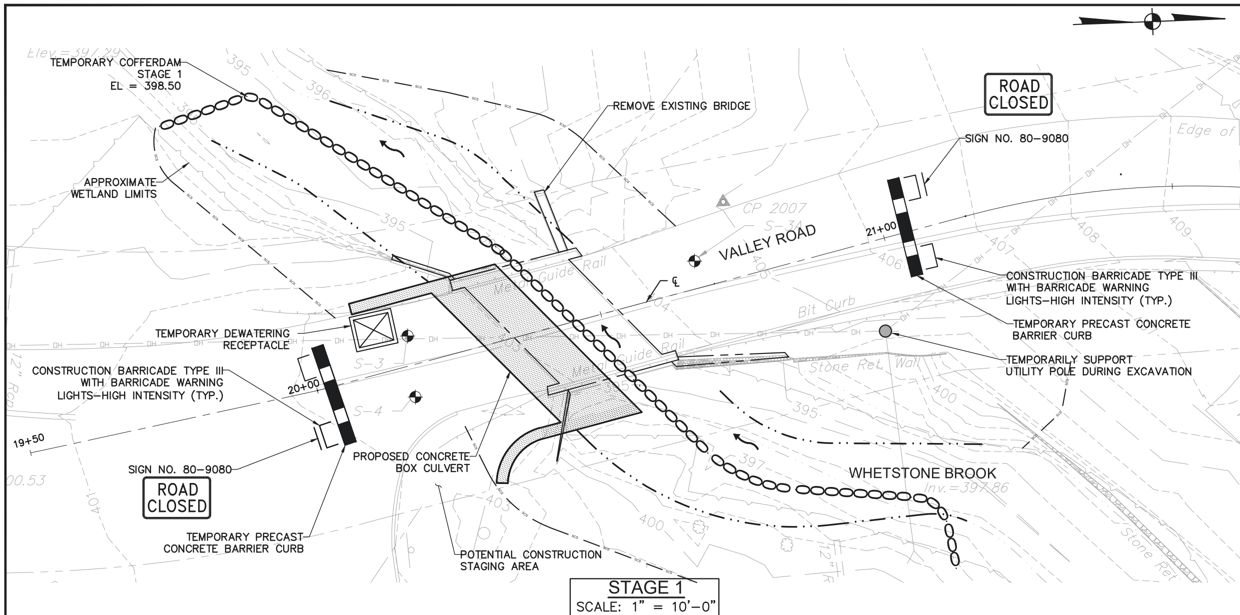
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

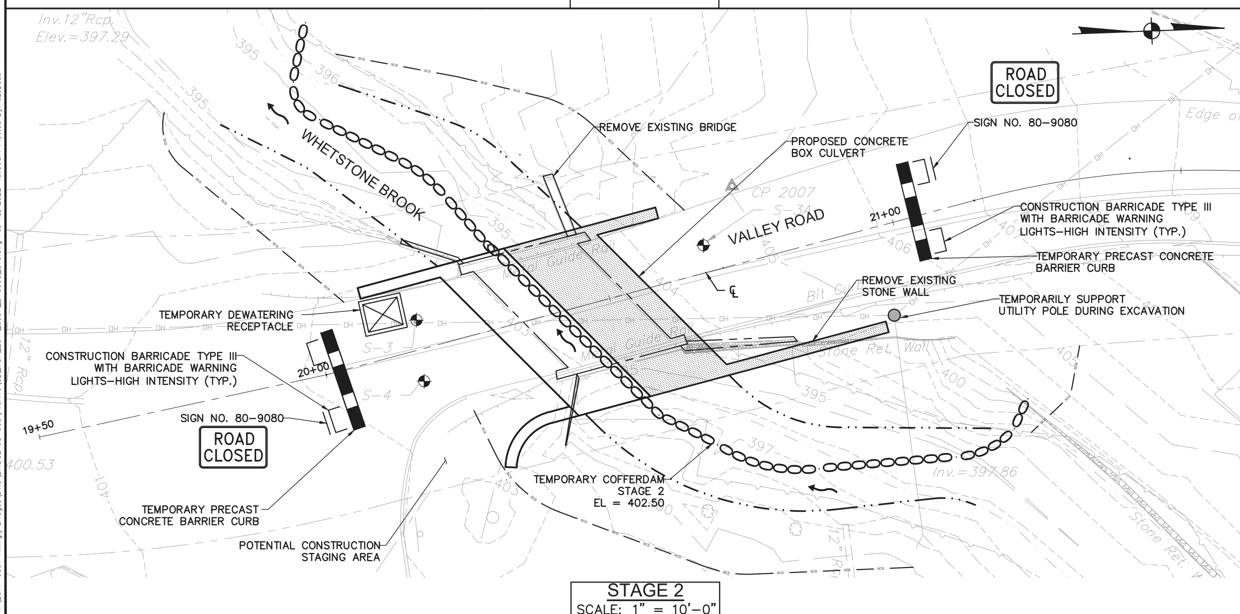
DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	06/14/2019
CAD:	HW_MSH_2017_0507_BRG003_PRO

TITLE: ROADWAY PROFILE

SHEET NUMBER: PRO-2.1



STAGE 1
SCALE: 1" = 10'-0"



STAGE 2
SCALE: 1" = 10'-0"

VALLEY ROAD OVER WHETSTONE WATER HANDLING PLAN

GENERAL NOTES
1. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A DETAILED PLAN AND NARRATIVE DESCRIBING ITS PROPOSED CONSTRUCTION SEQUENCE INCLUDING DETAILED INFORMATION RELATING TO THE WATER HANDLING.
2. BEST MANAGEMENT PRACTICES (BMP) SHALL BE UTILIZED AS APPROPRIATE AND SHALL BE CONSISTENT WITH THE CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENTATION CONTROL.
3. CONSTRUCTION ACTIVITIES SHALL CONFORM TO SECTION 1.10, ENVIRONMENTAL COMPLIANCE OF THE STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS, BRIDGES, AND INCIDENTAL CONSTRUCTION, FORM 817.
4. DE WATERING, IF AND AS NEEDED, SHALL UTILIZE BMP'S AS APPLICABLE AND AS APPROVED AND ACCEPTABLE BY THE ENGINEER AND THE TOWN OF KILLINGLY.
5. BASE STREAM FLOWS SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. PROVISIONS TO ALLOW SAFE PASSAGE OF A 2-YEAR STORM EVENT SHALL ALSO BE IMPLEMENTED AS REQUIRED.
6. MATERIAL EXCAVATED FROM THE RIVERBED SHALL BE STOCKPILED AND USED AS BACKFILL MATERIAL DURING RESTORATION OF THE RIVERBED.
7. THE CONTRACTOR MAY PUMP THE BASE FLOW OF THE EXISTING WATERCOURSE AS DEPICTED ON THE PLANS OR INSTALL A GRAVITY FED BYPASS PIPE TO CONVEY FLOW.
8. THE CONTRACTOR IS REQUIRED TO SUBMIT A PLAN AND EQUIPMENT SPECIFICATIONS FOR THE PUMP OR BYPASS PIPE FOR APPROVAL BY THE ENGINEER.
9. REGARDLESS OF WATER HANDLING METHOD UTILIZED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AND PROVIDING SAFE PASSAGE OF FLOW AT ALL TIMES INCLUDING INCLEMENT WEATHER.
10. DETOUR PLAN MUST BE ESTABLISHED BY THE TOWN.
11. ALL MATERIAL EQUIPMENT AND PROCEDURES SHALL BE PRE APPROVED BY THE ENGINEER AND THE TOWN.
12. REMOVAL OF EXISTING WALL SHALL BE PAID FOR UNDER THE PAY ITEM "REMOVAL OF EXISTING MASONRY".

SUGGESTED SEQUENCE OF CONSTRUCTION
PRE-CONSTRUCTION STAGE
1. CONTACT "CALL-BEFORE-YOU-DIG" AND PERFORM UTILITY MARK-OUTS IF AND AS NECESSARY.
2. CLOSE VALLEY ROAD, INSTALL CONSTRUCTION BARRICADES, AND DETOUR TRAFFIC OVER LOCAL STREETS.
3. INSTALL SEDIMENTATION AND EROSION CONTROL MEASURES AS REQUIRED.

SUGGESTED SEQUENCE OF OPERATION:

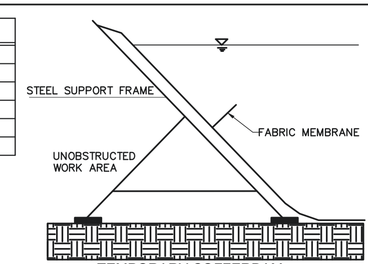
PRE-CONSTRUCTION STAGE
1. CONTACT "CALL-BEFORE-YOU-DIG" AND PERFORM UTILITY MARK-OUTS IF AND AS NECESSARY..
2. CLOSE VALLEY ROAD, INSTALL CONSTRUCTION BARRICADES, AND DETOUR TRAFFIC OVER LOCAL STREETS.
3. INSTALL SEDIMENTATION AND EROSION CONTROL MEASURES AS REQUIRED.

STAGE 1
1. INSTALL DEBRIS SHIELD AND REMOVE EXISTING BRIDGE DECK / SUPERSTRUCTURE.
2. INSTALL TEMPORARY COFFERDAM AND INSTALL TEMPORARY DEWATERING RECEPTACLE WHERE SHOWN ON THE PLANS.
3. INSTALL SUMP PUMP AND DEWATER AS NECESSARY TO ESTABLISH A DRY WORK AREA. EXCAVATE AND REMOVE EXISTING ABUTMENT 1.
4. PREPARE SUBGRADE FOUNDATION BENEATH CULVERT AND CONSTRUCT CUT-OFF WALLS AND RETURN WALLS.
5. PLACE GRANULAR FILL AND INSTALL CONCRETE BOX CULVERT.
6. CONSTRUCT WINGWALL FOOTINGS AND INSTALL PRECAST CONCRETE WINGWALLS.
7. PLACE NATURAL STREAMBED MATERIAL INSIDE BOX CULVERT AND INSTALL RIPRAP ON THE TOE OF SLOPE.
8. PLACE PERVIOUS BACKFILL BEHIND CULVERT WALL AND GRADE AROUND THE STRUCTURE AS SHOWN ON THE PLANS.

STAGE 2
1. INSTALL STAGE 2 TEMPORARY COFFERDAM AS SHOWN ON THE PLANS AND INSTALL TEMPORARY DEWATERING RECEPTACLE WHERE SHOWN.
2. DIVERT STREAM FLOW INTO NEW BOX CULVERT.
3. INSTALL SUMP PUMP AND DEWATER AS NECESSARY TO ESTABLISH A DRY WORK AREA. EXCAVATE AND REMOVE EXISTING ABUTMENT 2.
4. PREPARE SUBGRADE FOUNDATION AND CONSTRUCT CUT-OFF WALLS AND RETURN WALLS.
5. PLACE GRANULAR FILL AND INSTALL CONCRETE BOX CULVERT.
6. CONSTRUCT CONCRETE NOSING AND CONSTRUCT WINGWALL FOOTINGS. INSTALL PRECAST CONCRETE WINGWALLS.
7. PLACE NATURAL STREAMBED MATERIAL INSIDE BOX CULVERT AND COMPLETE INSTALLATION OF RIPRAP AT THE TOE OF SLOPE.
8. PLACE REQUIRED GRADING AROUND THE STRUCTURE AS SHOWN ON THE PLANS.
9. INSTALL MEMBRANE WATERPROOFING AS SHOWN ON THE PLANS.
10. PLACE PERVIOUS BACKFILL BEHIND CULVERT WALL AND COMPLETE GRADING AROUND THE NEW BRIDGE AS SHOWN ON THE PLANS.
11. REMOVE TEMPORARY COFFERDAM AND COMPLETE INSTALLATION OF RIPRAP TO LIMITS SHOWN.
12. PLACE REMAINING REQUIRED BACKFILL OVER THE CULVERT AND CONSTRUCT ROADWAY APPROACHES AND OTHER ROADWAY ITEMS TO LIMITS SHOWN.
13. REPAVE VALLEY ROAD AND RE-ESTABLISH TURF.
14. REMOVE SEDIMENTATION AND EROSION CONTROL MEASURES.
15. PERFORM SITE RESTORATION, SITE CLEAN-UP, REMOVE CONSTRUCTION BARRICADES, AND OPEN ROAD TO TRAFFIC.

TEMPORARY HYDRAULIC DATA	
TEMPORARY DESIGN FREQUENCY	2-YEAR
TEMPORARY DESIGN DISCHARGE	241 CFS
AVERAGE DAILY FLOW	10.4 CFS
AVERAGE DAILY FLOW ELEVATION	398.58 FT
TEMPORARY WSEL UPSTREAM	401.95 FT
TEMPORARY WSEL DOWNSTREAM	397.92 FT

LEGEND
- PROPOSED CULVERT
- SEDIMENTATION CONTROL SYSTEM (SCS)
- TEMPORARY COFFERDAM



TEMPORARY COFFERDAM
SCALE: N.T.S.

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KILLINGLY, CONNECTICUT 06239

OWNER FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY, CONNECTICUT 06239

DENNIS McQUAIT, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-003
VALLEY ROAD OVER WHETSTONE BROOK
KILLINGLY, CONNECTICUT

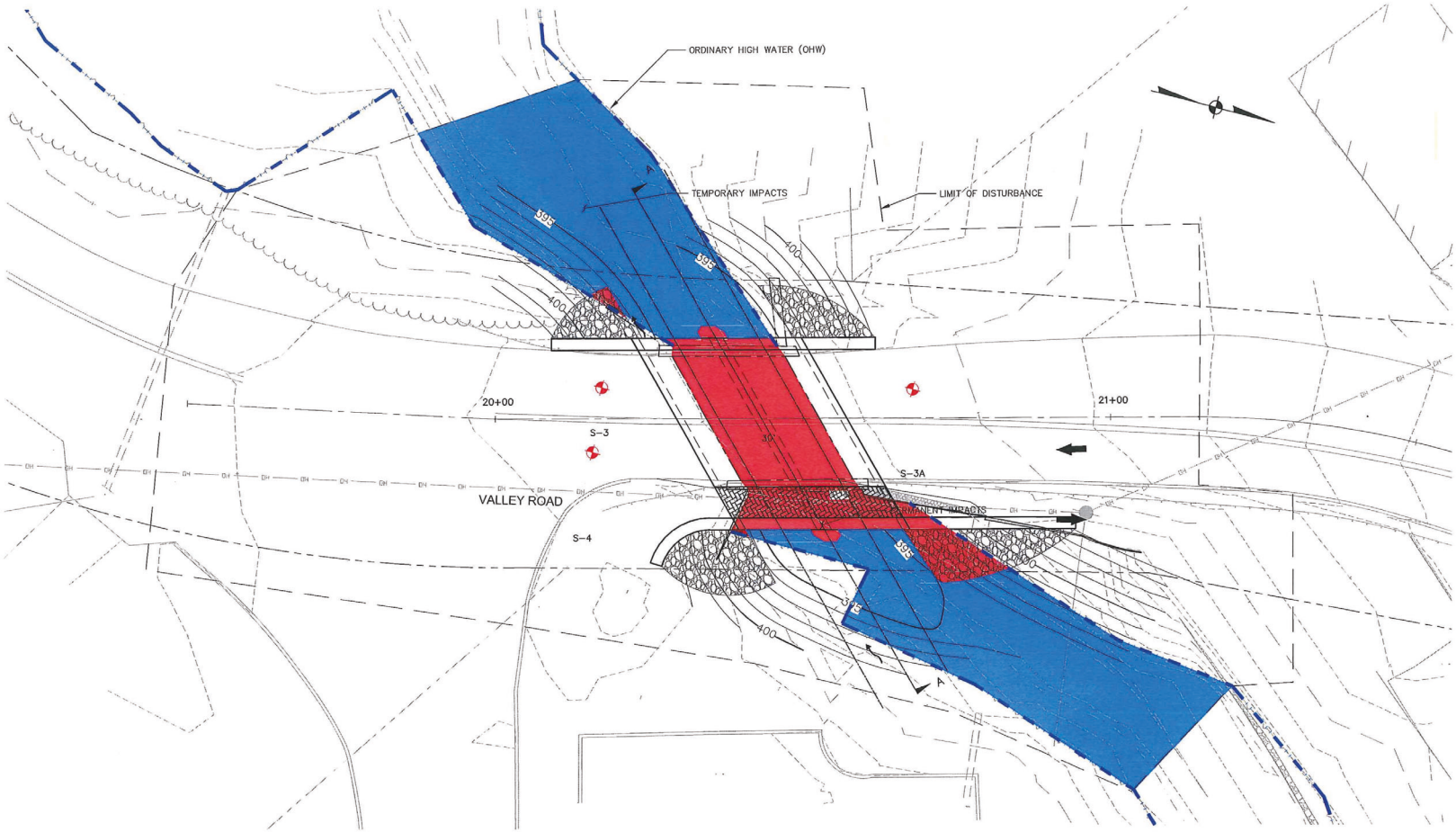
NO.	DATE	DESCRIPTION
1	02/18/22	ADDED CROSS-SECTION DATA & REVISED HYDRAULIC DATA

REVISIONS

DESIGNED:	YL
DRAFTED:	KM
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	10/05/2020
CAD:	SB_MSH_2017_0507_BRG003_STG

TITLE: WATER HANDLING PLAN

SHEET NUMBER: S-2.4



PLAN

SCALE: 1/8" = 1'-0"

PERMANENT IMPACTS	
WETLAND AREA	0 S.F.
WATERCOURSE AREA	750 S.F.
TOTAL:	750 S.F.

TEMPORARY IMPACTS	
WETLAND AREA	0 S.F.
WATERCOURSE AREA	2,275 S.F.
TOTAL:	2,275 S.F.

UPLANDS IMPACTS	
TOTAL:	11,200 S.F.

LEGEND

- PERMANENT IMPACTS
- TEMPORARY IMPACTS
- LIMIT OF DISTURBANCE
- ORDINARY HIGH WATER (OHW)

FREEMAN COMPANIES
CIVIL | LAND PLANNING | SURVEYING | GEOTECHNICAL | ENVIRONMENTAL
FREEMAN COMPANIES, LLC
ELEVATE YOUR EXPECTATIONS

PREPARED FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY, CONNECTICUT 06239

OWNER FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY, CONNECTICUT 06239

STATE OF CONNECTICUT — LICENSED PROFESSIONAL ENGINEER
DONNA MARINI, PE NO. 19108

REPLACEMENT OF BRIDGE No. 68-003
VALLEY ROAD OVER WHETSTONE BROOK
KILLINGLY, CONNECTICUT

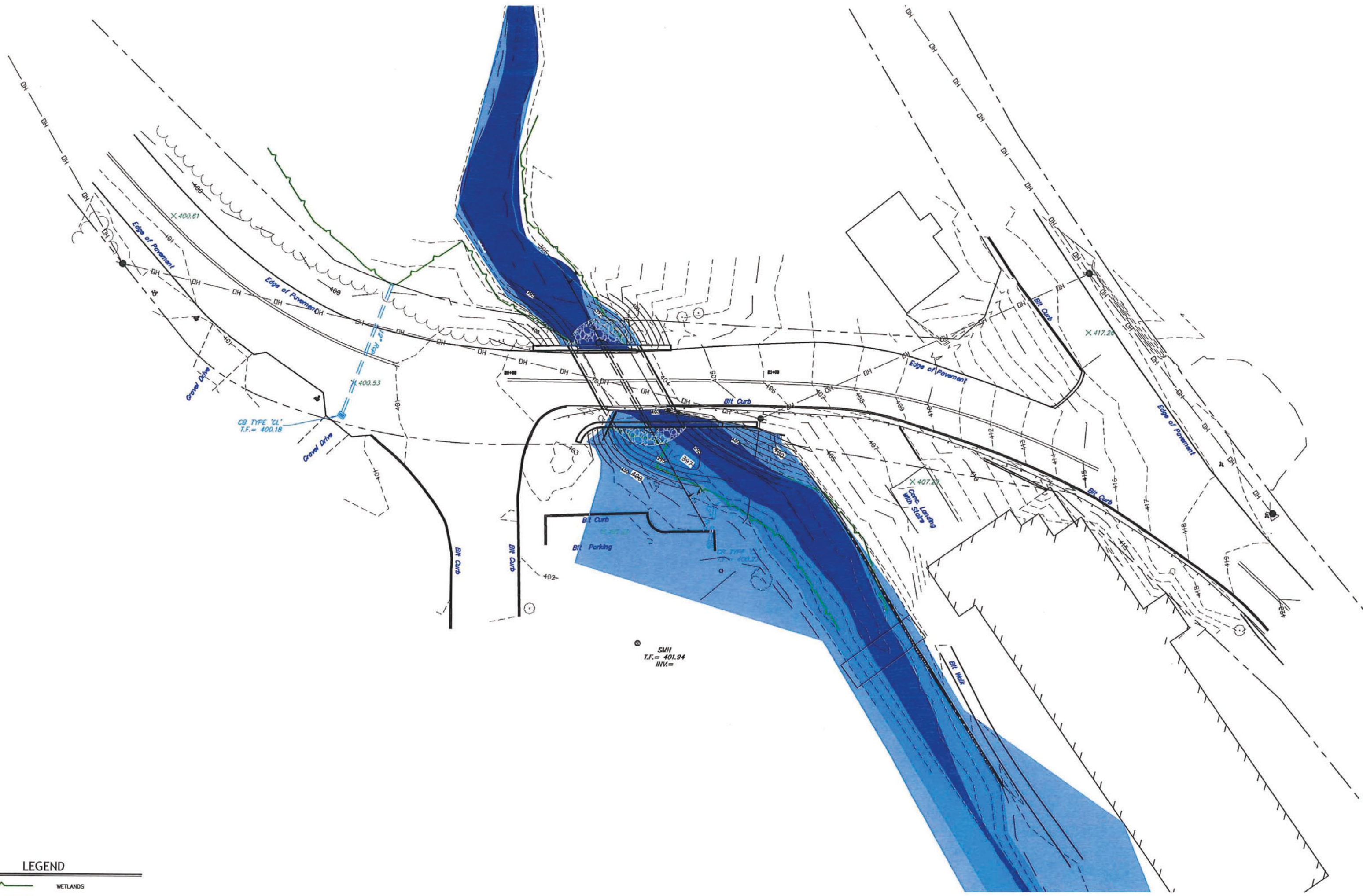
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	KM
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	10/05/2020
CAD:	hw_msh_2017_0507_brg003_gen (impacts)

TITLE: IMPACTS

SHEET NUMBER: WL-2



LEGEND

- WETLANDS
- WHETSTONE BROOK
- PROPOSED DESIGN – LAND UNDER WATER
- EXISTING CONDITION – LAND UNDER WATER

2 YEAR STORM CONDITIONS

SCALE: 1" = 20'–0"

FREEMAN COMPANIES

DBE | DAS | MBE | GNMSDC CERTIFIED
CIVIL | GEOTECHNICAL | SURVEY | ENVIRONMENTAL

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CONNECTICUT 06239

OWNER FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

STATE OF CONNECTICUT — DENNIS M. QUINT — LICENSED PROFESSIONAL ENGINEER

DENNIS McQUINT, PE NO. 18106

REPLACEMENT OF BRIDGE No. 68-003
VALLEY ROAD OVER WHETSTONE BROOK
KILLINGLY, CONNECTICUT

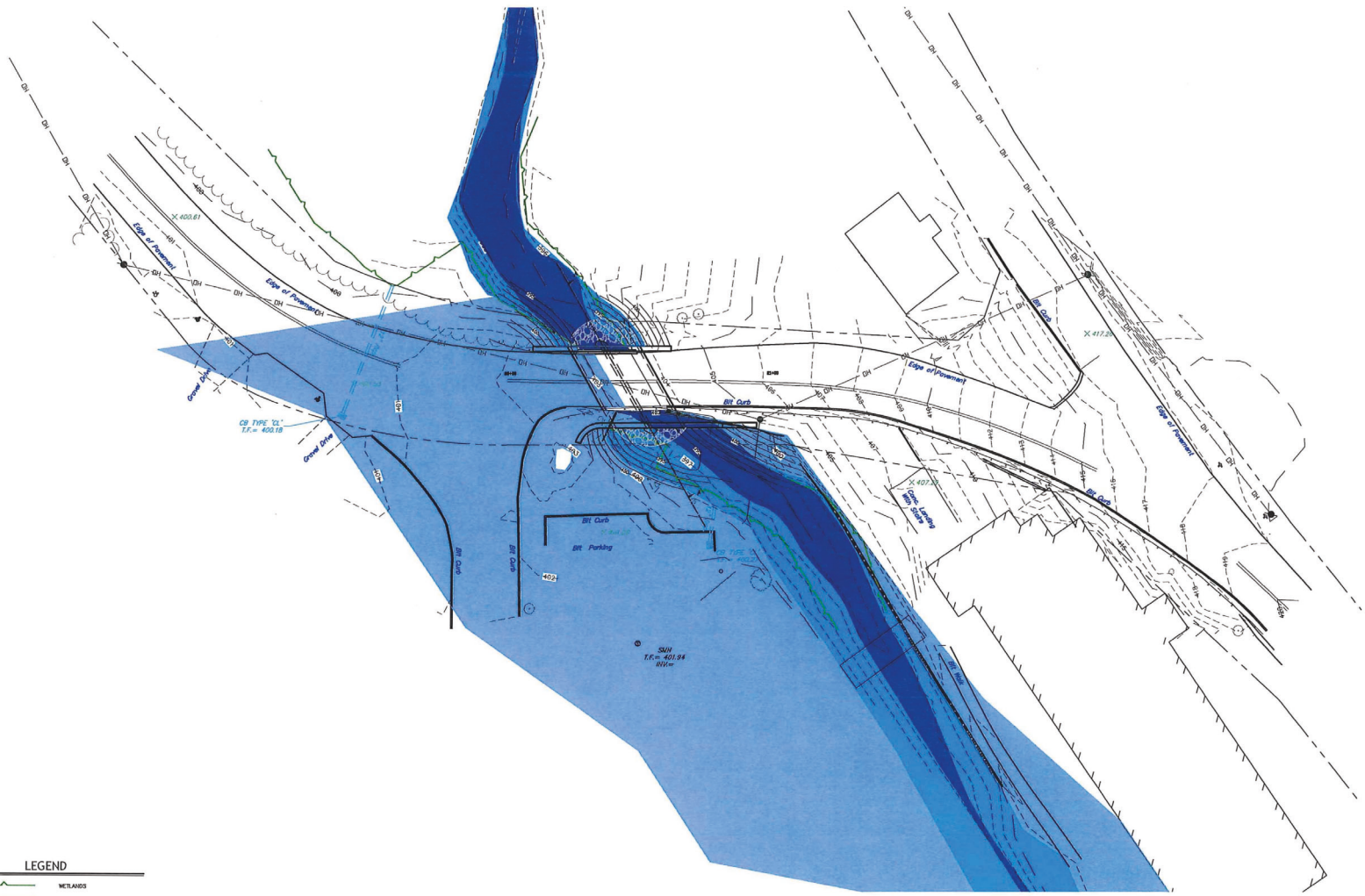
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	KM
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017–0507
DATE:	10/05/2020
CAD:	2017–0507 WHETSTONE_HYDRAULICS

TITLE: HYDRAULIC DATA

SHEET NUMBER: C–1



10 YEAR STORM CONDITIONS

SCALE: 1" = 20'–0"

FREEMAN COMPANIES
CIVIL | ENGINEERING | SURVEYING CERTIFIED
CIVIL | GEOTECHNICAL | SURVEY | ENVIRONMENTAL
FREEMAN COMPANIES, LLC
ELEVATE YOUR EXPECTATIONS

PREPARED FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

OWNER FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

STATE OF CONNECTICUT — LICENSED PROFESSIONAL ENGINEER

DENNIS MORRIS, PE NO. 18108

REPLACEMENT OF BRIDGE No. 68-003
VALLEY ROAD OVER WHETSTONE BROOK
KILLINGLY, CONNECTICUT

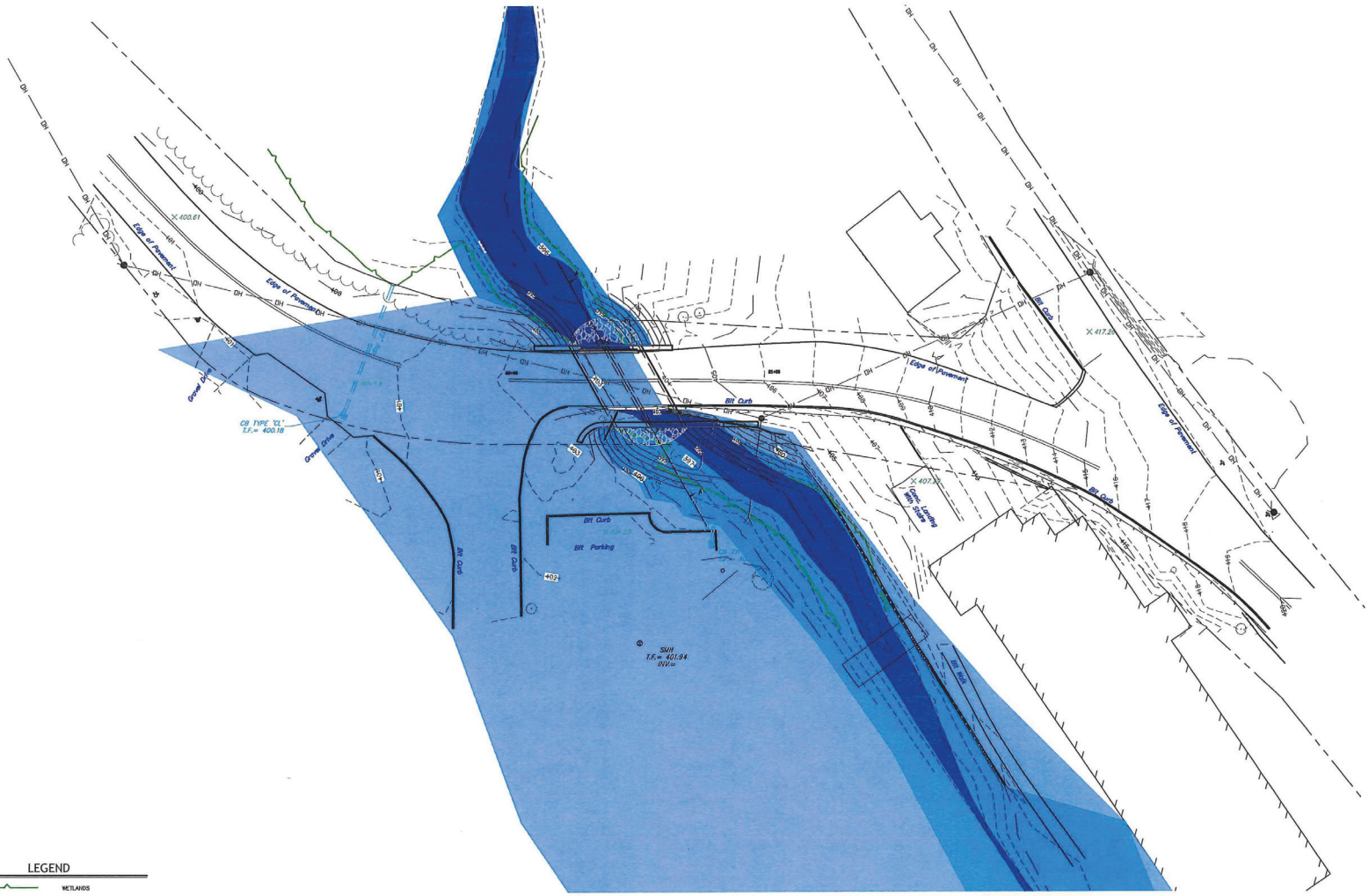
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	KM
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	10/05/2020
CAD:	2017-0507 WHETSTONE_HYDRAULICS

TITLE: HYDRAULIC DATA

SHEET NUMBER: C-2



25 YEAR STORM CONDITIONS

SCALE: 1" = 20'-0"

FREEMAN COMPANIES
CIVIL | DAS | MEP | GIS/GPS CERTIFIED
CIVIL | GEOTECHNICAL | SURVEY | ENVIRONMENTAL
FREEMAN COMPANIES, LLC
ELEVATE YOUR EXPECTATIONS

PREPARED FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

OWNER FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

DENNIS MCGUIRE, PE NO. 19108

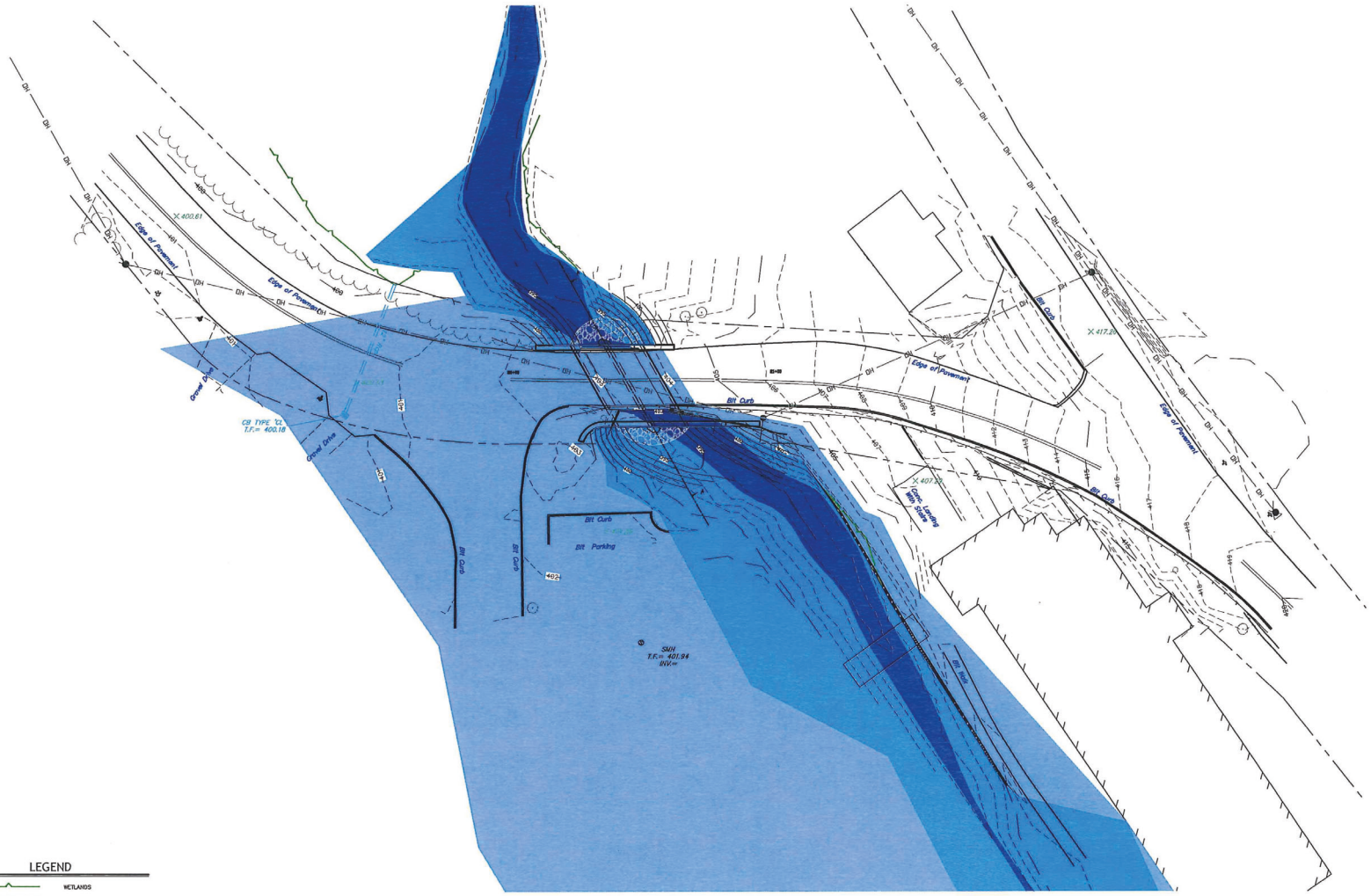
REPLACEMENT OF BRIDGE No. 68-003
VALLEY ROAD OVER WHETSTONE BROOK
KILLINGLY, CONNECTICUT

NO.	DATE	DESCRIPTION
		REVISIONS

DESIGNED:	YL
DRAFTED:	KM
CHECKED:	DO
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	10/05/2020
CAD:	2017-0507 WHETSTONE_HYDRAULICS

TITLE: HYDRAULIC DATA

SHEET NUMBER: C-3



50 YEAR STORM CONDITIONS

SCALE: 1" = 20'–0"

FREEMAN COMPANIES

ENGINEERS | SURVEYORS | PLANNERS | CERTIFIED SOIL SCIENTISTS | GEOTECHNICAL | SURVEY | ENVIRONMENTAL

FREEMAN COMPANIES, LLC

ELEVATE YOUR EXPECTATIONS

PREPARED FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

OWNER FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

DENNIS MORRIS, PE NO. 19958

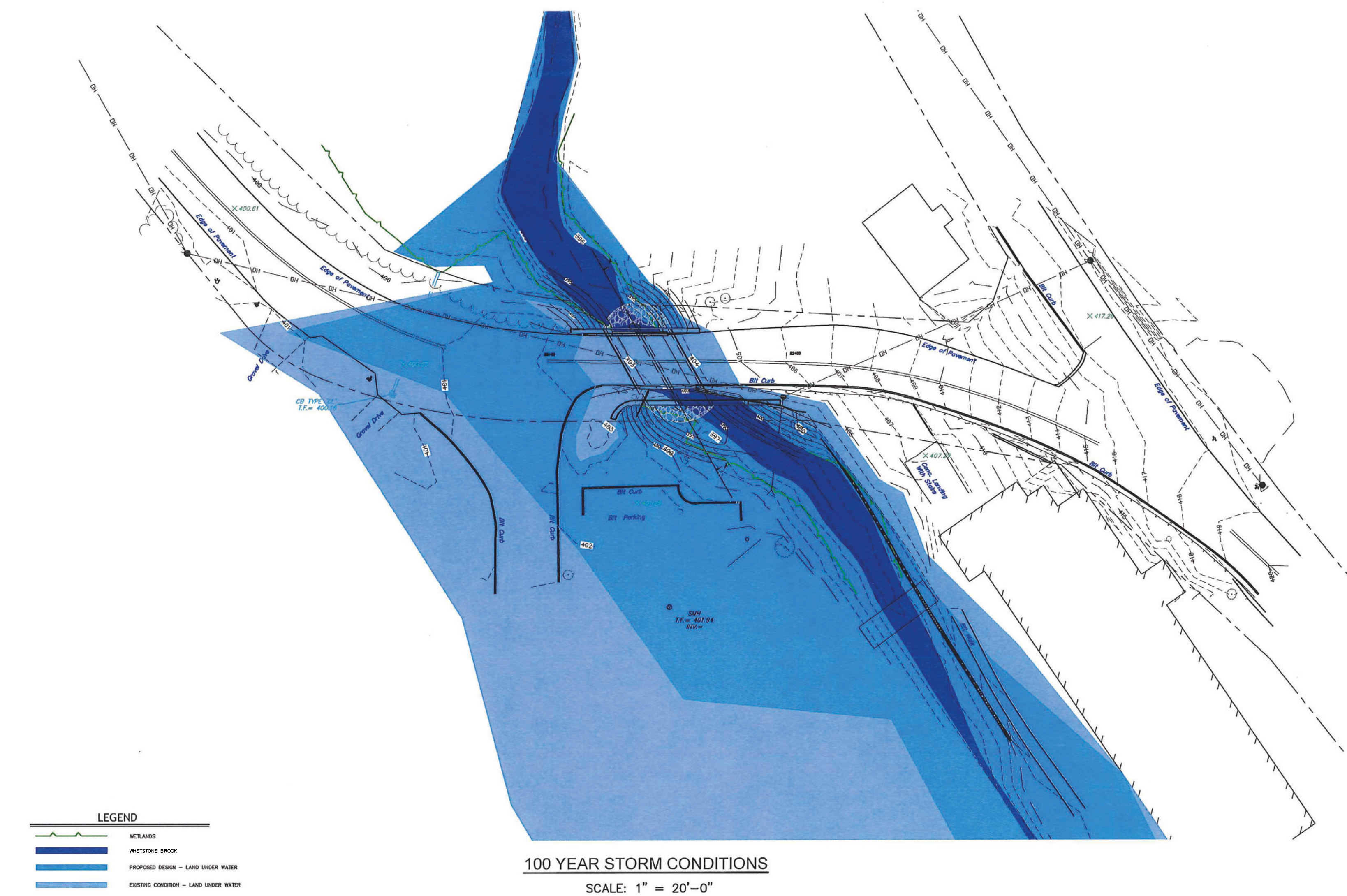
REPLACEMENT OF BRIDGE No. 68-003
VALLEY ROAD OVER WHETSTONE BROOK
KILLINGLY, CONNECTICUT

NO.	DATE	DESCRIPTION
		REVISIONS

DESIGNED:	YL
DRAFTED:	KM
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	10/05/2020
CAD:	2017-0507 WHETSTONE_HYDRAULICS

TITLE: HYDRAULIC DATA

SHEET NUMBER: C-4



100 YEAR STORM CONDITIONS

SCALE: 1" = 20'–0"

FREEMAN COMPANIES
DBE | DAS | PBE | GHSDC CERTIFIED
CIVIL | GEOTECHNICAL | SURVEY | ENVIRONMENTAL
FREEMAN COMPANIES, LLC
ELEVATE YOUR EXPECTATIONS

PREPARED FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

OWNER FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

REPLACEMENT OF BRIDGE No. 68-003
VALLEY ROAD OVER WHETSTONE BROOK
KILLINGLY, CONNECTICUT

NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	KM
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	10/05/2020
CAD:	2017-0507 WHETSTONE_HYDRAULICS

TITLE: HYDRAULIC DATA

SHEET NUMBER: C-5

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: Kevin Kotelly, Chief Permits and Enforcement Branch B

Re: 202065399-PCN, Concurrence of Eligibility
NAE-2021-00306
Bear Hill Road over Bog Meadow Reservoir, Killingly, CT 06239

Dear Mr. Kotelly:

The above-referenced Pre-Construction Notification ("PCN") was submitted to the Connecticut Department of Energy and Environmental Protection ("DEEP") on January 19, 2021 and made complete on January 24, 2022 by the Town of Killingly, 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 *"Construction Plans for Replacement of Bridge No. 68-009 Bear Hill Road over Unnamed Brook, Town of Killingly, CT Final Design Plans,"* 13 sheets, dated September 4, 2018, sheets S-3.1 and S-3.2 revised December 23, 2021, sheets HWY-3.1, S-3.4, and WL-3 revised January 16, 2022, sheet PRO-3.1, C-1, C-2, C-3, C-4, and C-5 revised June 14, 2019, and prepared by Freeman Companies:

1. Install temporary water-handling cofferdams;
2. Install a 32' long, 15' wide by 6' high box culvert with 1' of natural streambed material approximately 40' to the south of the existing twin corrugated metal pipes (CMPs) and associated headwalls, wingwalls, and cutoff walls; and
3. Remove existing twin 52' long 60" diameter CMPs and associated trash racks and backfill.

	Waterway	Wetland	Total
Temporary:	2830 sf	0 sf	2830 sf
Permanent:	760 sf	0 sf	760 sf
Total:	3590 sf	0 sf	3590 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. **Time-of-Year Restriction.** Any unconfined instream work within Bog Meadow Reservoir shall be restricted to the period from June 1 to September 30, inclusive.
2. **Road Barricade and Flood Warnings.** The Project Proponent shall post signage at both crossing approaches, warning that the road is subject to flooding. In the event that a significant storm event is forecast that is likely to cause road overtopping, the Project Proponent shall make provisions for barricading the road.

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 #6 & 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 Farrah Ashe at 860-860-424-3169 or Farrah.Ashe@ct.gov.

Jeff Caiola

Jeff Caiola, Assistant Director
Land and Water Resources Division
Bureau of Water Protection and Land Reuse

6-02-2022
Date

CC (via email):
David Capacchione, Town of Killingly, dcapacchione@killinglyct.gov
Jeffery LeBeau, Freeman Companies, jlebeau@freemancos.com
Dennis Quinit, Freeman Companies, dquinit@freemancos.com
Peter Olmstead, USACE, Peter.D.Olmstead@usace.army.mil
Stacy Pappano, CT DEEP, Stacy.Pappano@ct.gov

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.

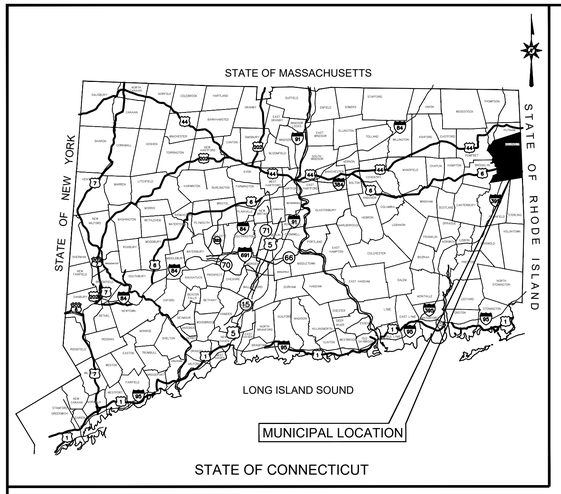
8. **Certification of Documents.** Any document, including but not limited to any notice, which is required to be submitted to the Commissioner under this certificate shall be signed by the permittee, a responsible corporate officer of the permittee, a general partner of the permittee, or a duly authorized 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



LOCATION MAP

N.T.S.

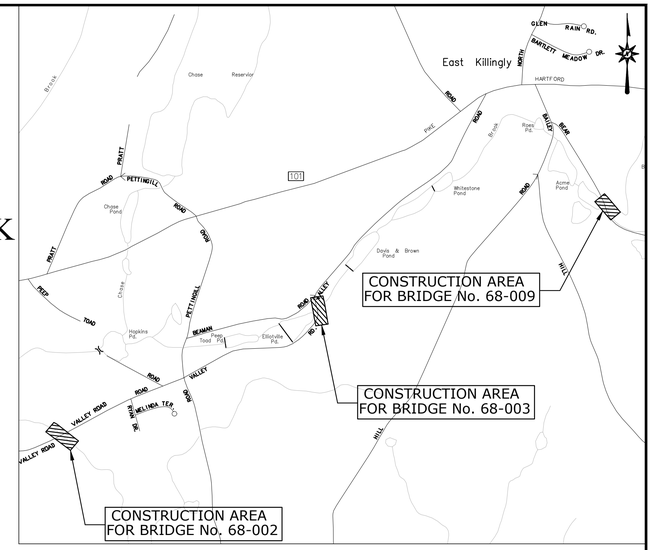
CONSTRUCTION PLANS

FOR

REPLACEMENT OF BRIDGE NO.68-002 VALLEY ROAD OVER MASHENTUCK BROOK
REPLACEMENT OF BRIDGE NO.68-003 VALLEY ROAD OVER WHETSTONE BROOK
REPLACEMENT OF BRIDGE NO.68-009 BEAR HILL ROAD OVER UNNAMED BROOK

TOWN OF KILLINGLY, CT

FINAL DESIGN PLANS



VICINITY MAP

SCALE: 1"=1000'

GENERAL NOTES:

CONNECTICUT DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS FOR ROADS, BRIDGES AND INCIDENTAL CONSTRUCTION, FORM 817, DATED 2016;SUPPLEMENTAL SPECIFICATIONS, DATED JANUARY 2015; AND SPECIAL PROVISIONS.

ALL HORIZONTAL GEOMETRY ON THIS PROJECT IS BASED ON HORIZONTAL DATUM NAD83.

ALL ELEVATIONS ON THIS PROJECT BASED ON NAVD88.

DESIGN STANDARDS:

TOWN OF KILLINGLY DESIGN STANDARDS

CONNECTICUT DEPARTMENT OF TRANSPORTATION HIGHWAY DESIGN MANUAL, 2003 EDITION.

A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS 2011 EDITION, PUBLISHED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO).

CONNECTICUT DEPARTMENT OF TRANSPORTATION BRIDGE DESIGN MANUAL, 2003 EDITION.

AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

CONTENTS

PREPARED FOR:

TOWN OF KILLINGLY
172 MAIN STREET
KILLINGLY, CONNECTICUT 06239

PREPARED BY:

FREEMAN COMPANIES

LAND DEVELOPMENT | ENGINEERING DESIGN | CONSTRUCTION SERVICES

LAND DEVELOPMENT ENGINEERING DESIGN CONSTRUCTION SERVICES

36 JOHN STREET
HARTFORD, CONNECTICUT 06106
(860) 251-9550
(860) 986 -7161 Fax

TOWN OF KILLINGLY, CONNECTICUT

APPROVED BY:

DAVID CAPACCHIONE, P.E.
TOWN ENGINEER

DATE

DESIGN BY: FREEMAN COMPANIES

DENNIS M. QUINIT, P.E.
CT. PROFESSIONAL ENGINEER REG. NO. 19106

DATE: 9/4/2018

STATE OF CONNECTICUT · DENNIS M. QUINIT · 19106 · LICENSED PROFESSIONAL ENGINEER

SUBCONSULTANTS:

GIBSON ENVIRONMENTAL SERVICES

DATES

ISSUE DATE: SEPTEMBER 04, 2018
REVISION:

SURVEY NOTES

THIS SURVEY HAS BEEN PREPARED BY FREEMAN COMPANIES, LLC. IN ACCORDANCE WITH THE REGULATIONS OF CONNECTICUT STATE AGENCIES, SECTIONS 20-300b-1 THRU 20-300b-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996.

THE TYPE OF SURVEY IS A TOPOGRAPHIC SURVEY AND IS INTENDED TO DEPICT THE EXISTING CONDITIONS AND TOPOGRAPHIC FEATURES OF THE PROJECT SITE.

THE SURVEY ACCURACY CONFORMS TO HORIZONTAL CLASS A-2, AND TOPOGRAPHIC ACCURACY CLASS T-2. PROPERTY LINES CONFORM TO HORIZONTAL CLASS D.

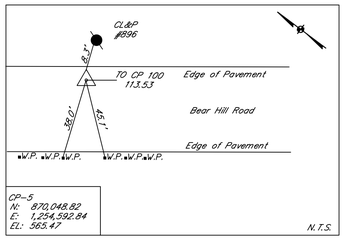
PROPERTY LINES DEPICTED ON THIS PLAN ARE COMPILED FROM OTHER MAPS, RECORD RESEARCH OR OTHER SOURCES OF INFORMATION.

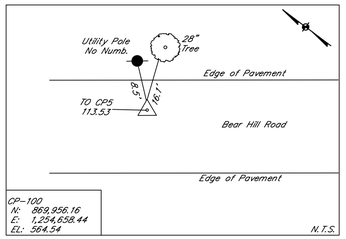
NORTH ARROW REFERS TO THE CONNECTICUT COORDINATE SYSTEM (NAD83) AND IS BASED UPON GPS OBSERVATIONS PERFORMED BY FREEMAN COMPANIES.

ELEVATIONS REFER TO NAVD88 AND ARE BASED ON GPS OBSERVATIONS PERFORMED BY FREEMAN COMPANIES.

THE UNDERGROUND FEATURES DEPICTED HEREON ARE THE RESULT OF COMPILATION OF EXISTING MAPPING AND LOCATION OF UTILITY PAINT. ACTUAL LOCATION OF UNDERGROUND UTILITIES IS TO BE CONSIDERED TO BE APPROXIMATE AT BEST. OTHER UTILITIES MAY EXIST WHICH FREEMAN COMPANIES ARE UNAWARE OF. VERIFY INFORMATION IN THE FIELD. BEFORE ANY DIGGING OR SITE EXCAVATION CALL " CALL BEFORE YOU DIG" 1-800-922-4455.

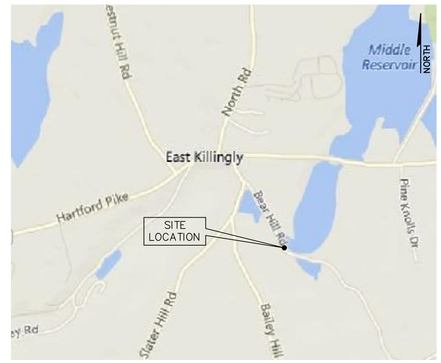
STREET SURFACE IS LOCATED IN FLOOD HAZARD AREA ZONE C 'AREAS OF MINIMAL FLOODING'. POND AREAS ARE LOCATED WITHIN FLOOD HAZARD AREA A 'AREAS OF 100-YEAR FLOOD; BASE FLOOD ELEVATIONS AND FLOOD HAZARD FACTORS NOT DETERMINED', AS DEPICTED ON FLOOD INSURANCE RATE MAP FOR THE TOWN OF KILLINGLY, COMMUNITY PANEL NUMBER 090136 0020 B, PANEL 20 OF 30, EFFECTIVE DATE: JANUARY 3, 1985.





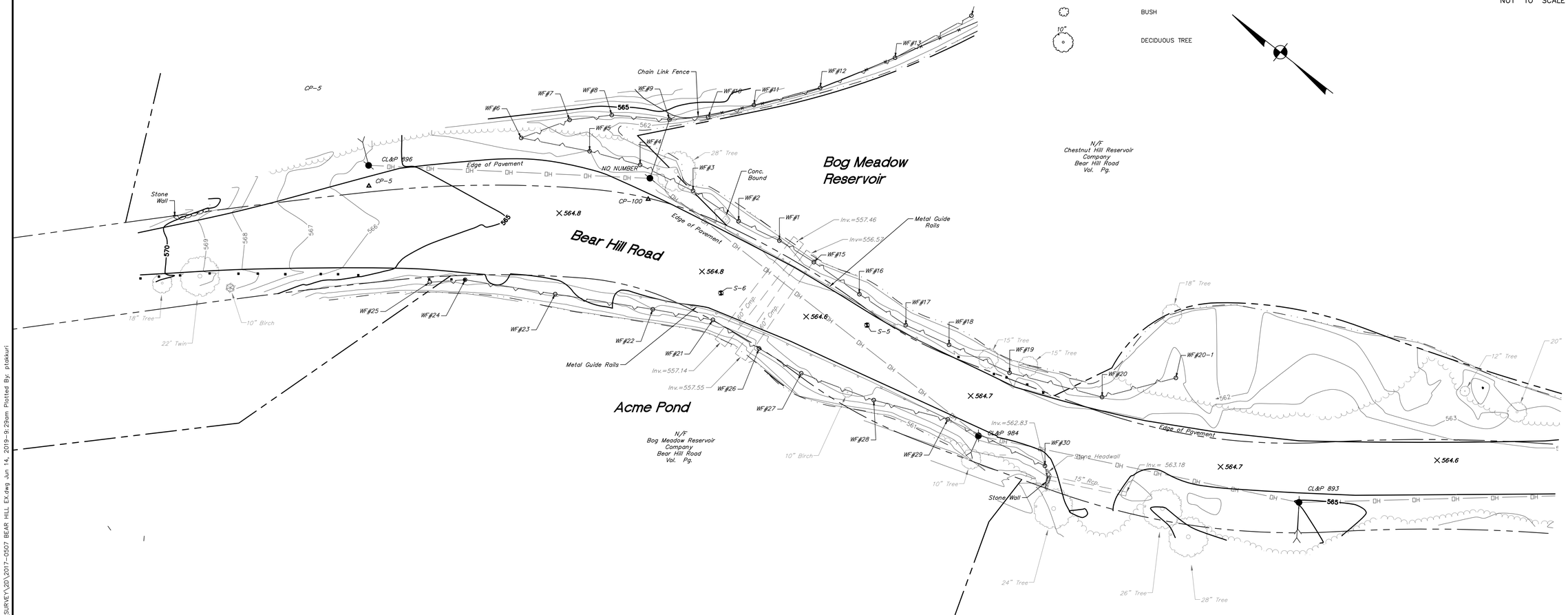
LEGEND

- PROPERTY LINE
- EDGE OF WETLANDS
- EDGE OF RIVER
- W — W — WATER LINE
- S — S — SANITARY LINE
- G — G — GAS LINE
- OH — OH — OVERHEAD WIRES
- DRAINAGE PIPE
- UTILITY POLE
- W.G. WATER GATE VALVE
- Hyd. FIRE HYDRANT
- G.G. GAS GATE VALVE
- SIGN
- PROPERTY CORNER IRON PIN
- CATCH BASIN
- D DRAINAGE MANHOLE
- S SANITARY MANHOLE
- WF# WETLAND FLAG
- MAILBOX
- BORING
- BUSH
- 10" DECIDUOUS TREE



LOCATION MAP

NOT TO SCALE



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

TO MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

MICHAEL J. GARON L.S. #70366

NO CERTIFICATION IS EXPRESSED OR IMPLIED UNLESS THIS MAP BEARS THE ORIGINAL SIGNATURE AND EMBOSSED SEAL OF THE ABOVE NAMED LAND SURVEYOR.

FREEMAN COMPANIES
LAND DEVELOPMENT | ENGINEERING DESIGN | CONSTRUCTION SERVICES
DBE | DAS | MBE | CMWSDC CERTIFIED
CIVIL | GEOTECHNICAL | SURVEY | ENVIRONMENTAL
FREEMAN COMPANIES, LLC
36 JOHN STREET
HARTFORD, CT 06106
WWW.FREEMANCOS.COM
(860)251-9550
TOLL FREE:(800)604-5141
FAX:(860)986-7161
ELEVATE YOUR EXPECTATIONS

PREPARED FOR
TOWN OF KILLINGLY
BEAR HILL ROAD
KILLINGLY,
CONNECTICUT 06239

OWNER FOR
TOWN OF KILLINGLY
BEAR HILL ROAD
KILLINGLY,
CONNECTICUT 06239

STATE OF CONNECTICUT · DENNIS M. QUINT · 19106 · LICENSED PROFESSIONAL ENGINEER

DENNIS M.QUINT, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-009
BEAR HILL ROAD OVER UNNAMED BROOK
KILLINGLY, CONNECTICUT

NO.	DATE	DESCRIPTION
--	--	--

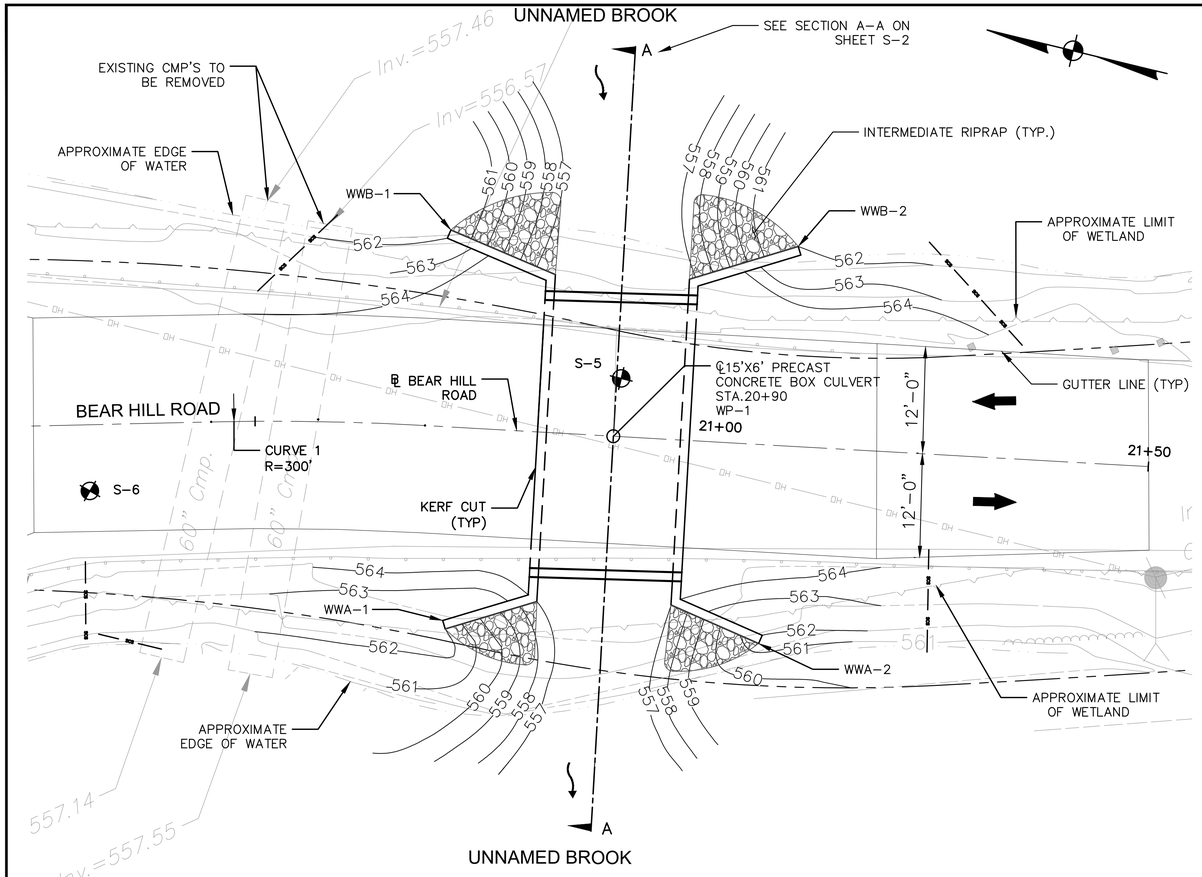
REVISIONS

SURVEYED:	R.J.C/N.I.C
DRAFTED:	R.J.C
CHECKED:	R.G
APPROVED:	M.J.G
SCALE:	1" = 20'
PROJECT NO.:	2017-0507
DATE:	09/15/2017
CAD: 2017-0507 BEAR HILL EX	

TITLE:
TOPOGRAPHIC SURVEY

SHEET NUMBER:
EX-3.1

Freeman Companies, LLC R:\2017\2017-0507 Killingly Bridges\DWG\SURVEY\20\2017-0507 BEAR HILL EX.dwg Jun 14, 2019 - 9:29am Plotted By: ptokluri



PLAN

SCALE: 1/8" = 1'–0"

UTILITY NOTES

1. THIS PROJECT INVOLVES THE PRESENCE OF OVERHEAD UTILITY LINES WITHIN THE LIMITS AND FOOTPRINT OF THE PROJECT. WHILE NO WORK INVOLVING OR IMPACTING THESE UTILITIES ARE ANTICIPATED, THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL WORK WITH THE APPROPRIATE UTILITY COMPANY (EVER SOURCE) AND FOR PROVIDING TEMPORARY PROTECTION AND/OR SUPPORT OF THESE FACILITIES IF AND AS REQUIRED BY THE UTILITY COMPANY.
2. THE CONTRACTOR SHALL DEVELOP ITS ERECTION SCHEME IN CONFORMANCE WITH LIMITATIONS AND RESTRICTIONS ASSOCIATED WITH THE OVERHEAD UTILITY LINES AND AS REQUIRED BY THE APPROPRIATE UTILITY COMPANY.
3. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANY WITH REGARDS TO POTENTIAL RELOCATION OR TEMPORARY SUPPORT OF THEIR FACILITIES. THE CONTRACTOR SHALL IDENTIFY POTENTIAL UTILITY IMPACTS ASSOCIATED WITH THEIR WORK, IF ANY, PRIOR TO START OF CONSTRUCTION AND NOTIFY THE APPROPRIATE UTILITY COMPANY ACCORDINGLY.

NOTICE TO BRIDGE INSPECTORS

IT IS RECOMMENDED THAT CONNDOT'S BRIDGE SAFETY PROCEDURES BE FOLLOWED WHEN INSPECTING THIS BRIDGE FOR, BUT NOT LIMITED TO, ALL APPROPRIATE COMPONENTS INDICATED IN THE GOVERNING MANUALS FOR BRIDGE INSPECTION. ATTENTION MUST BE GIVEN TO INSPECTING THE FOLLOWING SPECIAL COMPONENTS AND DETAILS. (THE LISTING OF COMPONENTS FOR SPECIFIC ATTENTION SHALL NOT BE CONSTRUED TO REDUCE THE IMPORTANCE OF INSPECTION OF ANY OTHER COMPONENT OF THE STRUCTURE.) THE FREQUENCY OF INSPECTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE GOVERNING MANUALS FOR BRIDGE INSPECTION, UNLESS OTHERWISE DIRECTED BY THE MANAGER OF BRIDGE SAFETY AND EVALUATIONS.

COMPONENT OR DETAIL	STRUCTURE SHEET REFERENCE
NONE	–
	–

GENERAL NOTES

SPECIFICATIONS: CONNECTICUT DEPARTMENT OF TRANSPORTATION INCLUDING FORM 817, SUPPLEMENTAL SPECIFICATIONS DATED JANUARY, 2018 AND SPECIAL PROVISIONS.

DESIGN SPECIFICATIONS: AASHTO LRFD SPECIFICATIONS FOR HIGHWAY BRIDGES, 7TH EDITION (2013) AS SUPPLEMENTED BY THE CONNECTICUT DEPARTMENT OF TRANSPORTATION BRIDGE MANUAL (2003) EDITION WITH REVISIONS UP TO AND INCLUDING 2011.

ALLOWABLE DESIGN STRESSES:

CLASS "A" CONCRETE:	f'c =	3,000	psi
CLASS "50" CONCRETE:	f'c =	5,000	psi
REINFORCEMENT (ASTM 615 GRADE 60)	fy =	60,000	psi

LIVE LOAD:

STANDARD DESIGN VEHICLE:	AASHTO HL–93
PERMIT (OVERLOAD) VEHICLES:	CONNDOT P204 (8–AXLE)
	CONNDOT P380 (19–AXLE)

SALVAGE: NONE

DIMENSIONS AND ELEVATIONS: WHEN DECIMAL DIMENSIONS AND ELEVATIONS ARE GIVEN TO LESS THAN THREE DECIMAL PLACES, THE OMITTED DIGITS SHALL BE ASSUMED TO BE ZERO. ALL ELEVATIONS ARE GIVEN IN DECIMAL FEET AND ARE BASED ON NAVD 88.

EXISTING DIMENSIONS: DIMENSIONS OF THE EXISTING STRUCTURE SHOWN ON THESE PLANS ARE FOR GENERAL REFERENCE ONLY AND ARE NOT GUARANTEED. THE CONTRACTOR SHALL TAKE ALL FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF THE FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY. WHEN SHOP DRAWINGS BASED ON FIELD MEASUREMENTS ARE SUBMITTED FOR APPROVAL, THE FIELD MEASUREMENTS SHALL ALSO BE SUBMITTED FOR REFERENCE BY THE REVIEWER.

UTILITIES: THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES LOCATED WITHIN THE VICINITY OF THE SITE DURING CONSTRUCTION. THE METHOD OF SUPPORTING AND PROTECTING UTILITIES SELECTED BY THE CONTRACTOR MUST BE APPROVED BY THE UTILITY COMPANY. UTILITY MODIFICATIONS SHALL BE MADE BY THE RESPECTIVE UTILITY COMPANIES EXCEPT WHERE NOTED OTHERWISE.

CONCRETE NOTES

CLASS "A" CONCRETE: CLASS "A" CONCRETE SHALL BE USED FOR THE CUT–OFF WALLS, RETURN WALLS, HEADWALLS AND WINGWALL FOOTINGS.

CLASS "50" CONCRETE: CLASS "50" CONCRETE SHALL BE USED FOR THE PRECAST CONCRETE BOX CULVERT AND PRECAST CONCRETE WINGWALL STEMS.

REINFORCEMENT: ALL REINFORCEMENT SHALL BE ASTM A615 GRADE 60.

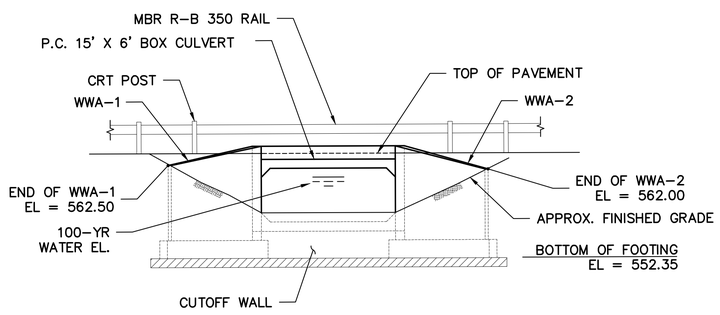
EXPOSED EDGES: EXPOSED EDGES OF CONCRETE SHALL BE BEVELED 1" X 1", UNLESS DIMENSIONED OTHERWISE.

EPOXY COATED REINFORCEMENT BARS: ALL REINFORCEMENT IN THE PRECAST CONCRETE BOX CULVERT SHALL BE EPOXY COATED AND INCLUDED IN THE PAY ITEM "15'X6' PRECAST CONCRETE BOX CULVERT". ALL REINFORCEMENT IN THE PRECAST CONCRETE WINGWALLS SHALL BE EPOXY COATED AND INCLUDED IN THE PAY ITEM "PRECAST CONCRETE WINGWALLS". ALL REINFORCEMENT IN THE CUT–OFF WALLS, AND RETURN WALLS SHALL BE PAID FOR IN THE PAY ITEM "DEFORMED STEEL BARS". ALL REINFORCEMENT IN THE HEADWALLS SHALL BE EPOXY COATED AND PAID FOR UNDER THE ITEM "DEFORMED STEEL BARS (EPOXY COATED)".

CONCRETE COVER: ALL REINFORCEMENT SHALL HAVE 2" COVER UNLESS DIMENSIONED OTHERWISE.

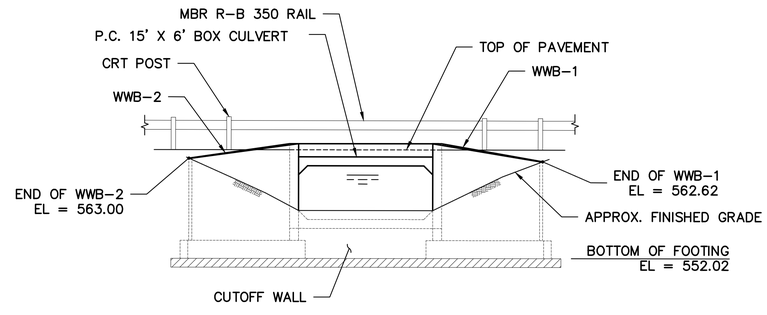
PREFORMED EXPANSION JOINT FILLER: THE COST OF FURNISHING AND INSTALLING PREFORMED EXPANSION JOINT FILLERS SHALL BE INCLUDED IN THE ITEM "CLASS 'A' CONCRETE".

BORING LEGEND	
B–1	APPROXIMATE BORING LOCATION



UPSTREAM ELEVATION

SCALE: 1/8" = 1'–0"



DOWNSTREAM ELEVATION

SCALE: 1/8" = 1'–0"

HYDRAULIC DATA	
HYDRAULIC AREA	5.0 SQ MI
DESIGN FREQUENCY	100 YEAR
DESIGN DISCHARGE	950 CFS
AVERAGE DAILY FLOW	9.1 CFS
AVERAGE DAILY FLOW ELEVATION	558.30
UPSTREAM DESIGN WATER SURFACE ELEVATION	565.26
DOWN STREAM DESIGN WATER SURFACE ELEVATION	558.30
2 YEAR DESIGN STORM WATER ELEVATION	561.91

TRANSPORTATION DATA				
MEMBER	SHIPPING LENGTH	SHIPPING HEIGHT	SHIPPING WIDTH	SHIPPING WEIGHT
BOX CULVERT	17'–0"	8'–0"	8–0"	55,800 lbs
WINGWALL	13'–0"	8'–0"	8'–0"	16,000 lbs

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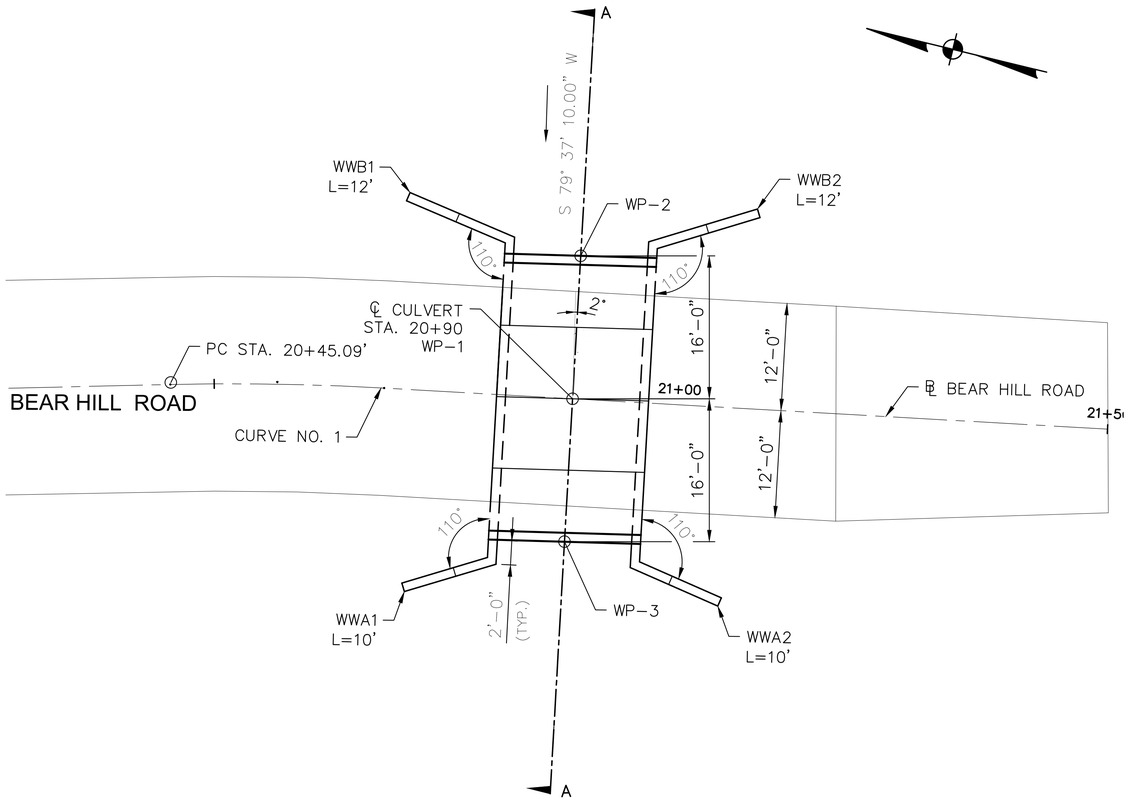
STATE OF CONNECTICUT · DENNIS M. DUNN · 19106 · LICENSED PROFESSIONAL ENGINEER
DENNIS M.DUNN, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-009
BEAR HILL ROAD OVER UNNAMED BROOK
KILLINGLY, CONNECTICUT

NO.	DATE	REVISIONS
1	12/23/21	GENERAL REVISIONS, FLOW ARROWS, HYDRAULIC INFO.

DESIGNED: YL
DRAFTED: PT
CHECKED: DQ
APPROVED: PAR
SCALE: AS NOTED
PROJECT NO.: 2017–0507
DATE: 02/05/2020
CAD: hw_msh_2017_0507_brg009_gen

TITLE: GENERAL PLAN
SHEET NUMBER: S-3.1



LAYOUT PLAN

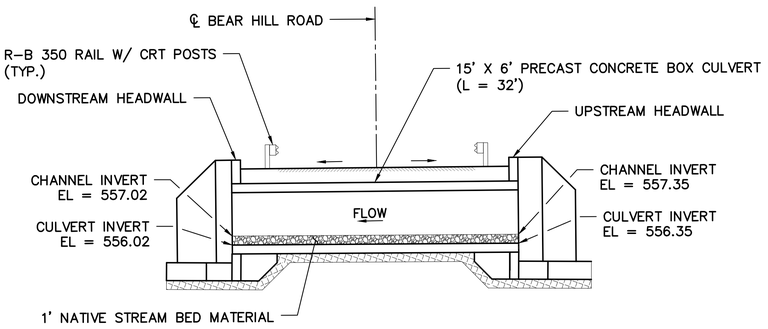
SCALE: 1/8" = 1'-0"

WORKING POINT COORDINATES		
WP	NORTHING	EASTING
WP-1	869851.0942	1254650.6114
WP-2	869856.8715	1254682.0981
WP-3	869853.9828	1254666.3548

NOTES:

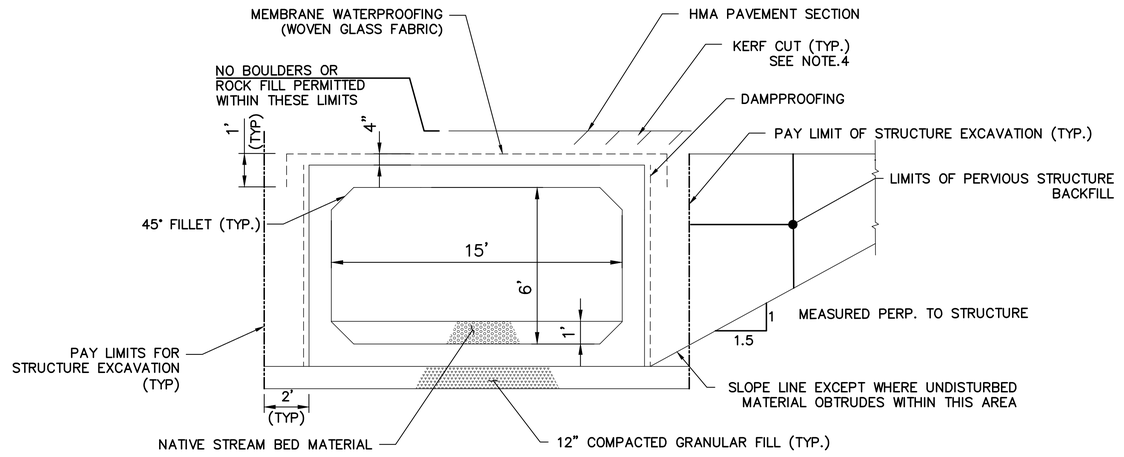
1. FOR COMPLETE BASELINE GEOMETRY, SEE SHEET NO. HWY-1.
2. ROADWAY PROFILE TO MATCH EXISTING.
3. FOR WINGWALL SECTION DETAILS SEE SHEET MDS-3.
4. CUT BITUMINOUS OVERLAY WITH $\frac{3}{8}$" WIDE BY $1\frac{1}{4}$" DEEP KERF AND FILL WITH POURABLE SEALANT. TO BE PAID FOR UNDER THE ITEM "SAWING AND SEALING JOINTS IN BITUMINOUS PAVEMENT.

QUANTITIES		
ITEM	UNITS	TOTALS
STRUCTURE EXCAVATION – EARTH (COMPLETE)	CY	450
STRUCTURE EXCAVATION – ROCK (COMPLETE)	CY	12
HANDLING WATER	LS	1
COMPACTED GRANULAR FILL	CY	30
PERVIOUS STRUCTURE BACKFILL	CY	260
SAWING AND SEALING JOINTS IN BIT. CONC. PAVEMENT	LF	70
REMOVAL OF EXISTING CULVERT	LS	1
CLASS 'A' CONCRETE	CY	20
PRECAST CONCRETE WINGWALL	EA	4
15' X 6' PRECAST CONCRETE BOX CULVERT	LF	32
DEFORMED STEEL BARS	LB	1,800
DEFORMED STEEL BARS (EPOXY COATED)	LB	500
DRILLING HOLES AND GROUTING DOWELS	EA	30
MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC)	SY	75
DAMPPROOFING	SY	150



SECTION A-A

N.T.S.



TYPICAL CULVERT SECTION

N.T.S.

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STATE OF CONNECTICUT · DENNIS M. QUINT · LICENSED PROFESSIONAL ENGINEER

DENNIS M.QUINT, PE NO. 19106

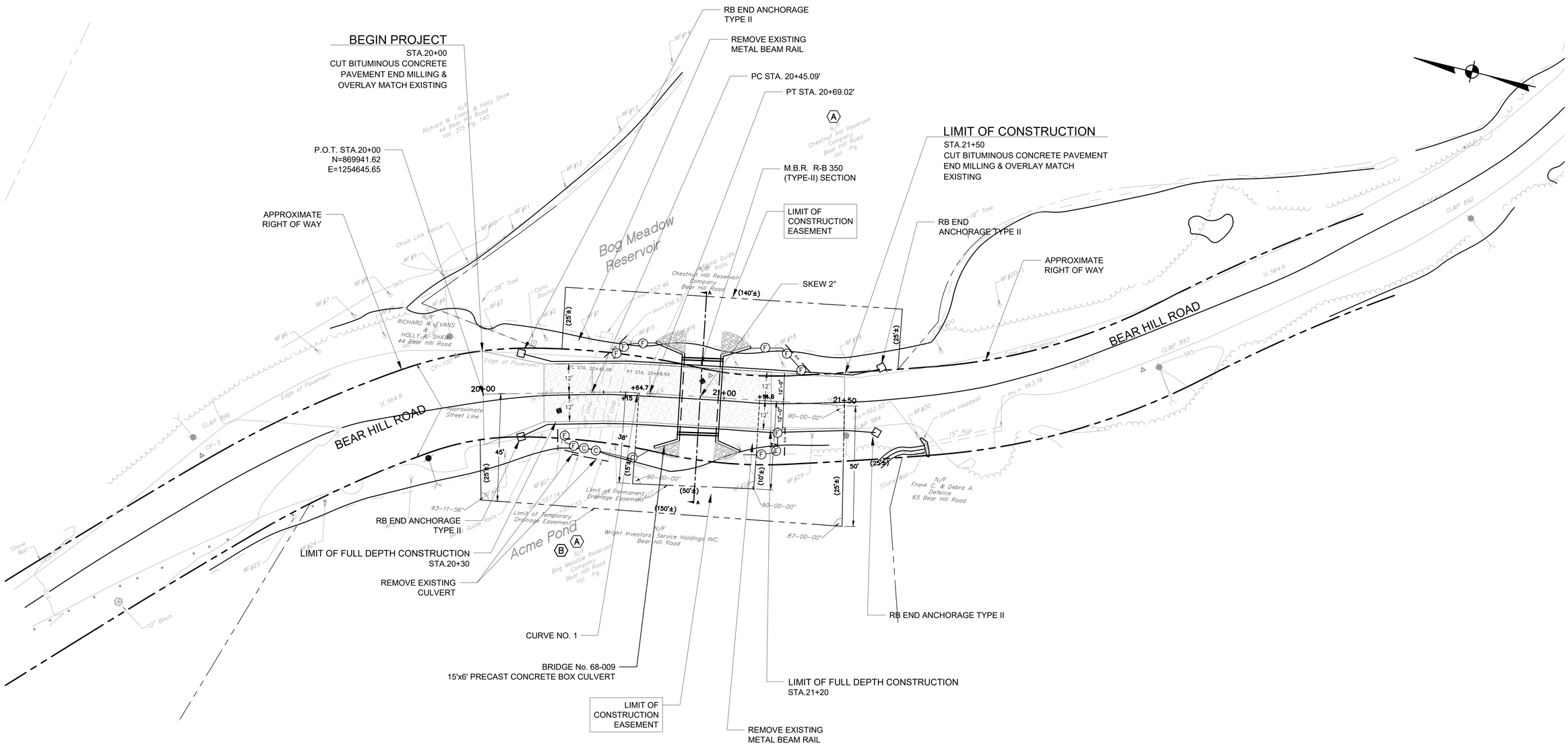
REPLACEMENT OF BRIDGE No. 68-009
BEAR HILL ROAD OVER UNNAMED BROOK
KILLINGLY, CONNECTICUT

NO.	DATE	REVISIONS
1	12/23/21	GENERAL REVISIONS, FLOW ARROWS, HYDRAULIC INFO.

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	02/05/2020
CAD:	HW_MSH_2017_0507_BRG009_ALN

TITLE: LAYOUT PLAN

SHEET NUMBER: S-3.2



NOTES

1. ALL SOIL DISTURBANCES SHALL BE TREATED WITH 4" TOP SOIL & TURF ESTABLISHMENT.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND ELEVATIONS PRIOR TO CONSTRUCTION.
3. CONTRACTOR SHALL COORDINATE WITH THE ENGINEER REGARDING THE LIMITS OF RESTORATION TO ENSURE A SMOOTH TRANSITION FROM NEW CONSTRUCTION TO EXISTING CONDITIONS.
4. CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" (CBYD) 1-800-922-4455 PRIOR TO COMMENCING CONSTRUCTION.
5. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE PLANS OR AS DIRECTED BY THE ENGINEER.
6. REFER TO STRUCTURAL (S SERIES) DRAWINGS FOR PROPOSED CULVERT DETAILS, GRADING, AND METAL BEAM RAIL POST DETAILS.

CURVE DATA

No.		Northing	Easting	Delta(Δ)	Length	Radius
CURVE NO. 1	PC	869898.06	1254657.30	N04°34'8"E	23.923'	300.0'
	PI	869886.50	1254660.34			
	PT	869874.72	1254662.55			

SCHEDULE OF RIGHTS & EASEMENTS

- (A) CONSTRUCTION EASEMENT
- (B) EASEMENT TO INSTALL, CONSTRUCT & MAINTAIN METAL BEAM RAIL END ANCHORAGE

LEGEND

- FULL DEPTH PAVEMENT RECONSTRUCTION / PROPOSED WIDENING
- FILL/CUT APPROXIMATE SLOPE LIMITS
- SCS SEDIMENTATION CONTROL SYSTEM
- APPROXIMATE WETLAND LIMITS
- EASEMENT LINE

GRAPHIC SCALE
20 10 0 20
SCALE IN FEET

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STATE OF CONNECTICUT — DENNIS M. QUINT — No. 19106 — REGISTERED PROFESSIONAL ENGINEER
DENNIS M.QUINT, PE NO. 19106

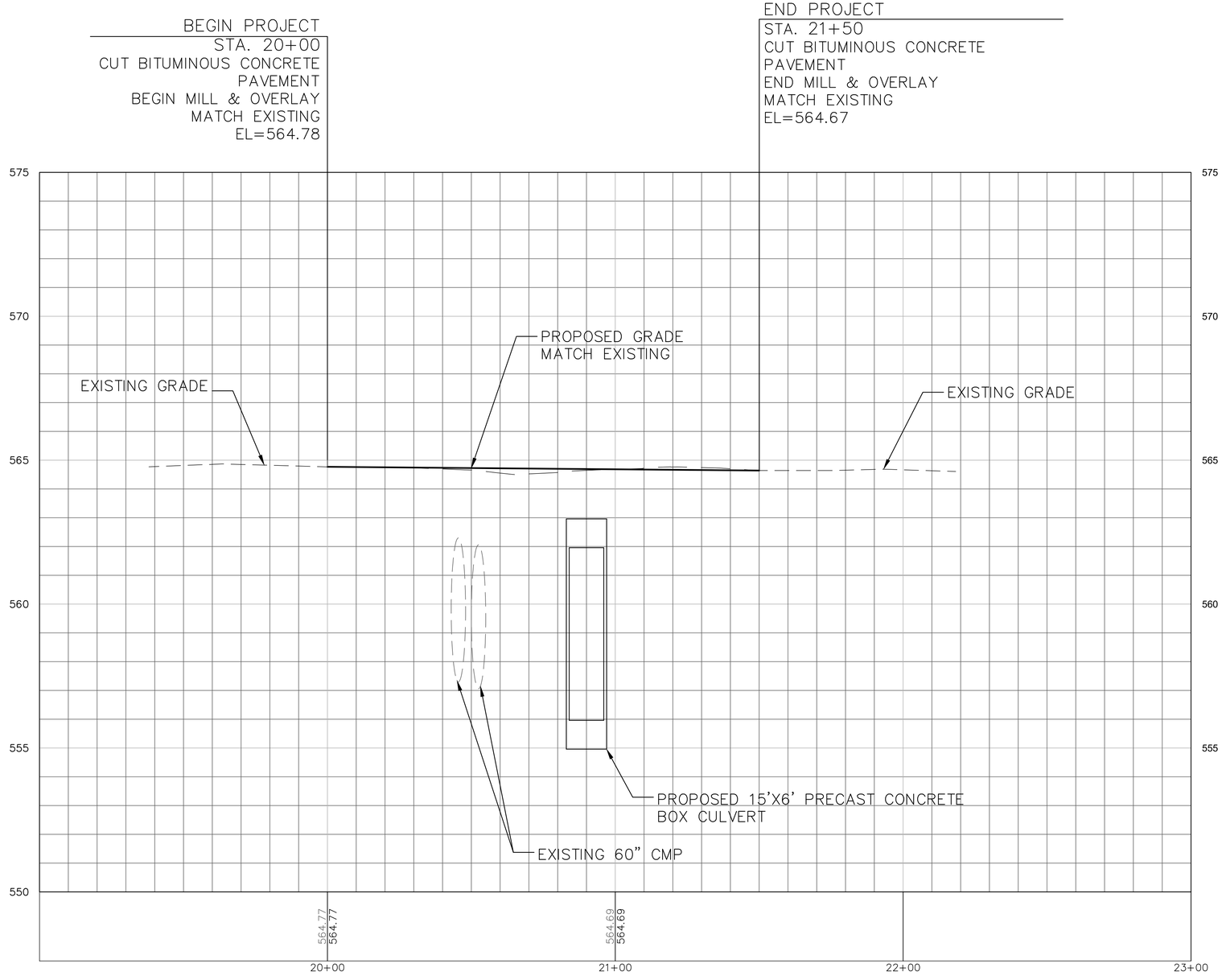
REPLACEMENT OF BRIDGE No. 68-009
BEAR HILL ROAD OVER UNNAMED BROOK
KILLINGLY, CONNECTICUT

NO.	DATE	DESCRIPTION
1	01/16/22	GENERAL REVISIONS, FLOW ARROWS, HYDRAULIC INFO.

REVISIONS

DESIGNED: YL
DRAFTED: PT
CHECKED: DQ
APPROVED: PAR
SCALE: AS NOTED
PROJECT NO.: 2017-0507
DATE: 02/05/2020
CAD: HW_MSH_2017_0507_BRG009_HWY

TITLE: ROADWAY PLAN
SHEET NUMBER: HWY-3.1



BEAR HILL ROAD PROFILE

H: 1"=10'
V: 1"=2'

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KILLINGLY, CONNECTICUT

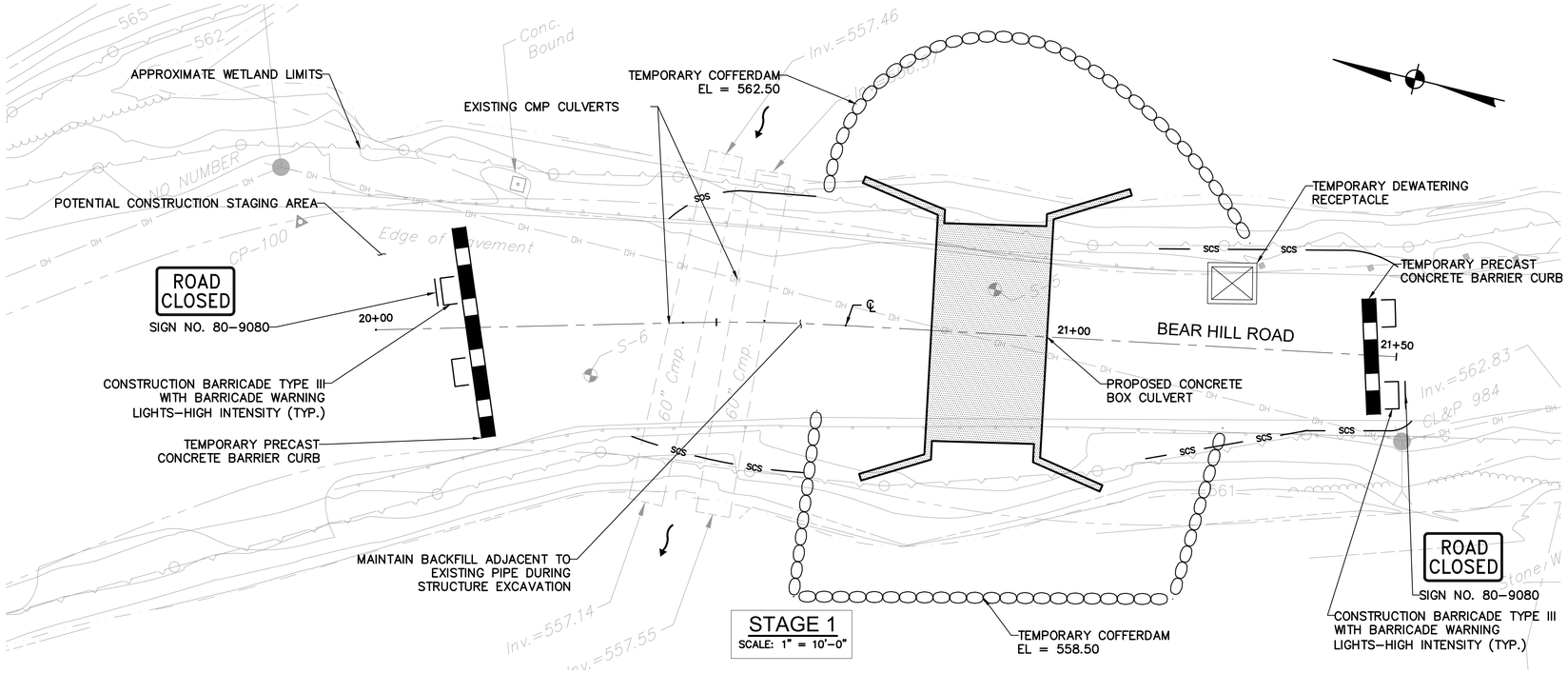
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

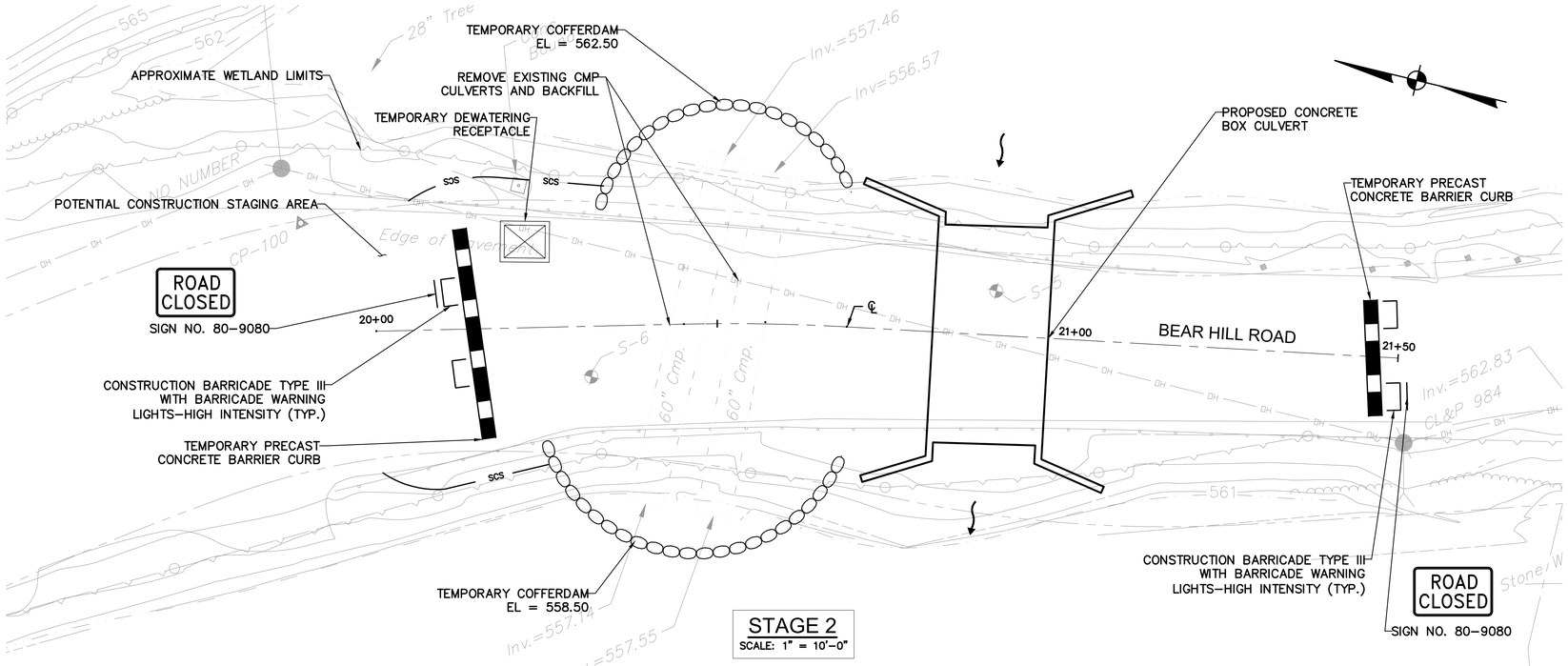
DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017–0507
DATE:	06/14/2019
CAD:	HW_MSH_2017_0507_BRG009_PRO

TITLE:
ROADWAY PROFILE

SHEET NUMBER:
PRO-3.1



STAGE 1
SCALE: 1" = 10'-0"



STAGE 2
SCALE: 1" = 10'-0"

BEAR HILL ROAD WATER HANDLING PLAN

GENERAL NOTES

1. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL A DETAILED PLAN AND NARRATIVE DESCRIBING ITS PROPOSED CONSTRUCTION SEQUENCE INCLUDING DETAILED INFORMATION RELATING TO THE WATER HANDLING.
2. BEST MANAGEMENT PRACTICES (BMP) SHALL BE UTILIZED AS APPROPRIATE AND SHALL BE CONSISTENT WITH THE CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENTATION CONTROL.
3. CONSTRUCTION ACTIVITIES SHALL CONFORM TO SECTION 1.10, ENVIRONMENTAL COMPLIANCE OF THE STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS, BRIDGES, AND INCIDENTAL CONSTRUCTION, FORM 817.
4. DEWATERING, IF AND AS NEEDED, SHALL UTILIZE BMP'S AS APPLICABLE AND AS APPROVED AND ACCEPTABLE BY THE ENGINEER AND THE TOWN OF KILLINGLY.
5. FLOW WILL BE MAINTAINED THROUGH THE EXISTING PIPE CULVERTS DURING CONSTRUCTION OF THE PROPOSED REPLACEMENT CONCRETE BOX CULVERT. TRASH RACK TO BE PULLED FROM UPSTREAM END OF CULVERTS FOR BYPASS FLOWS AND DEWATERING.
6. DETOUR SHALL BE ESTABLISHED BY THE TOWN.

SUGGESTED SEQUENCE OF CONSTRUCTION

PRE-CONSTRUCTION STAGE

1. CONTACT "CALL-BEFORE-YOU-DIG" AND PERFORM UTILITY MARK-OUTS IF AND AS NECESSARY.
2. INSTALL SEDIMENTATION AND EROSION CONTROL MEASURES AS REQUIRED.
3. CLOSE BEAR HILL ROAD, INSTALL CONSTRUCTION BARRICADES, AND DETOUR TRAFFIC.
4. INSTALL TEMPORARY COFFER DAMS AROUND PROPOSED CULVERT AND INSTALL TEMPORARY DEWATERING RECEPTACLES AS SHOWN.

STAGE 1

1. EXCAVATE SITE AND DEWATER AS NECESSARY.
   NOTE: THE CONTRACTOR IS ADVISED TO MAINTAIN BACKFILL ADJACENT TO THE PIPES TO MAINTAIN STABILITY OF CORRUGATED METAL PIPE.
2. CONSTRUCT CUT-OFF WALLS AND RETURN WALLS.
3. INSTALL CONCRETE BOX CULVERT, PRECAST CONCRETE WING WALLS, AND CONSTRUCT HEADWALLS.
4. INSTALL RIPRAP TO LIMITS SHOWN ON THESE PLANS.
5. APPLY MEMBRANE WATERPROOFING OVER TOP SLAB TO LIMITS SHOWN.
6. BACKFILL STRUCTURE AS SHOWN ON THESE PLANS AND PER SPECIFICATIONS.

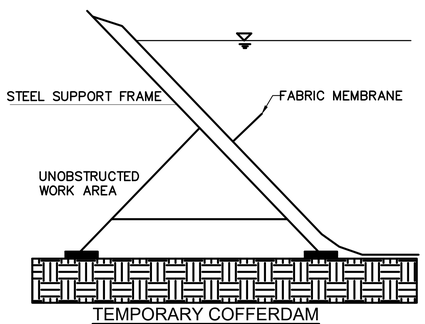
STAGE 2

1. RELOCATE TEMPORARY COFFERDAM AROUND EXISTING CORRUGATED METAL PIPES AND DIVERT WATER FLOW INTO NEW CULVERT.
2. RELOCATED TEMPORARY DEWATERING RECEPTACLE AS SHOWN.
3. DEWATER SITE OF EXISTING CULVERT.
4. EXCAVATE AND REMOVE EXISTING CORRUGATED METAL PIPES.
5. BACKFILL AND REMOVE TEMPORARY COFFERDAM.
6. CONSTRUCT ROADWAY APPROACHES AND OTHER ROADWAY ITEMS TO LIMITS SHOWN.
7. REPAVE BEAR HILL ROAD AND RE-ESTABLISH TURF.
8. REMOVE SEDIMENTATION AND EROSION CONTROL MEASURES.
9. PERFORM SITE CLEAN-UP, REMOVE CONSTRUCTION BARRICADES, AND OPEN ROAD TO TRAFFIC.

LEGEND

- PROPOSED CULVERT
- SCS — SEDIMENTATION CONTROL SYSTEM
- TEMPORARY COFFERDAM

TEMPORARY HYDRAULIC DATA	
TEMPORARY DESIGN FREQUENCY	2-YEAR
TEMPORARY DESIGN DISCHARGE	192 CFS
AVERAGE DAILY FLOW	9.1 CFS
AVERAGE DAILY FLOW ELEVATION	558.30 FT
TEMPORARY WSEL UPSTREAM	561.91 FT
TEMPORARY WSEL DOWNSTREAM	558.01 FT



TEMPORARY COFFERDAM
SCALE: N.T.S.

NOTES:

TEMPORARY COFFERDAM SHOWN ABOVE BASED ON PORTADAM SYSTEM. THE CONTRACTOR MAY CHOOSE TO PROVIDE A DIFFERENT TEMPORARY COFFERDAM SYSTEM AS APPROVED BY THE ENGINEER.

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DENNIS M.QUINT, PE NO. 19106

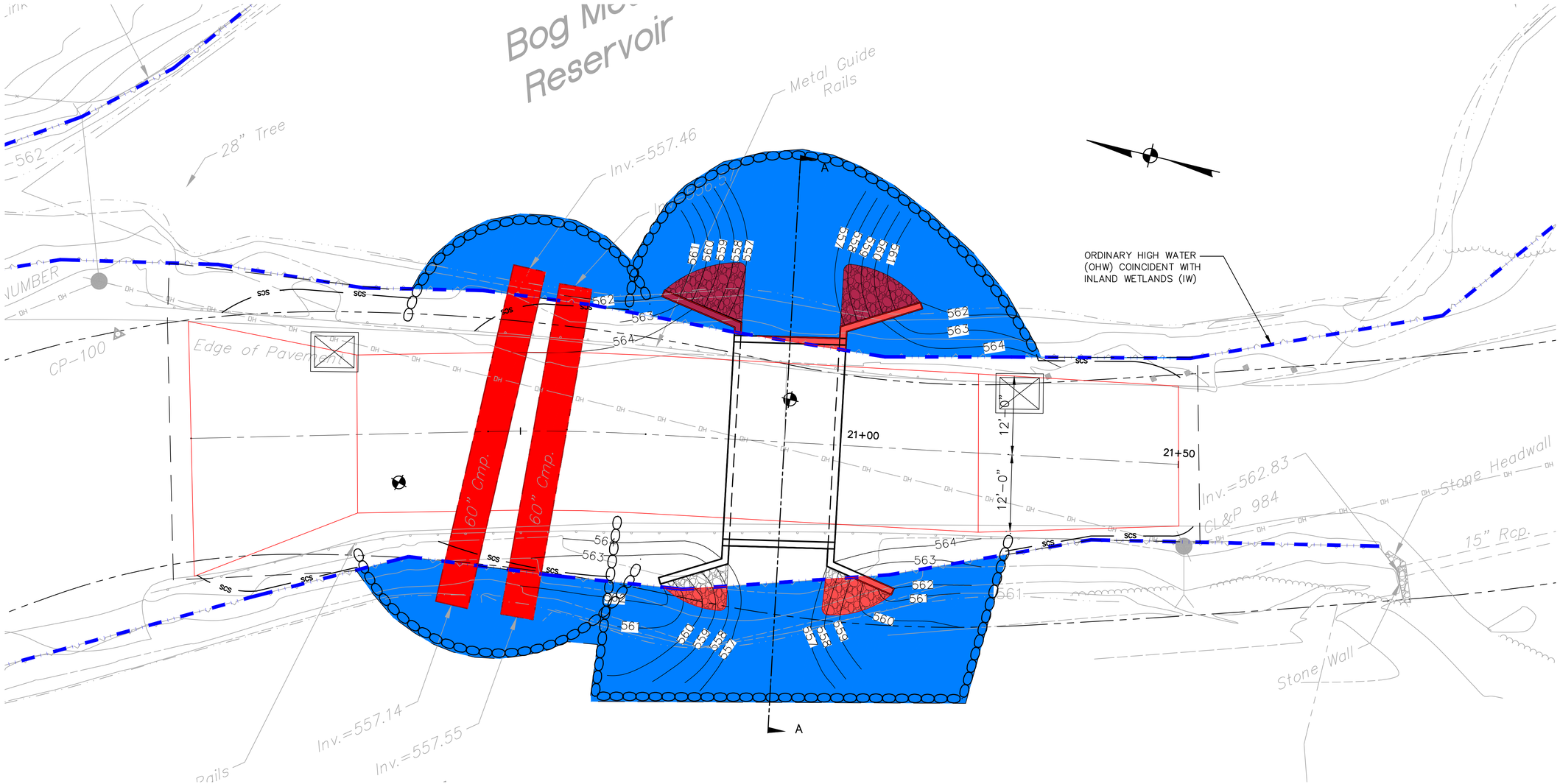
REPLACEMENT OF BRIDGE No. 68-009
BEAR HILL ROAD OVER UNNAMED BROOK
KILLINGLY, CONNECTICUT

NO.	DATE	REVISIONS
1	01/16/22	GENERAL REVISIONS, FLOW ARROWS, HYDRAULIC INFO.

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	02/05/2020
CAD:	SB_MSH_2017_0507_BRG009_STG

TITLE: WATER HANDLING PLAN

SHEET NUMBER: S-3.4



PLAN

SCALE: 1/8" = 1'-0"

PERMANENT IMPACTS	
WETLAND AREA	0 S.F.
WATERCOURSE AREA	760 S.F.
TOTAL:	760 S.F.

TEMPORARY IMPACTS	
WETLAND AREA	0 S.F.
WATERCOURSE AREA	2,830 S.F.
TOTAL:	2,830 S.F.

UPLANDS IMPACTS	
TOTAL:	5,502 S.F.

LEGEND

- PERMANENT IMPACTS
- TEMPORARY IMPACTS
- LIMIT OF DISTURBANCE
- ORDINARY HIGH WATER (OHW)

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PREPARED FOR
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BEAR HILL ROAD
KILLINGLY,
CONNECTICUT 06239

OWNER FOR
TOWN OF KILLINGLY
BEAR HILL ROAD
KILLINGLY,
CONNECTICUT 06239

STATE OF CONNECTICUT · DENNIS M. QUINET · LICENSED PROFESSIONAL ENGINEER

DENNIS M.QUINET, PE NO. 19109

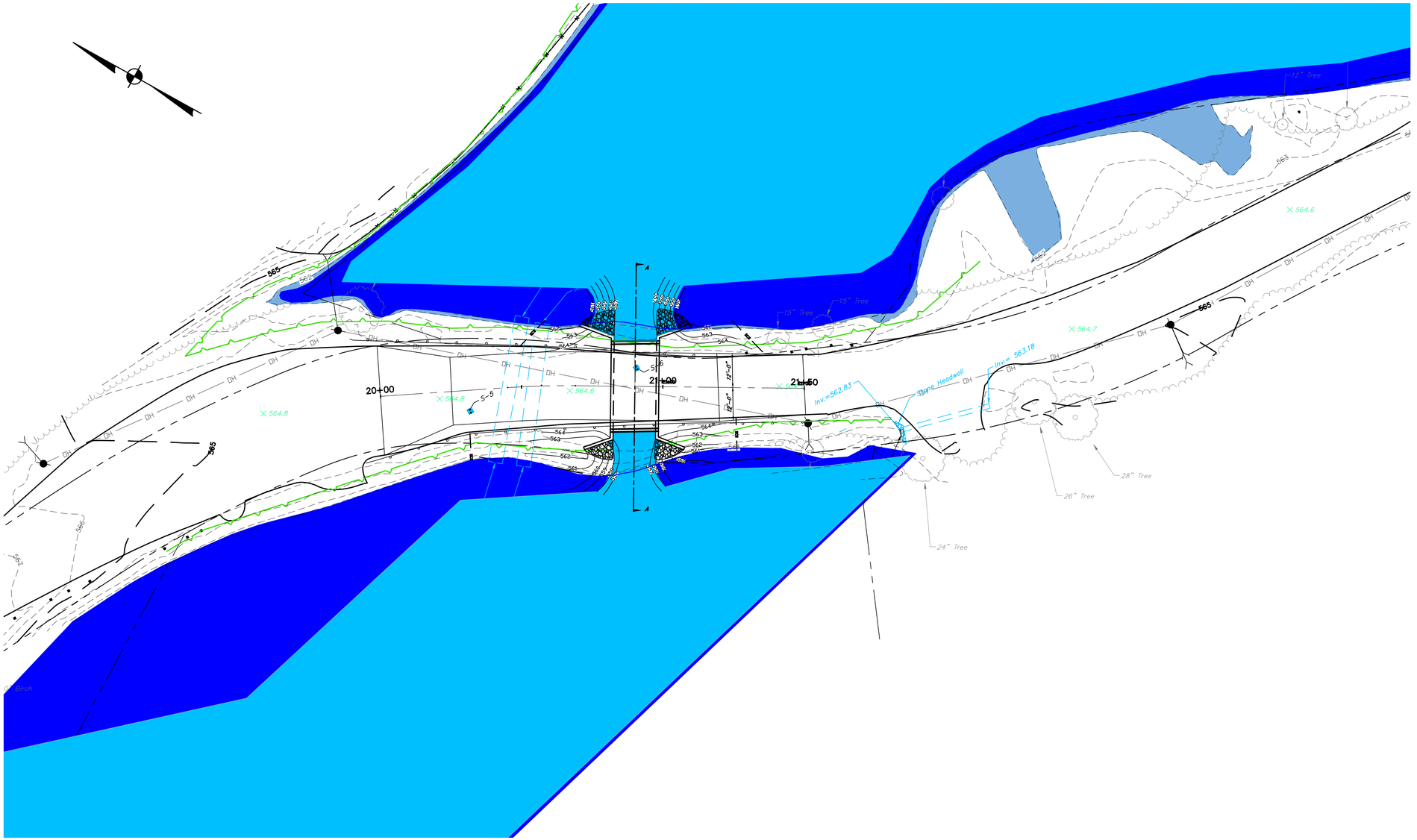
REPLACEMENT OF BRIDGE No. 68-009
BEAR HILL ROAD OVER UNNAMED BROOK
KILLINGLY, CONNECTICUT

NO.	DATE	REVISIONS
1	01/16/22	GENERAL REVISIONS, FLOW ARROWS, HYDRAULIC INFO.

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	02/05/2020
CAD:	hw_msh_2017_0507_brg009_gen (Impacts)

TITLE: IMPACTS

SHEET NUMBER: WL-3



LEGEND

- WETLANDS
- UNNAMED BROOK
- PROPOSED DESIGN – LAND UNDER WATER
- EXISTING CONDITION – LAND UNDER WATER

2 YEAR STORM CONDITIONS

SCALE: 1" = 20'–0"

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REPLACEMENT OF BRIDGE No. 68-009
BEAR HILL ROAD OVER UNNAMED BROOK
KILLINGLY, CONNECTICUT

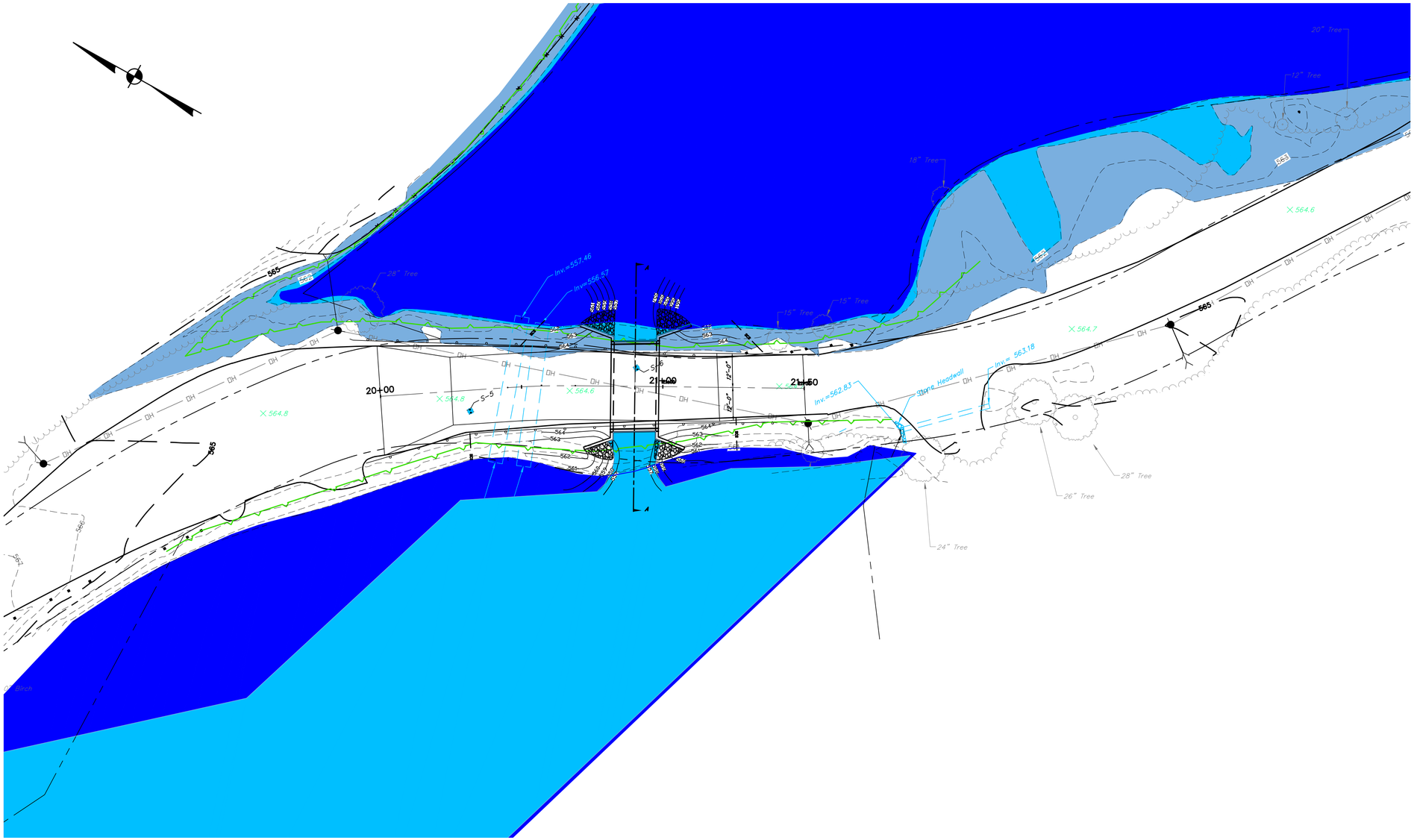
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	NOT TO SCALE
PROJECT NO.:	2017–0507
DATE:	06/14/2019
CAD:	2017–0507 BEAR HILL HYDRAULICS

TITLE: HYDRAULIC DATA

SHEET NUMBER: C–1



LEGEND

- WETLANDS
- UNNAMED BROOK
- PROPOSED DESIGN – LAND UNDER WATER
- EXISTING CONDITION – LAND UNDER WATER

10 YEAR STORM CONDITIONS

SCALE: 1" = 20'-0"

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REPLACEMENT OF BRIDGE No. 68-009
BEAR HILL ROAD OVER UNNAMED BROOK
KILLINGLY, CONNECTICUT

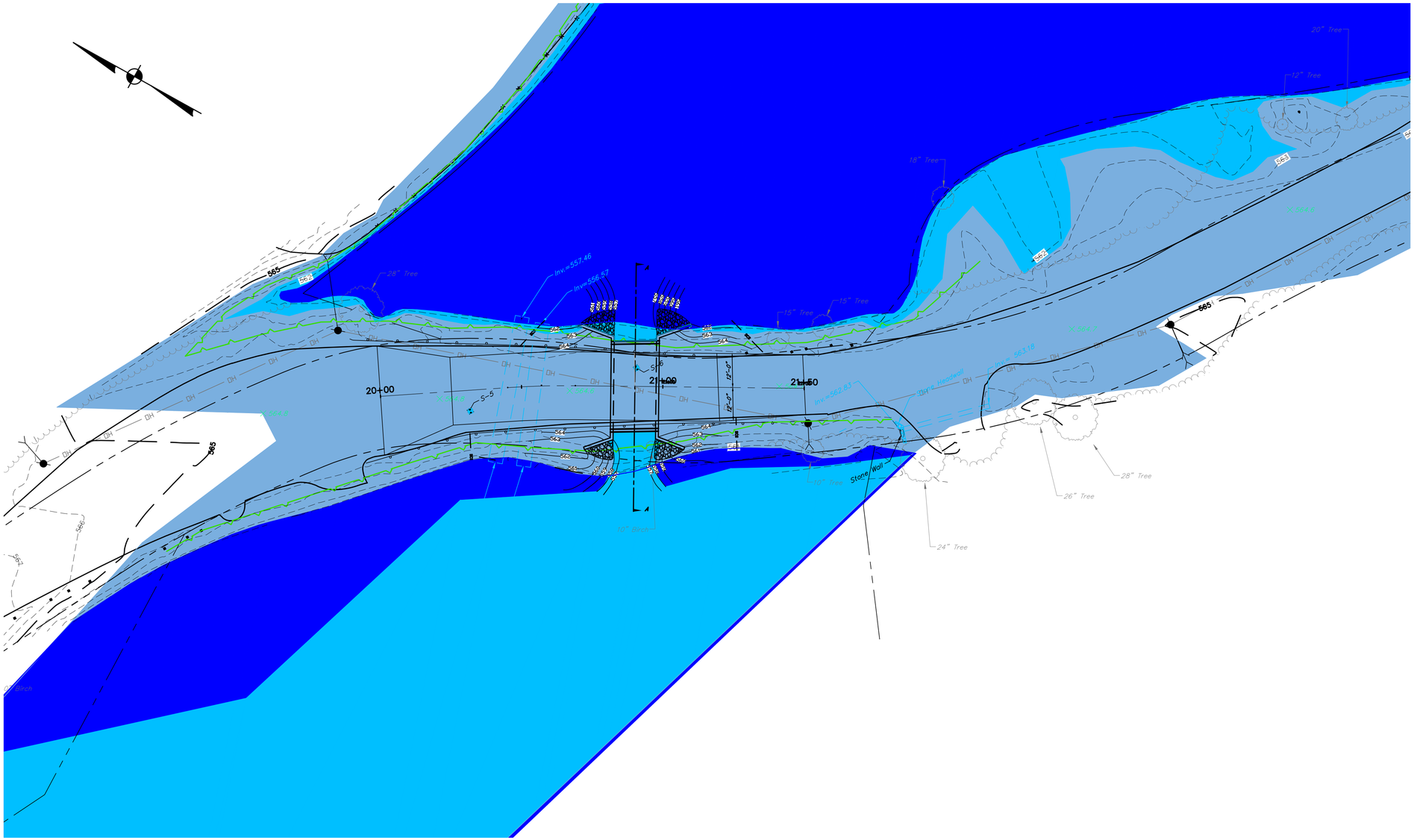
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	NOT TO SCALE
PROJECT NO.:	2017-0507
DATE:	06/14/2019
CAD: 2017-0507 BEAR HILL HYDRAULICS	

TITLE: HYDRAULIC DATA

SHEET NUMBER: C-2



LEGEND

- WETLANDS
- UNNAMED BROOK
- PROPOSED DESIGN – LAND UNDER WATER
- EXISTING CONDITION – LAND UNDER WATER

25 YEAR STORM CONDITIONS

SCALE: 1" = 20'–0"

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CONNECTICUT 06239

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BEAR HILL ROAD
KILLINGLY,
CONNECTICUT 06239

STATE OF CONNECTICUT · DENNIS M. QUINT · 19106 · REGISTERED PROFESSIONAL ENGINEER

DENNIS M.QUINT, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-009
BEAR HILL ROAD OVER UNNAMED BROOK
KILLINGLY, CONNECTICUT

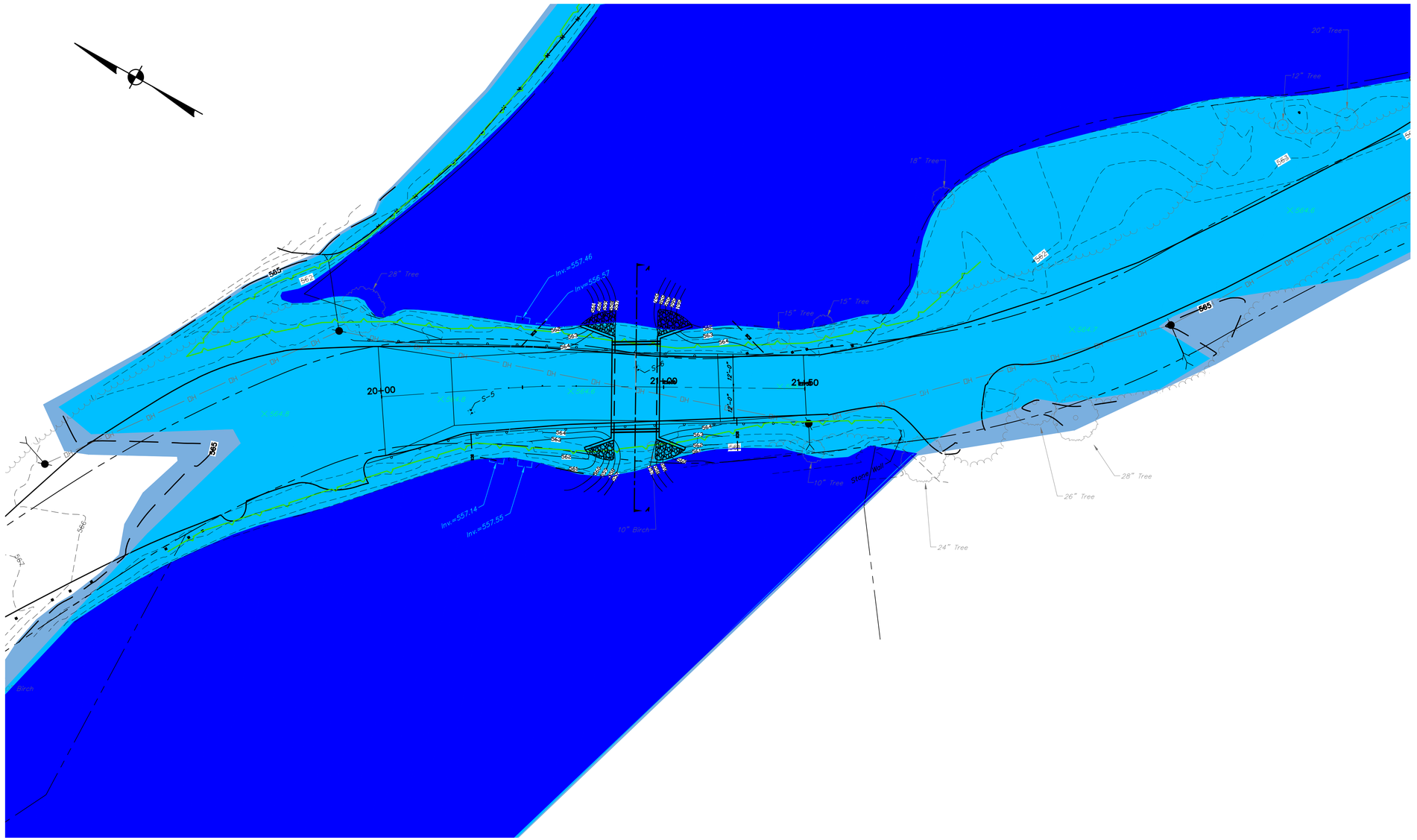
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	NOT TO SCALE
PROJECT NO.:	2017–0507
DATE:	06/14/2019
CAD:	2017–0507 BEAR HILL HYDRAULICS

TITLE: HYDRAULIC DATA

SHEET NUMBER: C–3



LEGEND

- WETLANDS
- UNNAMED BROOK
- PROPOSED DESIGN – LAND UNDER WATER
- EXISTING CONDITION – LAND UNDER WATER

50 YEAR STORM CONDITIONS

SCALE: 1" = 20'–0"

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STATE OF CONNECTION
DENNIS M. QUINT
19106
REGISTERED
PROFESSIONAL ENGINEER

DENNIS M.QUINT, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-009
BEAR HILL ROAD OVER UNNAMED BROOK
KILLINGLY, CONNECTICUT

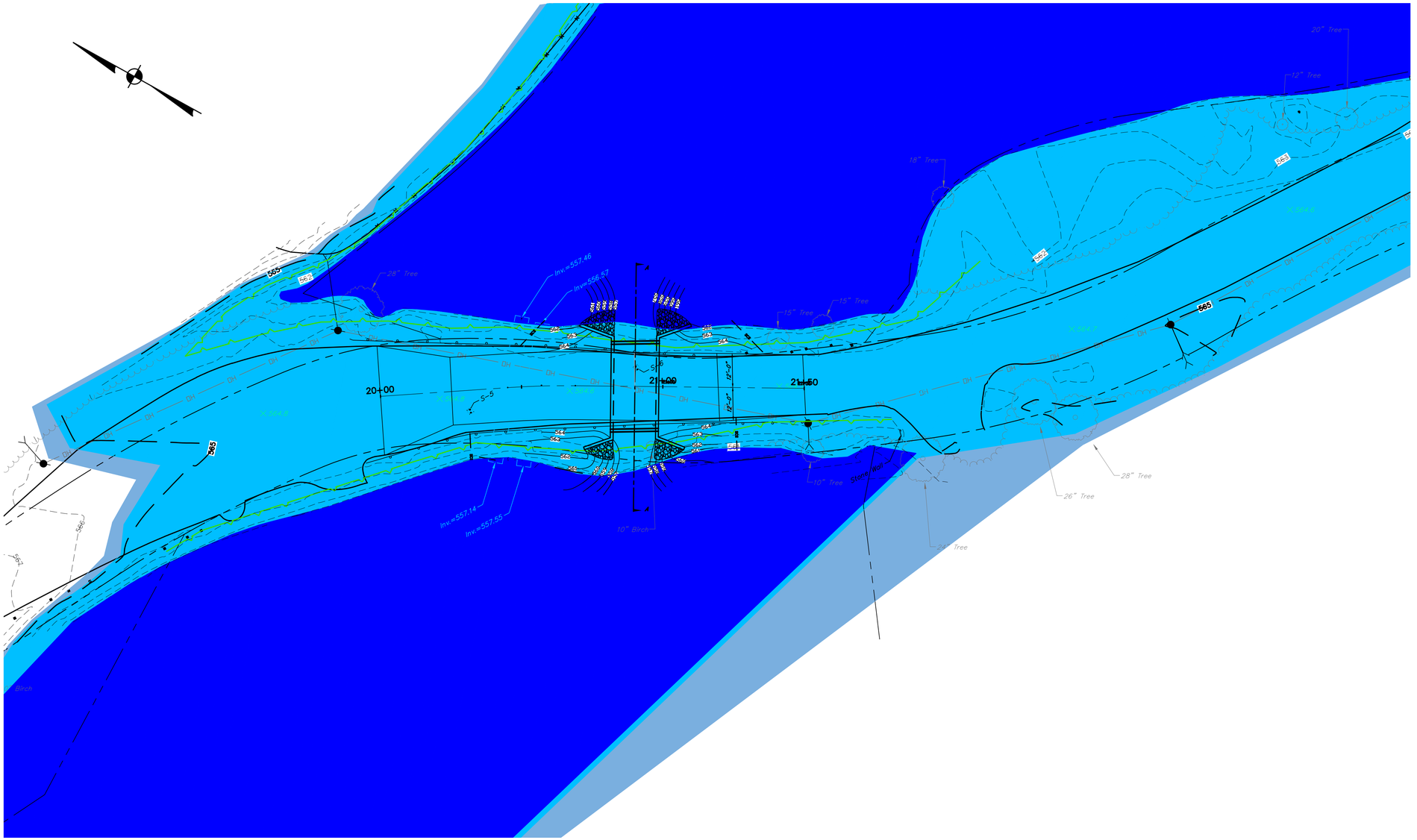
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	NOT TO SCALE
PROJECT NO.:	2017–0507
DATE:	06/14/2019
CAD:	2017–0507 BEAR HILL HYDRAULICS

TITLE: HYDRAULIC DATA

SHEET NUMBER: C–4



LEGEND

- WETLANDS
- UNNAMED BROOK
- PROPOSED DESIGN – LAND UNDER WATER
- EXISTING CONDITION – LAND UNDER WATER

100 YEAR STORM CONDITIONS

SCALE: 1" = 20'–0"

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STATE OF CONNECTICUT · DENNIS M. QUINT · 19106 · LICENSED PROFESSIONAL ENGINEER

DENNIS M.QUINT, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-009
BEAR HILL ROAD OVER UNNAMED BROOK
KILLINGLY, CONNECTICUT

NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	NOT TO SCALE
PROJECT NO.:	2017–0507
DATE:	06/14/2019
CAD:	2017–0507 BEAR HILL HYDRAULICS

TITLE:
HYDRAULIC DATA

SHEET NUMBER:
C–5

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

August 9, 2022

Regulatory Division
File Number: NAE-2021-00302

David Capacchione, P.E.
Director of Engineering and Facilities
Town of Killingly
172 Main Street
Killingly, Connecticut 06239
(Via email: dcapacchione@killinglyct.gov)

Dear Mr. Capacchione:

The U.S. Army Corps of Engineers (USACE) has reviewed your application for the replacement of the existing bridge Number 68-002. This work will result in the permanent discharge of approximately 250 square-feet (sf) of rip rap and approximately 600sf of pre-cast box culvert measuring 8-feet wide by 13-feet long and the temporary discharge of approximately 1,700sf of temporary fill consisting of coffer dams, erosion control barriers, temporary bypass pipes and rip rap below the Ordinary High Water line (OHW) of Mashentuck Brook. This work is located on Valley Road over Mashentuck Brook in Killingly, Connecticut and is shown on the enclosed plans titled "REPLACEMENT OF BRIDGE No. 68-002 VALLEY ROAD OVER MASHENTUCK BROOK KILLINGLY, CONNECTICUT" on three sheets dated "DATE: 06/14/2019".

Based on the information you have provided, we verify that the activity is authorized under General Permits # 19 of the enclosed December 15, 2021, federal permit known as the Connecticut General Permits (GPs). This verification is subject to the following special condition:

This authorization requires you to complete and return the enclosed Work Start Notification Form to this office at least two weeks before the anticipated starting date. You must also complete and return the enclosed Compliance Certification Form within one month following the completion of the authorized work.

Please review the special conditions above and the enclosed GPs carefully, including its general conditions beginning on page 48, to be sure that you and whoever does the work understands this verification's requirements. A copy of the GPs and this verification letter shall be available at the project site throughout the time the work is underway. Performing work within our jurisdiction that is not specifically authorized by this determination, failing to comply with any special condition provided above or all the terms and conditions of the GPs may subject you to the enforcement provisions of our regulations.

This authorization presumes that the work as described above and as shown on your plans noted above is in waters of the U.S.

This authorization expires on December 15, 2026, unless the GPs are modified, suspended, or revoked before then. You must commence or have 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. We recommend that you contact us *before* this permit expires to discuss a permit reissuance. If you change the project plans or construction methods for work within our jurisdiction, please contact us immediately to discuss modification of this authorization. This office must approve any changes before you undertake them.

This authorization does not obviate the need to obtain other Federal, state, or local authorizations required by law.

The Connecticut Department of Energy & Environmental Protection (DEEP) has conditionally granted Water Quality Certification (WQC) for the 2021 CT GPs under Section 401 of the Clean Water Act. This verification that your project is authorized under the CT GPs is valid only after DEEP provides you with written concurrence of eligibility for use of that WQC under the GPs. Work authorized herein may not commence until you receive DEEP concurrence of eligibility. Any adaptive best management practices prescribed by DEEP in your written concurrence of eligibility are hereby incorporated by reference into this GP authorization and will remain in full force and effect. In the event the DEEP denies eligibility for the project above, this GP authorization becomes null and void.

We continually strive to improve our customer service. To better serve you, we would appreciate your completing our Customer Service Survey located at https://regulatory.ops.usace.army.mil/customer-service-survey/.

Please contact Mike Wierbonics of my staff, at (978) 318-8723 or at michael.s.wierbonics@usace.army.mil if you have any questions.

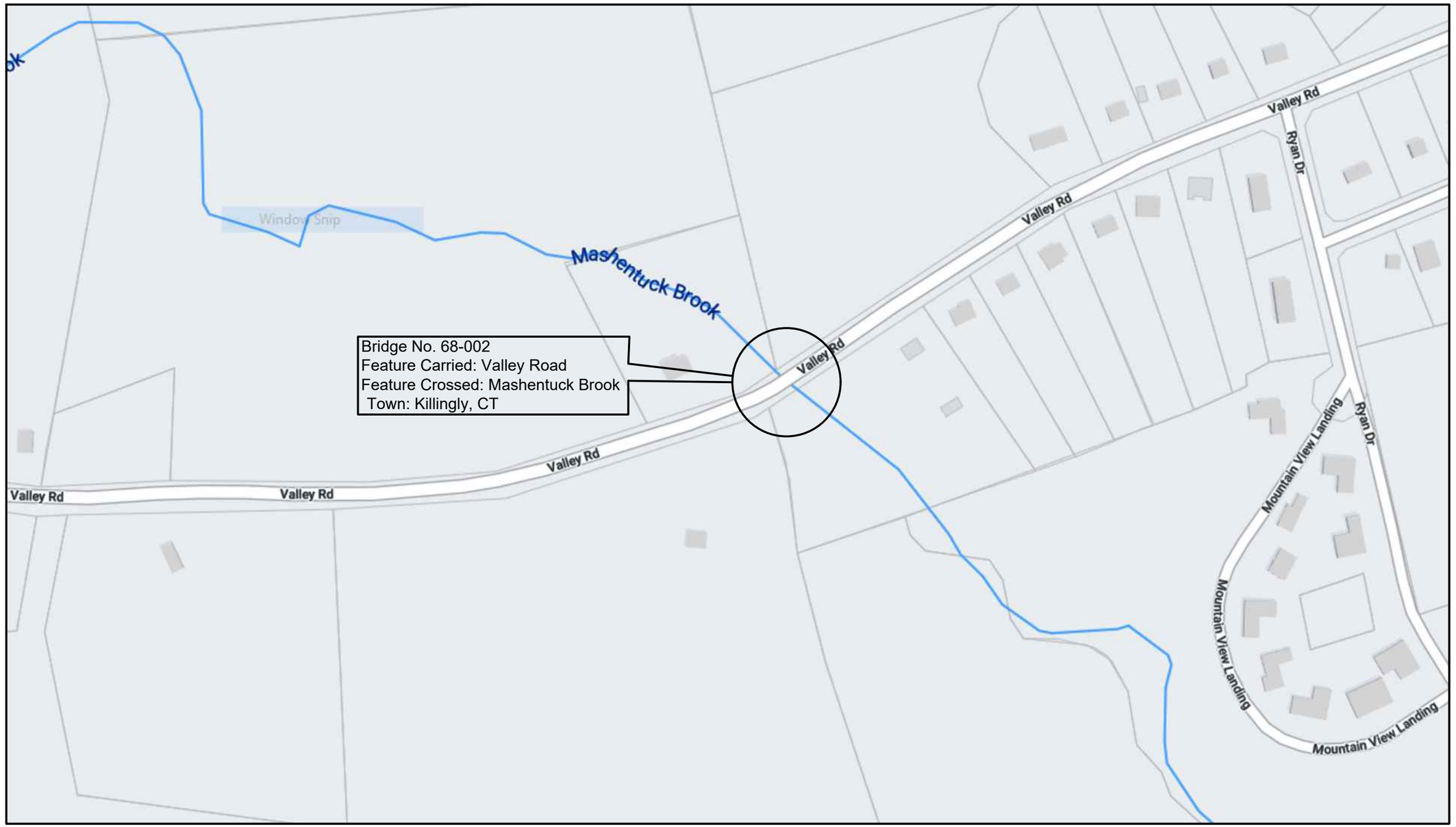
Sincerely,

Kevin R Kotelly

Kevin R. Kotelly, P.E.
Chief, Permits & Enforcement Branch
Regulatory Division

Enclosures

cc:
William Sigmund, CT DEEP, william.sigmund@ct.gov
Nate Margason, U.S. EPA, Region 1, margason.nathan@epa.gov
Luis Bucheli, Freeeman Companies, LLC, lbucheli@freemancos.com
Dennis Quinit, Freeman Companies, LLC, dquinit@freemancos.com
Jeffrey LeBeau, Freeman Companies, LLC, jlebeau@freemancos.com



SITE LOCATION MAP

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CONNECTICUT 06239

DENNIS M.QUINT, PE NO. 19108

REPLACEMENT OF BRIDGE No. 68-002
VALLEY ROAD OVER MASHENTUCK BROOK
KILLINGLY, CONNECTICUT

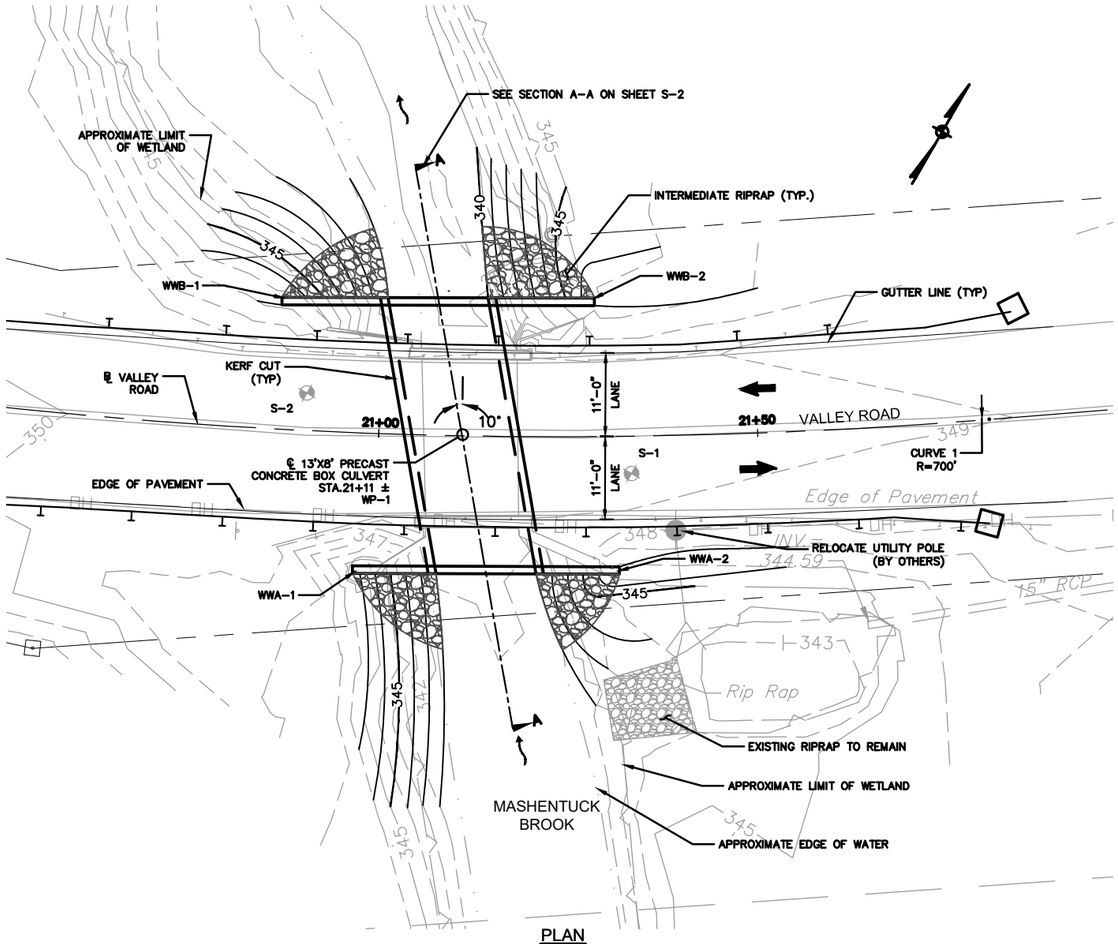
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	NOT TO SCALE
PROJECT NO.:	2017–0507
DATE:	06/14/2019
CAD: Location Map Bj68–002	

TITLE:

SHEET NUMBER:



PLAN

SCALE: 1" = 20'-0"

UTILITY NOTES

1. THIS PROJECT INVOLVES THE PRESENCE OF OVERHEAD UTILITY LINES WITHIN THE LIMITS AND FOOTPRINT OF THE PROJECT. WHILE NO WORK INVOLVING OR IMPACTING THESE UTILITIES ARE ANTICIPATED, THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL WORK WITH THE APPROPRIATE UTILITY COMPANY (EVERSOURCE) AND FOR PROVIDING TEMPORARY PROTECTION AND/OR SUPPORT OF THESE FACILITIES IF AND AS REQUIRED BY THE UTILITY COMPANY.
2. THE CONTRACTOR SHALL DEVELOP ITS ERECTION SCHEME IN CONFORMANCE WITH LIMITATIONS AND RESTRICTIONS ASSOCIATED WITH THE OVERHEAD UTILITY LINES AND AS REQUIRED BY THE APPROPRIATE UTILITY COMPANY.
3. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANY WITH REGARDS TO POTENTIAL RELOCATION OR TEMPORARY SUPPORT OF THEIR FACILITIES. THE CONTRACTOR SHALL IDENTIFY POTENTIAL UTILITY IMPACTS ASSOCIATED WITH THEIR WORK, IF ANY, PRIOR TO START OF CONSTRUCTION AND NOTIFY THE APPROPRIATE UTILITY COMPANY ACCORDINGLY.

NOTICE TO BRIDGE INSPECTORS

IT IS RECOMMENDED THAT CONNDOT'S BRIDGE SAFETY PROCEDURES BE FOLLOWED WHEN INSPECTING THIS BRIDGE FOR, BUT NOT LIMITED TO, ALL APPROPRIATE COMPONENTS INDICATED IN THE GOVERNING MANUALS FOR BRIDGE INSPECTION. ATTENTION MUST BE GIVEN TO INSPECTING THE FOLLOWING SPECIAL COMPONENTS AND DETAILS. (THE LISTING OF COMPONENTS FOR SPECIFIC ATTENTION SHALL NOT BE CONSTRUED TO REDUCE THE IMPORTANCE OF INSPECTION OF ANY OTHER COMPONENT OF THE STRUCTURE.) THE FREQUENCY OF INSPECTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE GOVERNING MANUALS FOR BRIDGE INSPECTION, UNLESS OTHERWISE DIRECTED BY THE MANAGER OF BRIDGE SAFETY AND EVALUATIONS.

COMPONENT OR DETAIL	STRUCTURE SHEET REFERENCE
NONE	-
	-

BORING LEGEND

S-1 APPROXIMATE BORING LOCATION

GENERAL NOTES

SPECIFICATIONS: CONNECTICUT DEPARTMENT OF TRANSPORTATION FORM 817, INCLUDING SUPPLEMENTAL SPECIFICATIONS DATED JANUARY, 2018 AND SPECIAL PROVISIONS.

DESIGN SPECIFICATIONS: AASHTO LRFD SPECIFICATIONS FOR HIGHWAY BRIDGES, 8TH EDITION AS SUPPLEMENTED BY THE CONNECTICUT DEPARTMENT OF TRANSPORTATION BRIDGE MANUAL (2003) EDITION WITH REVISIONS UP TO AND INCLUDING 2011.

ALLOWABLE DESIGN STRESSES:

CLASS "A" CONCRETE:	f'c =	3,000 psi
CLASS "50" CONCRETE:	f'c =	5,000 psi
REINFORCEMENT (ASTM 615 GRADE 60)	fy =	60,000 psi

LIVE LOAD:

STANDARD DESIGN VEHICLE:	AASHTO HL-93
PERMIT (OVERLOAD) VEHICLES:	CONNDOT P204 (8-AXLE) CONNDOT P380 (19-AXLE)

SALVAGE: NONE

DIMENSIONS AND ELEVATIONS: WHEN DECIMAL DIMENSIONS AND ELEVATIONS ARE GIVEN TO LESS THAN THREE DECIMAL PLACES, THE OMITTED DIGITS SHALL BE ASSUMED TO BE ZERO. ALL ELEVATIONS ARE GIVEN IN DECIMAL FEET AND ARE BASED ON NAVD 88.

EXISTING DIMENSIONS: DIMENSIONS OF THE EXISTING STRUCTURE SHOWN ON THESE PLANS ARE FOR GENERAL REFERENCE ONLY AND ARE NOT GUARANTEED. THE CONTRACTOR SHALL TAKE ALL FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF THE FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY. WHEN SHOP DRAWINGS BASED ON FIELD MEASUREMENTS ARE SUBMITTED FOR APPROVAL, THE FIELD MEASUREMENTS SHALL ALSO BE SUBMITTED FOR REFERENCE BY THE REVIEWER.

UTILITIES: THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES LOCATED WITHIN THE VICINITY OF THE SITE DURING CONSTRUCTION. THE METHOD OF SUPPORTING AND PROTECTING UTILITIES SELECTED BY THE CONTRACTOR MUST BE APPROVED BY THE UTILITY COMPANY. UTILITY MODIFICATIONS SHALL BE MADE BY THE RESPECTIVE UTILITY COMPANIES EXCEPT WHERE NOTED OTHERWISE.

CONCRETE NOTES

CLASS "A" CONCRETE: CLASS "A" CONCRETE SHALL BE USED FOR THE CUT-OFF WALLS, RETURN WALLS, HEADWALLS AND WINGWALL FOOTINGS.

CLASS "50" CONCRETE: CLASS "50" CONCRETE SHALL BE USED FOR THE PRECAST CONCRETE BOX CULVERT AND PRECAST CONCRETE WINGWALL STEMS.

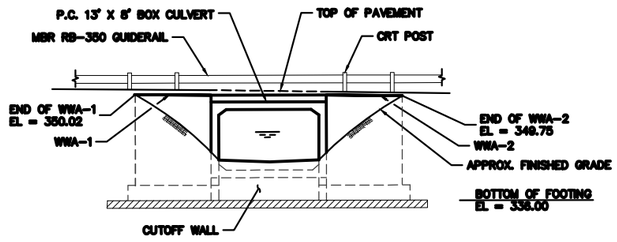
REINFORCEMENT: ALL REINFORCEMENT SHALL BE ASTM A615 GRADE 60.

EXPOSED EDGES: EXPOSED EDGES OF CONCRETE SHALL BE BEVELED 1" X 1", UNLESS DIMENSIONED OTHERWISE.

EPOXY COATED REINFORCEMENT BARS: ALL REINFORCEMENT IN THE PRECAST CONCRETE BOX CULVERT SHALL BE EPOXY COATED AND INCLUDED IN THE PAY ITEM "13'X8' PRECAST CONCRETE BOX CULVERT". ALL REINFORCEMENT IN THE PRECAST CONCRETE WINGWALLS SHALL BE EPOXY COATED AND INCLUDED IN THE PAY ITEM "PRECAST CONCRETE WINGWALLS". ALL REINFORCEMENT IN THE CUT-OFF WALLS, AND RETURN WALLS SHALL BE PAID FOR IN THE PAY ITEM "DEFORMED STEEL BARS". ALL REINFORCEMENT IN THE HEADWALLS SHALL BE EPOXY COATED AND PAID FOR UNDER THE ITEM "DEFORMED STEEL BARS (EPOXY COATED)".

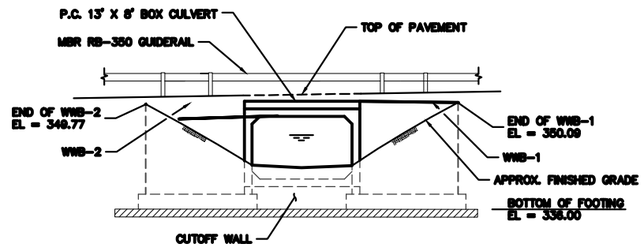
CONCRETE COVER: ALL REINFORCEMENT SHALL HAVE 2" COVER UNLESS DIMENSIONED OTHERWISE.

PREFORMED EXPANSION JOINT FILLER: THE COST OF FURNISHING AND INSTALLING PREFORMED EXPANSION JOINT FILLERS SHALL BE INCLUDED IN THE ITEM "CLASS 'A' CONCRETE".



UPSTREAM ELEVATION

SCALE: 1" = 20'-0"



DOWNSTREAM ELEVATION

SCALE: 1" = 20'-0"

HYDRAULIC DATA	
HYDRAULIC AREA	4.1 SQ MI
DESIGN FREQUENCY	100 YEAR
DESIGN DISCHARGE	920 CFS
AVERAGE DAILY FLOW	7.5 CFS
AVERAGE DAILY FLOW ELEVATION	341.69
UPSTREAM DESIGN WATER SURFACE ELEVATION	349.38
DOWN STREAM DESIGN WATER SURFACE ELEVATION	345.01
2 YEAR DESIGN STORM WATER ELEVATION	343.37

TRANSPORTATION DATA

MEMBER	SHIPPING LENGTH	SHIPPING HEIGHT	SHIPPING WIDTH	SHIPPING WEIGHT
BOX CULVERT	15'-0"	10'-0"	8'-0"	55,800 lbs
WINGWALL	15'-0"	10'-0"	8'-0"	24,000 lbs

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DENNIS M.QUINT, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-002
VALLEY ROAD OVER MASHENTUCK BROOK
KILLINGLY, CONNECTICUT

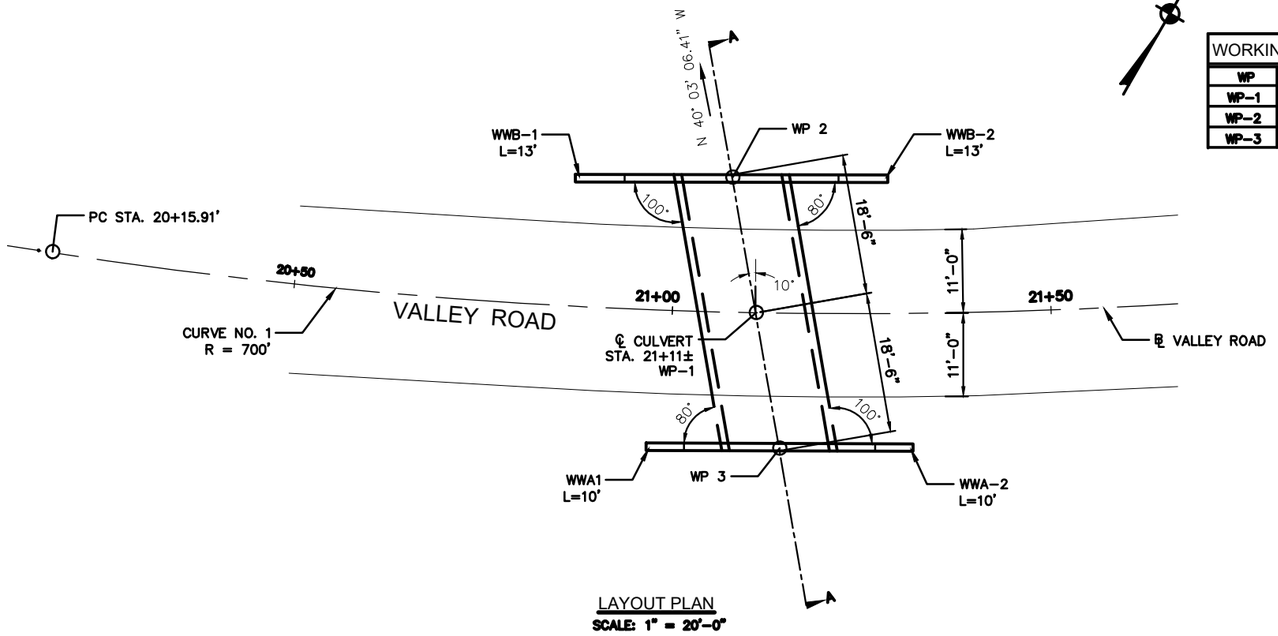
NO.	DATE	DESCRIPTION
-	-	-

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	02/03/2020
CAD:	HW_MSH_2017_0507_BRG002_GEN

TITLE: GENERAL PLAN

SHEET NUMBER: S-1.1



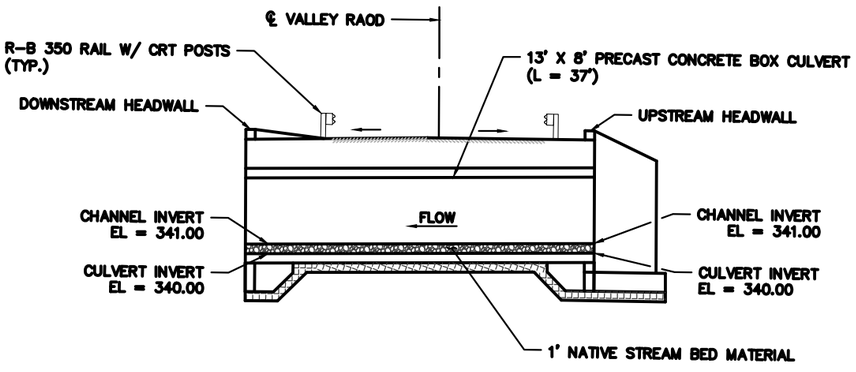
LAYOUT PLAN
SCALE: 1" = 20'-0"

WORKING POINT COORDINATES		
WP	NORTHING	EASTING
WP-1	126971.8336	1513318.9746
WP-2	126953.6666	1513322.1783
WP-3	126935.3957	1513325.3999

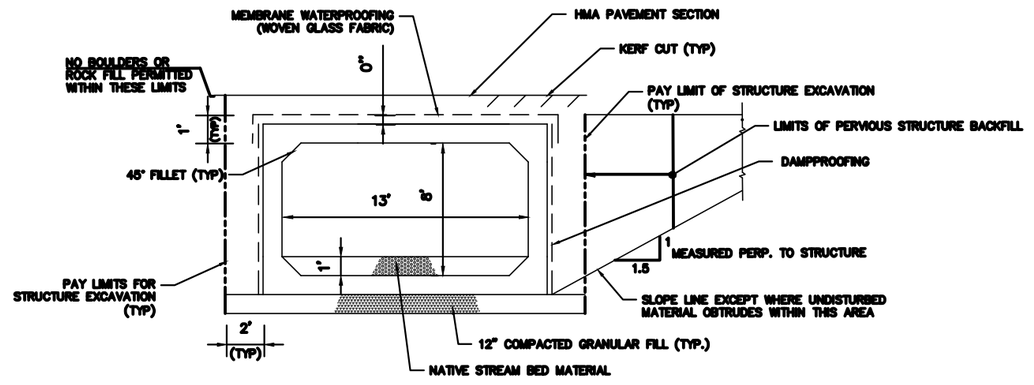
NOTES:

1. FOR COMPLETE BASELINE GEOMETRY, SEE SHEET NO. HWY-1.
2. ROADWAY PROFILE TO MATCH EXISTING.
3. FOR WINGWALL SECTION DETAILS SEE SHEET MDS-3.
4. CUT BITUMINOUS OVERLAY WITH 3" WIDE BY 1½" DEEP KERF AND FILL WITH POURABLE SEALANT. TO BE PAID FOR UNDER THE ITEM "SAWING AND SEALING JOINTS IN BITUMINOUS PAVEMENT.

QUANTITIES		
ITEM	UNITS	TOTALS
STRUCTURE EXCAVATION – EARTH (COMPLETE)	CY	450
STRUCTURE EXCAVATION – ROCK (COMPLETE)	CY	6
HANDLING WATER	LS	1
COMPACTED GRANULAR FILL	CY	30
PERVIOUS STRUCTURE BACKFILL	CY	375
SEDIMENTATION CONTROL SYSTEM	LF	100
SAWING AND SEALING JOINTS IN BIT. CONC. PAVEMENT	LF	70
REMOVAL OF EXISTING CULVERT	LS	1
CLASS 'A' CONCRETE	CY	14
PRECAST CONCRETE WINGWALL	EA	4
13' X 8' PRECAST CONCRETE BOX CULVERT	LF	37
DEFORMED STEEL BARS	LB	1,700
DEFORMED STEEL BARS (EPOXY COATED)	LB	500
DRILLING HOLES AND GROUTING DOWELS	EA	52
MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC)	SY	75
DAMPPROOFING	SY	175



SECTION A-A
SCALE: 3/4" = 1'-0"



TYPICAL CULVERT SECTION
N.T.S.

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36 JOHN STREET
HARTFORD, CT 06106
WWW.FREEMANCOS.COM
(860)251-9550
TOLL FREE:(800)404-5141
FAX:(860)986-7161
ELEVATE YOUR EXPECTATIONS

PREPARED FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

OWNER FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

DENNIS M.QUINT, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-002
VALLEY ROAD OVER MASHENTUCK BROOK
KILLINGLY, CONNECTICUT

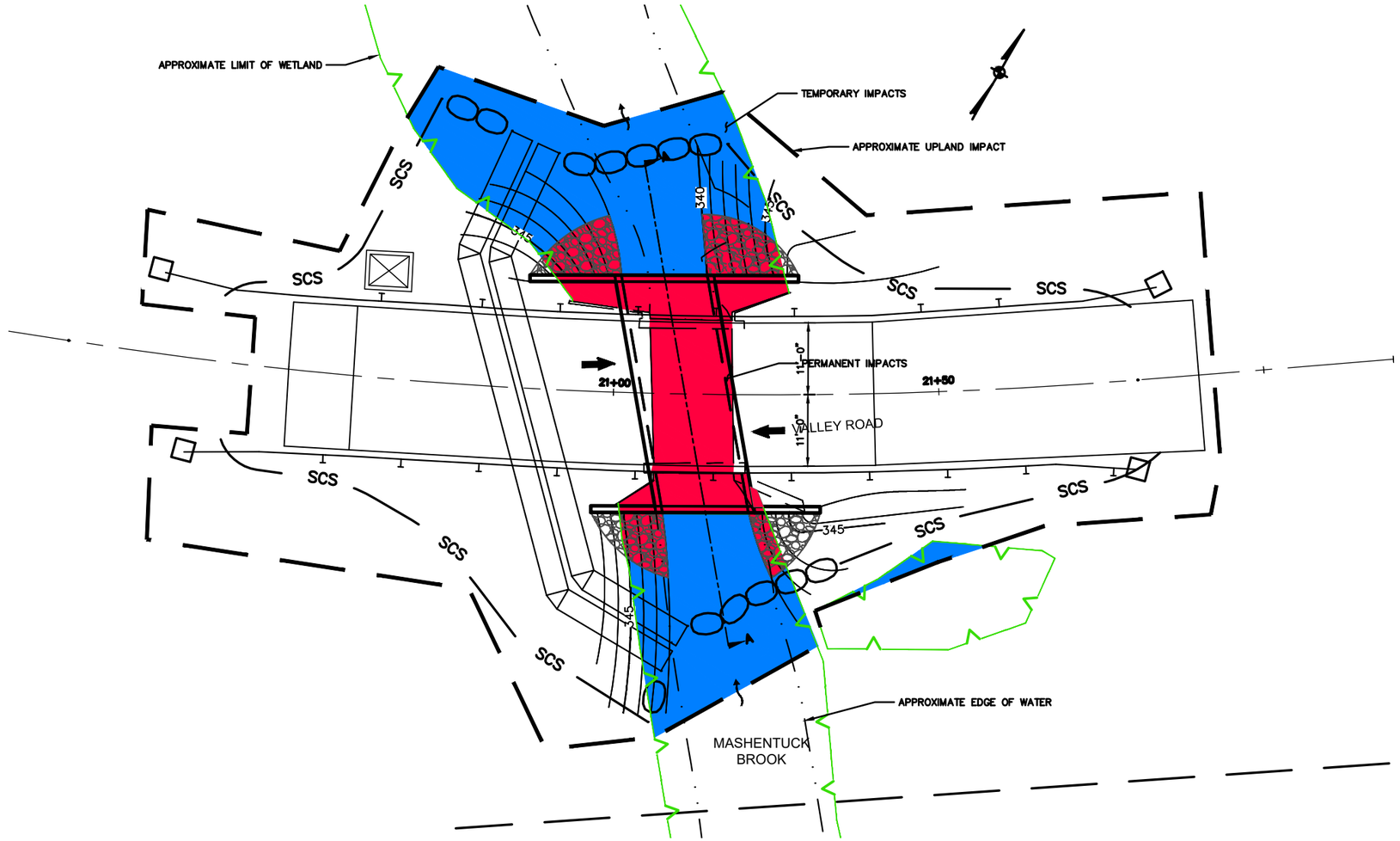
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	02/03/2020
CAD:	HW_MSH_2017_0507_BRG002_ALN

TITLE: LAYOUT PLAN

SHEET NUMBER: S-1.2



PLAN

SCALE: 1/8" = 1'-0"

PERMANENT IMPACTS	
RIPRAP	250 S.F.
EXISTING CULVERT FOOTPRINT	300 S.F.
PROPOSED CULVERT FOOTPRINT	300 S.F.
TOTAL:	850 S.F.

TEMPORARY IMPACTS	
TOTAL:	1700 S.F.

UPLANDS IMPACTS	
TOTAL:	8050 S.F.

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VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

OWNER FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

EDWARD M.QUINT, PE NO. 19128

REPLACEMENT OF BRIDGE No. 68-002
VALLEY ROAD OVER MASHENTUCK BROOK
KILLINGLY, CONNECTICUT

NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017–0507
DATE:	02/03/2020
CAD:	HW_MSH_2017_0507_BRG002_GEN (Impacts)

TITLE: IMPACTS

SHEET NUMBER:

US Army Corps of Engineers ®
New England District

WORK-START NOTIFICATION FORM

(Minimum Notice: Two weeks before work begins)

****

EMAIL TO: michael.s.wierbonics@usace.army.mil and cenae-r@usace.army.mil; or

MAIL TO: Mike Wierbonics
Regulatory Division
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

****

Corps of Engineers Permit No. NAE-2021-00302 was issued to David Capacchione, P.E., Director of Engineering and Facilities, Town of Killingly, Connecticut on August 9, 2022. The permit authorizes the replacement of a deficient bridge (No. 68-002) carrying Valley Road over Mashentuck Brook in Killingly, Connecticut. The project will result in the discharge of approximately 850 square-feet of permanent fill and approximately 1,700 square-feet of temporary fill below the Ordinary High Water (OHW) line of Mashentuck Brook.

The people (e.g., contractor) listed below will do the work, and they understand the permit's conditions and limitations.

PLEASE PRINT OR TYPE

Name of Person/Firm: _____

Business Address: _____

_____

_____

Phone & email: (___) _____ (___) _____ _____

Proposed Work Dates: **Start:** _____ **Finish:** _____

Permittee/Agent Signature: _____ **Date:** _____

Printed Name: _____ **Title:** _____

Date Permit Issued: _____ **Date Permit Expires:** _____

****

FOR USE BY THE CORPS OF ENGINEERS

PM: Mike Wierbonics **Submittals Required:** _____

Inspection Recommendation: _____

US Army Corps of Engineers ®
New England District

COMPLIANCE CERTIFICATION FORM

(Minimum Notice: Permittee must sign and return notification within one month of the completion of work.)

Permit Number: NAE-2021-00302

Project Manager: Mike Wierbonics

Name of Permittee: David Capacchione, P.E., Town of Killingly, Connecticut

Permit Issuance Date: August 9, 2022

Please sign this certification and return it to our office upon completion of the activity.

E-MAIL TO:	cenae-r@usace.army.mil; or
MAIL TO:	Permits and Enforcement Branch B
	U.S. Army Corps of Engineers, New England District
	Regulatory Division
	696 Virginia Road
	Concord, Massachusetts 01742-2751

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit was completed in accordance with the terms and conditions of the above referenced permit, and any required mitigation was completed in accordance with the permit conditions.

Signature of Permittee _____ Date _____

Printed Name _____ Date of Work Completion _____

( ) _____ ( ) _____

Telephone Number Telephone Number

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

August 9, 2022

Regulatory Division
File Number: NAE-2021-00304

David Capacchione, P.E.
Director of Engineering and Facilities
Town of Killingly
172 Main Street
Killingly, Connecticut 06239
(Via email: dcapacchione@killinglyct.gov)

Dear Mr. Capacchione:

The U.S. Army Corps of Engineers (USACE) has reviewed your application for the replacement of the existing bridge Number 68-003. This work will result in the permanent discharge of approximately 100 square-feet (sf) of rip rap and approximately 650sf of twin 35.5-foot-long by 10-foot wide by 7-foot high box culverts with associated wing walls and the temporary discharge of approximately 2,275sf of temporary fill consisting of coffer dams and erosion control barriers below the Ordinary High Water line (OHW) of Whetstone Brook. This work is located on Valley Road over Whetstone Brook in Killingly, Connecticut and is shown on the enclosed plans titled "REPLACEMENT OF BRIDGE No. 68-003 VALLEY ROAD OVER WHETSTONE BROOK KILLINGLY, CONNECTICUT" on four sheets dated "DATE: 10/5/2020".

Based on the information you have provided, we verify that the activity is authorized under General Permits # 19 of the enclosed December 15, 2021, federal permit known as the Connecticut General Permits (GPs). This verification is subject to the following special condition:

This authorization requires you to complete and return the enclosed Work Start Notification Form to this office at least two weeks before the anticipated starting date. You must also complete and return the enclosed Compliance Certification Form within one month following the completion of the authorized work.

Please review the special conditions above and the enclosed GPs carefully, including its general conditions beginning on page 48, to be sure that you and whoever does the work understands this verification's requirements. A copy of the GPs and this verification letter shall be available at the project site throughout the time the work is underway. Performing work within our jurisdiction that is not specifically authorized by this determination, failing to comply with any special condition provided above or all the terms and conditions of the GPs may subject you to the enforcement provisions of our regulations.

This authorization presumes that the work as described above and as shown on your plans noted above is in waters of the U.S.

This authorization expires on December 15, 2026, unless the GPs are modified, suspended, or revoked before then. You must commence or have 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. We recommend that you contact us *before* this permit expires to discuss a permit reissuance. If you change the project plans or construction methods for work within our jurisdiction, please contact us immediately to discuss modification of this authorization. This office must approve any changes before you undertake them.

This authorization does not obviate the need to obtain other Federal, state, or local authorizations required by law.

The Connecticut Department of Energy & Environmental Protection (DEEP) has conditionally granted Water Quality Certification (WQC) for the 2021 CT GPs under Section 401 of the Clean Water Act. This verification that your project is authorized under the CT GPs is valid only after DEEP provides you with written concurrence of eligibility for use of that WQC under the GPs. Work authorized herein may not commence until you receive DEEP concurrence of eligibility. Any adaptive best management practices prescribed by DEEP in your written concurrence of eligibility are hereby incorporated by reference into this GP authorization and will remain in full force and effect. In the event the DEEP denies eligibility for the project above, this GP authorization becomes null and void.

We continually strive to improve our customer service. To better serve you, we would appreciate your completing our Customer Service Survey located at https://regulatory.ops.usace.army.mil/customer-service-survey/.

Please contact Mike Wierbonics of my staff, at (978) 318-8723 or at michael.s.wierbonics@usace.army.mil if you have any questions.

Sincerely,

Kevin R Kotelly

Kevin R. Kotelly, P.E.
Chief, Permits & Enforcement Branch
Regulatory Division

Enclosures

cc:
William Sigmund, CT DEEP, william.sigmund@ct.gov
Nate Margason, U.S. EPA, Region 1, margason.nathan@epa.gov
Luis Bucheli, Freeeman Companies, LLC, lbucheli@freemancos.com
Dennis Quinit, Freeman Companies, LLC, dquinit@freemancos.com
Jeffrey LeBeau, Freeman Companies, LLC, jlebeau@freemancos.com

US Army Corps of Engineers ®
New England District

WORK-START NOTIFICATION FORM

(Minimum Notice: Two weeks before work begins)

****

EMAIL TO: michael.s.wierbonics@usace.army.mil and cenae-r@usace.army.mil; or

MAIL TO: Mike Wierbonics
Regulatory Division
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

****

Corps of Engineers Permit No. NAE-2021-00304 was issued to David Capacchione, P.E., Director of Engineering and Facilities, Town of Killingly, Connecticut on August 9, 2022. The permit authorizes the replacement of a deficient bridge (No. 68-003) carrying Valley Road over Whetstone Brook in Killingly, Connecticut. The project will result in the discharge of approximately 750 square-feet of permanent fill and approximately 2,275 square-feet of temporary fill below the Ordinary High Water (OHW) line of Whetstone Brook.

The people (e.g., contractor) listed below will do the work, and they understand the permit's conditions and limitations.

PLEASE PRINT OR TYPE

Name of Person/Firm: _____

Business Address: _____

_____

_____

Phone & email: (___) _____ (___) _____ _____

Proposed Work Dates: **Start:** _____ **Finish:** _____

Permittee/Agent Signature: _____ **Date:** _____

Printed Name: _____ **Title:** _____

Date Permit Issued: _____ **Date Permit Expires:** _____

****

FOR USE BY THE CORPS OF ENGINEERS

PM: Mike Wierbonics **Submittals Required:** _____

Inspection Recommendation: _____

US Army Corps of Engineers ®
New England District

COMPLIANCE CERTIFICATION FORM

(Minimum Notice: Permittee must sign and return notification within one month of the completion of work.)

Permit Number: NAE-2021-00304

Project Manager: Mike Wierbonics

Name of Permittee: David Capacchione, P.E., Dir. of Engineering and Facilities, Town of Killingly, Connecticut

Permit Issuance Date: August 8, 2022

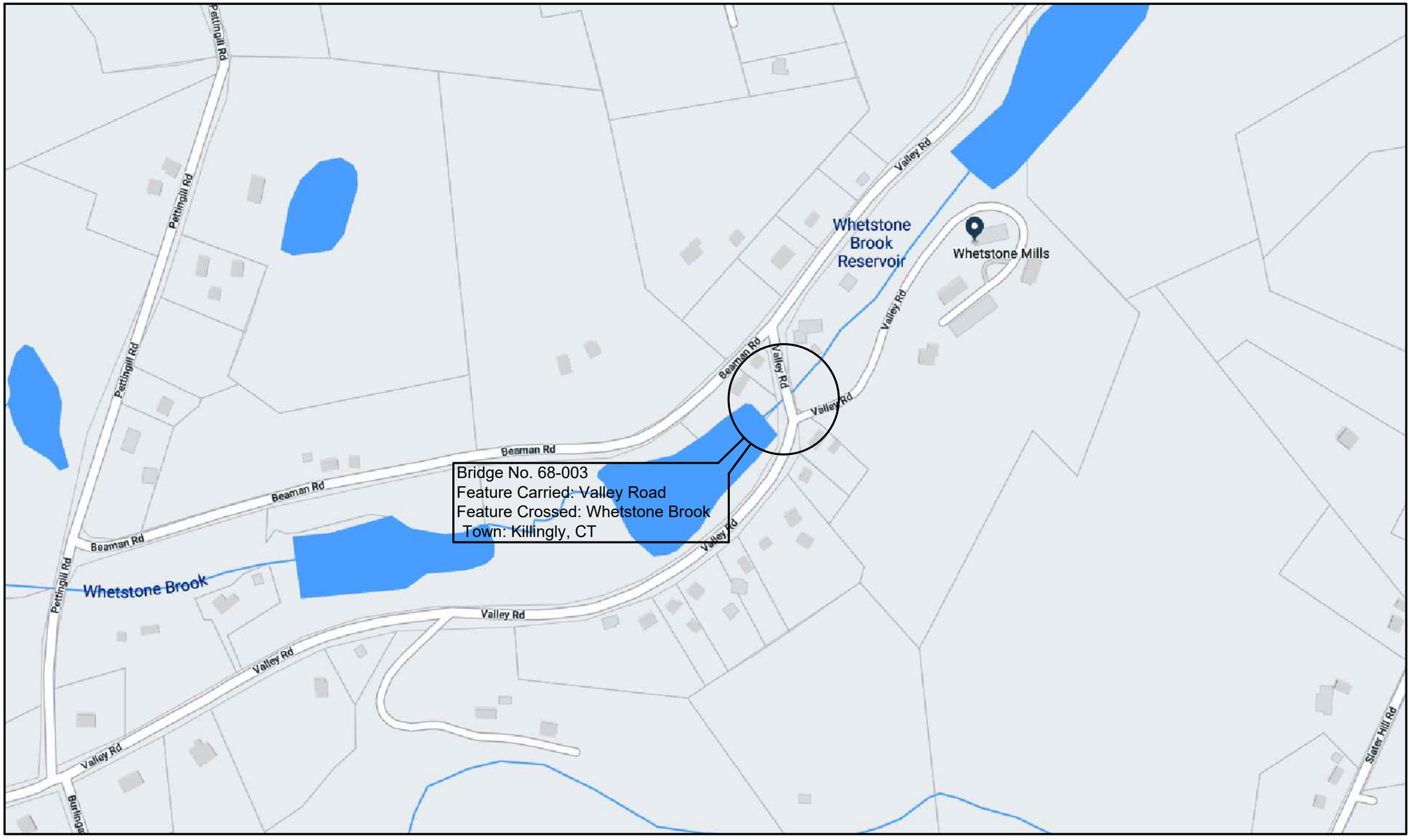
Please sign this certification and return it to our office upon completion of the activity.

E-MAIL TO:	cenae-r@usace.army.mil; or	
MAIL TO:	Permits and Enforcement Branch B	
	U.S. Army Corps of Engineers, New England District	
	Regulatory Division	
	696 Virginia Road	
	Concord, Massachusetts 01742-2751	

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit was completed in accordance with the terms and conditions of the above referenced permit, and any required mitigation was completed in accordance with the permit conditions.

Signature of Permittee	Date
Printed Name	Date of Work Completion
( ) Telephone Number	( ) Telephone Number



SITE LOCATION MAP

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VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

OWNER FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

DENNIS M.QUINET, PE NO. 19108

REPLACEMENT OF BRIDGE No. 68-003
VALLEY ROAD OVER WHETSTONE BROOK
KILLINGLY, CONNECTICUT

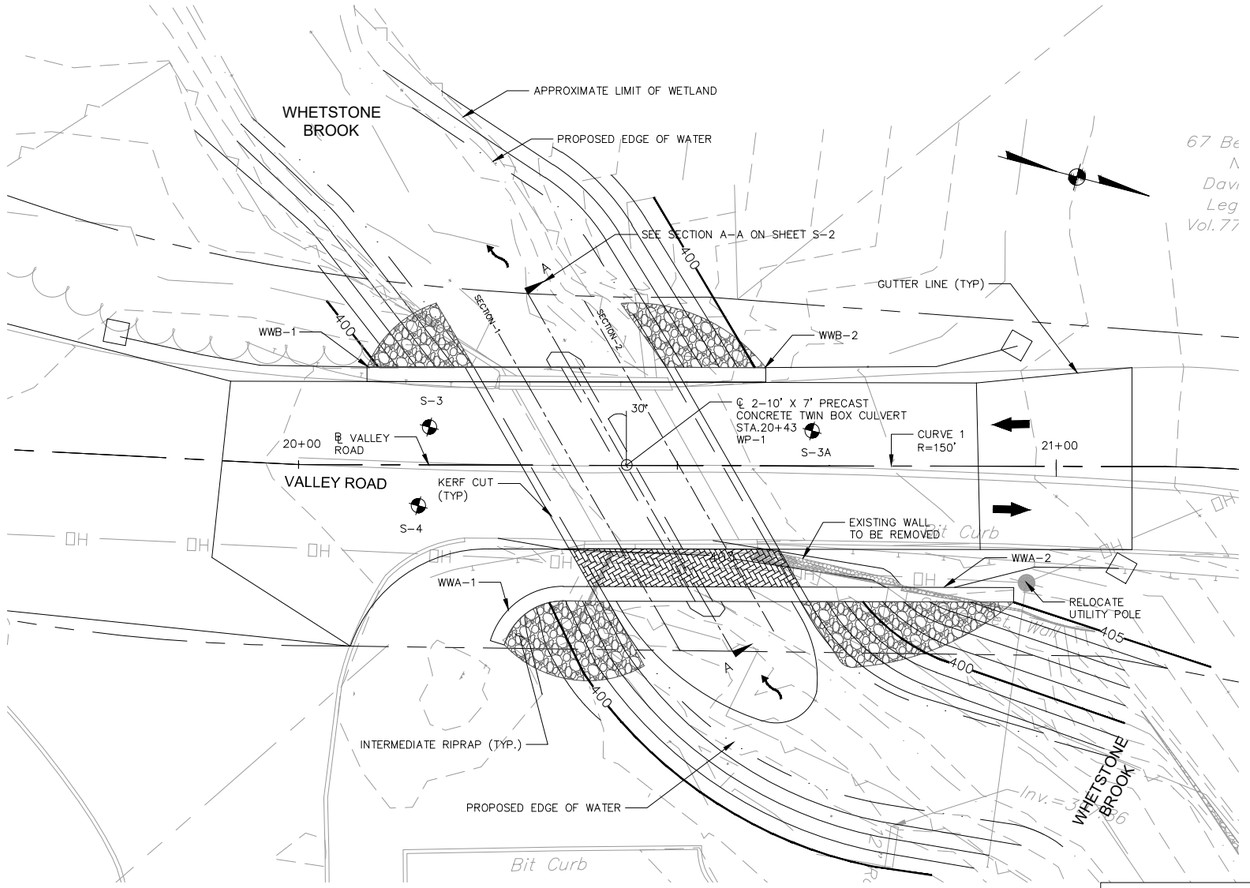
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	KM
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	10/05/2020
CAD:	Location Map B#68-003

TITLE:

SHEET NUMBER:



PLAN

SCALE: 1" = 20'–0"

UTILITY NOTES

1. THIS PROJECT INVOLVES THE PRESENCE OF OVERHEAD UTILITY LINES WITHIN THE LIMITS AND FOOTPRINT OF THE PROJECT. WHILE NO WORK INVOLVING OR IMPACTING THESE UTILITIES ARE ANTICIPATED, THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL WORK WITH THE APPROPRIATE UTILITY COMPANY (EVER SOURCE) AND FOR PROVIDING TEMPORARY PROTECTION AND/OR SUPPORT OF THESE FACILITIES IF AND AS REQUIRED BY THE UTILITY COMPANY.
2. THE CONTRACTOR SHALL DEVELOP ITS ERECTION SCHEME IN CONFORMANCE WITH LIMITATIONS AND RESTRICTIONS ASSOCIATED WITH THE OVERHEAD UTILITY LINES AND AS REQUIRED BY THE APPROPRIATE UTILITY COMPANY.
3. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANY WITH REGARDS TO POTENTIAL RELOCATION OR TEMPORARY SUPPORT OF THEIR FACILITIES. THE CONTRACTOR SHALL IDENTIFY POTENTIAL UTILITY IMPACTS ASSOCIATED WITH THEIR WORK, IF ANY, PRIOR TO START OF CONSTRUCTION AND NOTIFY THE APPROPRIATE UTILITY COMPANY ACCORDINGLY.

NOTICE TO BRIDGE INSPECTORS

IT IS RECOMMENDED THAT CTDOT'S BRIDGE SAFETY PROCEDURES BE FOLLOWED WHEN INSPECTING THIS BRIDGE FOR, BUT NOT LIMITED TO, ALL APPROPRIATE COMPONENTS INDICATED IN THE GOVERNING MANUALS FOR BRIDGE INSPECTION. ATTENTION MUST BE GIVEN TO INSPECTING THE FOLLOWING SPECIAL COMPONENTS AND DETAILS. (THE LISTING OF COMPONENTS FOR SPECIFIC ATTENTION SHALL NOT BE CONSTRUED TO REDUCE THE IMPORTANCE OF INSPECTION OF ANY OTHER COMPONENT OF THE STRUCTURE.) THE FREQUENCY OF INSPECTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE GOVERNING MANUALS FOR BRIDGE INSPECTION, UNLESS OTHERWISE DIRECTED BY THE MANAGER OF BRIDGE SAFETY AND EVALUATIONS.

COMPONENT OR DETAIL	STRUCTURE SHEET REFERENCE
NONE	–
	–

HYDRAULIC DATA

HYDRAULIC AREA	5.7 SQ MI
DESIGN FREQUENCY	100 YEAR
DESIGN DISCHARGE	1180 CFS
AVERAGE DAILY FLOW	10.4 CFS
AVERAGE DAILY FLOW ELEVATION	395.63
UPSTREAM DESIGN WATER SURFACE ELEVATION	402.49
DOWN STREAM DESIGN WATER SURFACE ELEVATION	399.70
2 YEAR DESIGN STORM WATER ELEVATION	397.59

TRANSPORTATION DATA

MEMBER	SHIPPING LENGTH	SHIPPING HEIGHT	SHIPPING WIDTH	SHIPPING WEIGHT
BOX CULVERT SECTION–1	12'–0"	8'–0"	9'–0"	46,500 lbs
BOX CULVERT SECTION–2	12'–0"	9'–0"	9'–0"	34,900 lbs
WINGWALL	13'–0"	7'–0"	9'–0"	37,000 lbs

BORING LEGEND

S–1 APPROXIMATE BORING LOCATION

GENERAL NOTES

SPECIFICATIONS: CONNECTICUT DEPARTMENT OF TRANSPORTATION FORM 817, INCLUDING SUPPLEMENTAL SPECIFICATIONS DATED JANUARY, 2018 AND SPECIAL PROVISIONS.

DESIGN SPECIFICATIONS: AASHTO LRFD SPECIFICATIONS FOR HIGHWAY BRIDGES, 8TH EDITION AS SUPPLEMENTED BY THE CONNECTICUT DEPARTMENT OF TRANSPORTATION BRIDGE MANUAL (2003) EDITION WITH REVISIONS UP TO AND INCLUDING 2011.

ALLOWABLE DESIGN STRESSES:

CLASS "A" CONCRETE:	f'c =	3,000	psi
CLASS "50" CONCRETE:	f'c =	5,000	psi
REINFORCEMENT (ASTM 615 GRADE 60)	fy =	60,000	psi

LIVE LOAD:

STANDARD DESIGN VEHICLE: AASHTO HL–93
PERMIT (OVERLOAD) VEHICLES: CONNDOT P204 (8–AXLE)
CONNDOT P380 (19–AXLE)

SALVAGE: NONE

DIMENSIONS AND ELEVATIONS: WHEN DECIMAL DIMENSIONS AND ELEVATIONS ARE GIVEN TO LESS THAN THREE DECIMAL PLACES, THE OMITTED DIGITS SHALL BE ASSUMED TO BE ZERO. ALL ELEVATIONS ARE GIVEN IN DECIMAL FEET AND ARE BASED ON NAVD 88.

EXISTING DIMENSIONS: DIMENSIONS OF THE EXISTING STRUCTURE SHOWN ON THESE PLANS ARE FOR GENERAL REFERENCE ONLY AND ARE NOT GUARANTEED. THE CONTRACTOR SHALL TAKE ALL FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF THE FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY. WHEN SHOP DRAWINGS BASED ON FIELD MEASUREMENTS ARE SUBMITTED FOR APPROVAL, THE FIELD MEASUREMENTS SHALL ALSO BE SUBMITTED FOR REFERENCE BY THE REVIEWER.

UTILITIES: THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES LOCATED WITHIN THE VICINITY OF THE SITE DURING CONSTRUCTION. THE METHOD OF SUPPORTING AND PROTECTING UTILITIES SELECTED BY THE CONTRACTOR MUST BE APPROVED BY THE UTILITY COMPANY. UTILITY MODIFICATIONS SHALL BE MADE BY THE RESPECTIVE UTILITY COMPANIES EXCEPT WHERE NOTED OTHERWISE.

CONCRETE NOTES

CLASS "A" CONCRETE: CLASS "A" CONCRETE SHALL BE USED FOR THE CUT–OFF WALLS, RETURN WALLS, HEADWALLS AND WINGWALL FOOTINGS.

CLASS "50" CONCRETE: CLASS "50" CONCRETE SHALL BE USED FOR THE PRECAST CONCRETE BOX CULVERT AND PRECAST CONCRETE WINGWALL STEMS.

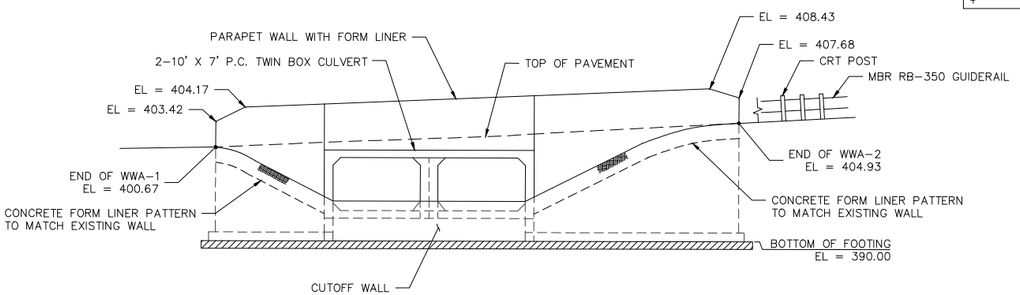
REINFORCEMENT: ALL REINFORCEMENT SHALL BE ASTM A615 GRADE 60.

EXPOSED EDGES: EXPOSED EDGES OF CONCRETE SHALL BE BEVELED 1" X 1", UNLESS DIMENSIONED OTHERWISE.

EPOXY COATED REINFORCEMENT BARS: ALL REINFORCEMENT IN THE PRECAST CONCRETE BOX CULVERT SHALL BE EPOXY COATED AND INCLUDED IN THE PAY ITEM "20'X7' PRECAST CONCRETE BOX CULVERT". ALL REINFORCEMENT IN THE PRECAST CONCRETE WINGWALLS SHALL BE EPOXY COATED AND INCLUDED IN THE PAY ITEM "PRECAST CONCRETE WINGWALLS". ALL REINFORCEMENT IN THE CUT–OFF WALLS, AND RETURN WALLS SHALL BE PAID FOR IN THE PAY ITEM "DEFORMED STEEL BARS". ALL REINFORCEMENT IN THE HEADWALLS SHALL BE EPOXY COATED AND PAID FOR UNDER THE ITEM "DEFORMED STEEL BARS (EPOXY COATED)".

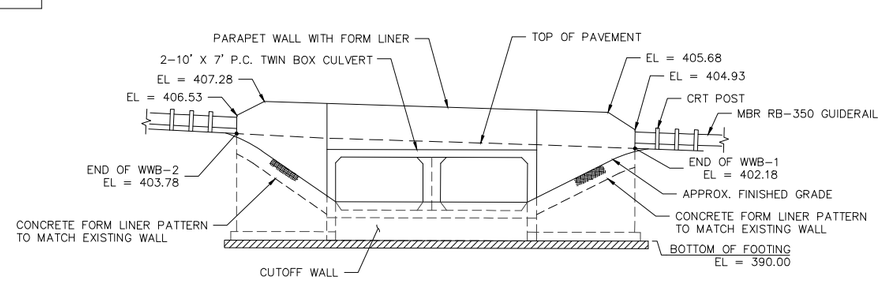
CONCRETE COVER: ALL REINFORCEMENT SHALL HAVE 2" COVER UNLESS DIMENSIONED OTHERWISE.

PREFORMED EXPANSION JOINT FILLER: THE COST OF FURNISHING AND INSTALLING PREFORMED EXPANSION JOINT FILLERS SHALL BE INCLUDED IN THE ITEM "CLASS 'A' CONCRETE".



UPSTREAM ELEVATION

SCALE: 1" = 20'–0"



DOWNSTREAM ELEVATION

SCALE: 1" = 20'–0"

FREEMAN COMPANIES
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CONNECTICUT 06239

DENNIS M.QUINT, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-003
VALLEY ROAD OVER WHETSTONE BROOK
KILLINGLY, CONNECTICUT

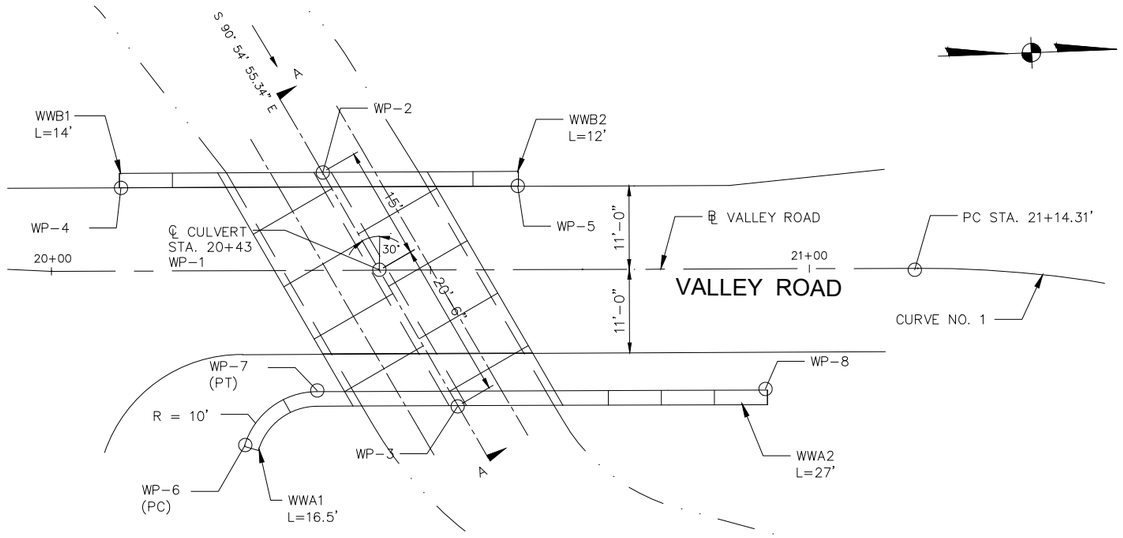
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	KM
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017–0507
DATE:	10/05/2020
CAD:	HW_MSH_2017_0507_BRG003_GEN

TITLE: GENERAL PLAN

SHEET NUMBER: S-2.1



LAYOUT PLAN

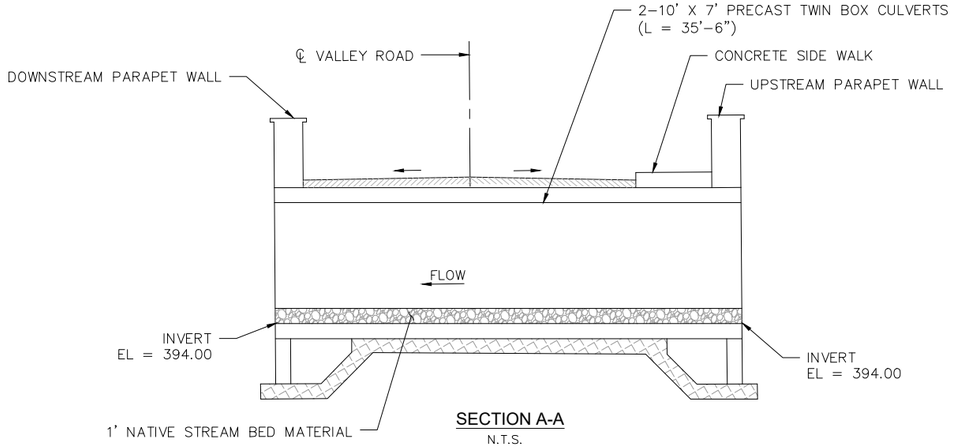
SCALE: 1" = 20'-0"

WORKING POINT COORDINATES		
WP	NORTHING	EASTING
WP-1	868379.2226	1250594.5198
WP-2	868370.3781	1250590.4256
WP-3	868395.5243	1250615.5987
WP-4	868344.9940	1250599.2626
WP-5	868395.8103	1250585.5193
WP-6	868377.0778	1250618.5760
WP-7	868369.6815	1250627.9522
WP-8	868434.3781	1250603.1484

NOTES:

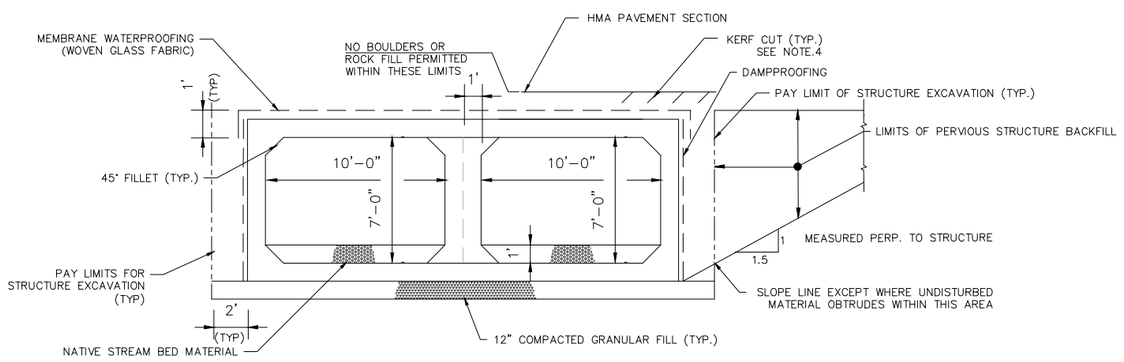
1. FOR COMPLETE BASELINE GEOMETRY, SEE SHEET NO. HWY-1.
2. ROADWAY PROFILE TO MATCH EXISTING.
3. FOR WINGWALL SECTION DETAILS SEE SHEET MDS-3.
4. CUT BITUMINOUS OVERLAY WITH $\frac{3}{8}$" WIDE BY $1\frac{3}{4}$" DEEP KERF AND FILL WITH POURABLE SEALANT. TO BE PAID FOR UNDER THE ITEM "SAWING AND SEALING JOINTS IN BITUMINOUS PAVEMENT.

QUANTITIES		
ITEM	UNITS	TOTALS
STRUCTURE EXCAVATION – EARTH (COMPLETE)	CY	300
STRUCTURE EXCAVATION – ROCK (COMPLETE)	CY	14
HANDLING WATER	LS	1
COMPACTED GRANULAR FILL	CY	40
PERVIOUS STRUCTURE BACKFILL	CY	380
SAWING AND SEALING JOINTS IN BIT. CONC. PAVEMENT	LF	100
REMOVAL OF EXISTING CULVERT	LS	1
CLASS 'A' CONCRETE	CY	20
CLASS 'F' CONCRETE	CY	25
PRECAST CONCRETE WINGWALL	EA	4
2–10' X 7' PRECAST CONCRETE BOX CULVERTS	LF	35.5
DEFORMED STEEL BARS	LB	2,000
DEFORMED STEEL BARS (EPOXY COATED)	LB	1500
DRILLING HOLES AND GROUTING DOWELS	EA	36
MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC)	SY	125
DAMPPROOFING	SY	175
CONCRETE FORM LINER	SF	1350



SECTION A-A

N.T.S.



TYPICAL CULVERT SECTION

N.T.S.

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PREPARED FOR
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VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

OWNER FOR
TOWN OF KILLINGLY
VALLEY ROAD
KILLINGLY,
CONNECTICUT 06239

DENNIS MCQUINT, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-003
VALLEY ROAD OVER WHETSTONE BROOK
KILLINGLY, CONNECTICUT

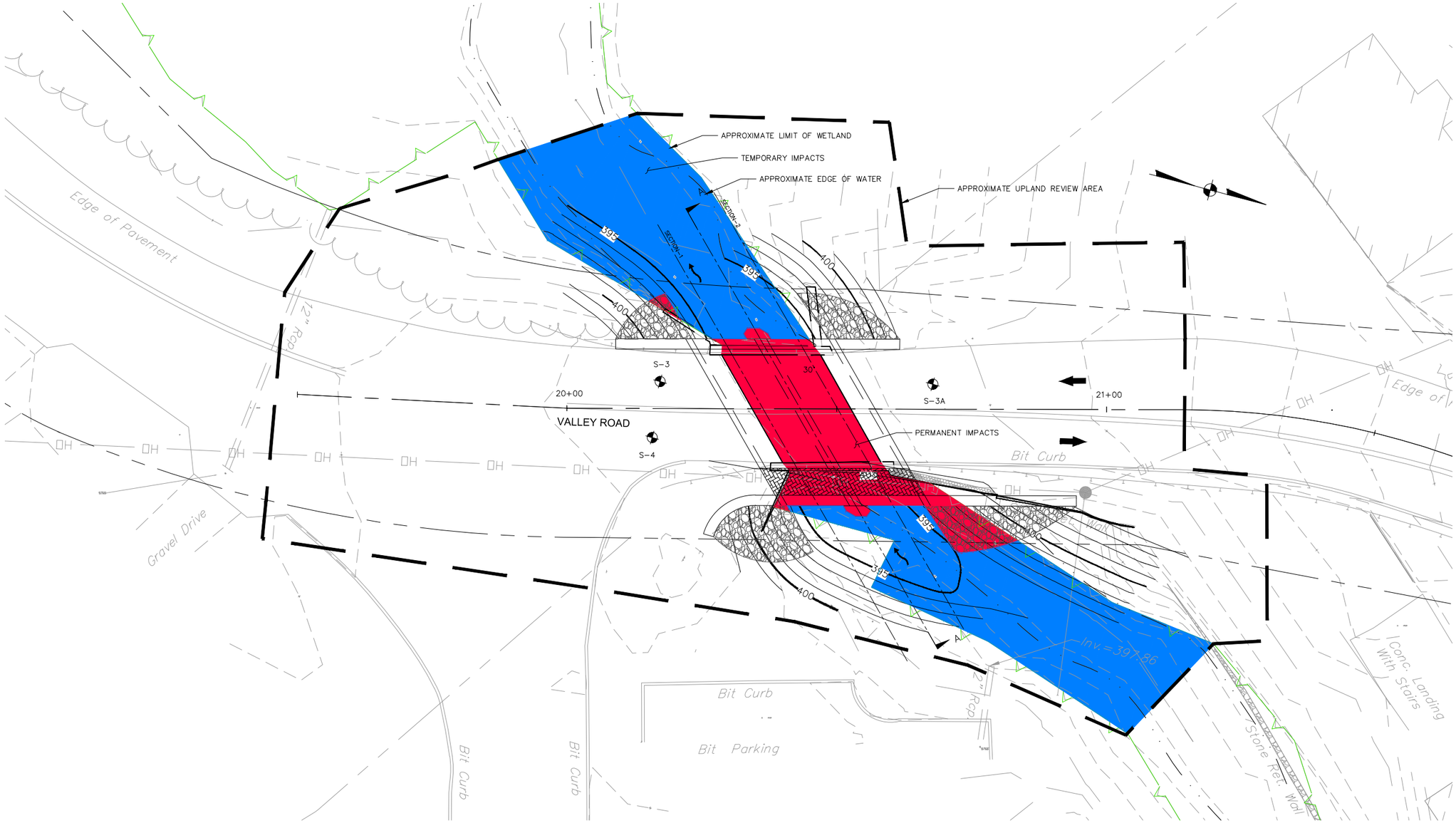
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED: YL
DRAFTED: KM
CHECKED: DQ
APPROVED: PAR
SCALE: AS NOTED
PROJECT NO.: 2017-0507
DATE: 10/05/2020
CAD: HW_MSH_2017_0507_BRG003_ALN

TITLE: LAYOUT PLAN

SHEET NUMBER: S-2.2



PERMANENT IMPACTS	
RIPRAP	100 S.F.
EXISTING CULVERT FOOTPRINT	425 S.F.
PROPOSED CULVERT FOOTPRINT	225 S.F.
TOTAL:	750 S.F.

TEMPORARY IMPACTS	
TOTAL:	2,275 S.F.

UPLANDS IMPACTS	
TOTAL:	11,200 S.F.

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CONNECTICUT 06239

DENNIS M.QUINT, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-003
VALLEY ROAD OVER WHETSTONE BROOK
KILLINGLY, CONNECTICUT

NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	KM
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	10/05/2020
CAD:	hw_msh_2017_0507_brg003_gen (impacts)

TITLE:
GENERAL PLAN

SHEET NUMBER:
S-2.1

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

August 10, 2022

Regulatory Division
File Number: NAE-2021-00306

David Capacchione, P.E.
Director of Engineering and Facilities
Town of Killingly
172 Main Street
Killingly, Connecticut 06239
(Via email: dcapacchione@killinglyct.gov)

Dear Mr. Capacchione:

The U.S. Army Corps of Engineers (USACE) has reviewed your application for the replacement of the existing bridge Number 68-009. This work will result in the permanent discharge of approximately 200 square-feet (sf) of rip rap and approximately 575sf of pre-cast box culvert measuring 6-feet wide by 15-feet long and the temporary discharge of approximately 4,050sf of temporary fill consisting of coffer dams and erosion control barriers below the Ordinary High Water line (OHW) of an unnamed stream associated with Bog Meadow Reservoir. This work is located on Bear Hill Road over an unnamed brook in Killingly, Connecticut and is shown on the enclosed plans titled "REPLACEMENT OF BRIDGE No. 68-009 BEAR HILL ROAD OVER UNNAMED BROOK KILLINGLY, CONNECTICUT" on four sheets dated "DATE: 02/05/2020".

Based on the information you have provided, we verify that the activity is authorized under General Permits # 19 of the enclosed December 15, 2021, federal permit known as the Connecticut General Permits (GPs). This verification is subject to the following special condition:

This authorization requires you to complete and return the enclosed Work Start Notification Form to this office at least two weeks before the anticipated starting date. You must also complete and return the enclosed Compliance Certification Form within one month following the completion of the authorized work.

Please review the special conditions above and the enclosed GPs carefully, including its general conditions beginning on page 48, to be sure that you and whoever does the work understands this verification's requirements. A copy of the GPs and this verification letter shall be available at the project site throughout the time the work is underway. Performing work within our jurisdiction that is not specifically authorized by this determination, failing to comply with any special condition provided above or all the terms and conditions of the GPs may subject you to the enforcement provisions of our regulations.

This authorization presumes that the work as described above and as shown on your plans noted above is in waters of the U.S.

This authorization expires on December 15, 2026, unless the GPs are modified, suspended, or revoked before then. You must commence or have 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. We recommend that you contact us *before* this permit expires to discuss a permit reissuance. If you change the project plans or construction methods for work within our jurisdiction, please contact us immediately to discuss modification of this authorization. This office must approve any changes before you undertake them.

This authorization does not obviate the need to obtain other Federal, state, or local authorizations required by law.

The Connecticut Department of Energy & Environmental Protection (DEEP) has conditionally granted Water Quality Certification (WQC) for the 2021 CT GPs under Section 401 of the Clean Water Act. This verification that your project is authorized under the CT GPs is valid only after DEEP provides you with written concurrence of eligibility for use of that WQC under the GPs. Work authorized herein may not commence until you receive DEEP concurrence of eligibility. Any adaptive best management practices prescribed by DEEP in your written concurrence of eligibility are hereby incorporated by reference into this GP authorization and will remain in full force and effect. In the event the DEEP denies eligibility for the project above, this GP authorization becomes null and void.

We continually strive to improve our customer service. To better serve you, we would appreciate your completing our Customer Service Survey located at https://regulatory.ops.usace.army.mil/customer-service-survey/.

Please contact Mike Wierbonics of my staff, at (978) 318-8723 or at michael.s.wierbonics@usace.army.mil if you have any questions.

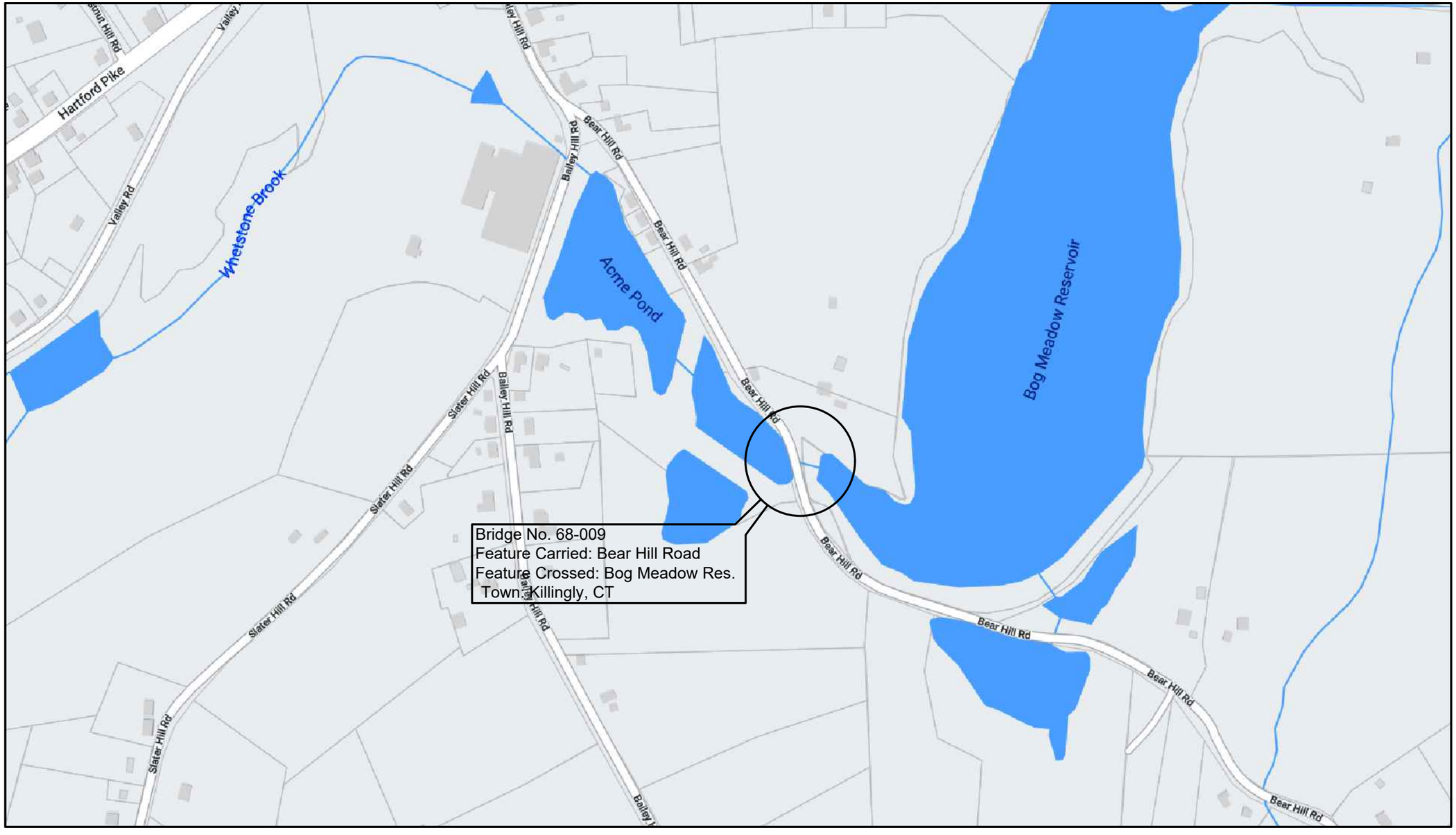
Sincerely,

Kevin R Kotelly

Kevin R. Kotelly, P.E.
Chief, Permits & Enforcement Branch
Regulatory Division

Enclosures

cc:
William Sigmund, CT DEEP, william.sigmund@ct.gov
Nate Margason, U.S. EPA, Region 1, margason.nathan@epa.gov
Luis Bucheli, Freeeman Companies, LLC, lbucheli@freemancos.com
Dennis Quinit, Freeman Companies, LLC, dquinit@freemancos.com
Jeffrey LeBeau, Freeman Companies, LLC, jlebeau@freemancos.com



SITE LOCATION MAP

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OWNER FOR
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BEAR HILL ROAD
KILLINGLY,
CONNECTICUT 06239

DENNIS M. GUINT, PE NO. 19108

REPLACEMENT OF BRIDGE No. 68-009
BEAR HILL ROAD OVER UNNAMED BROOK
KILLINGLY, CONNECTICUT

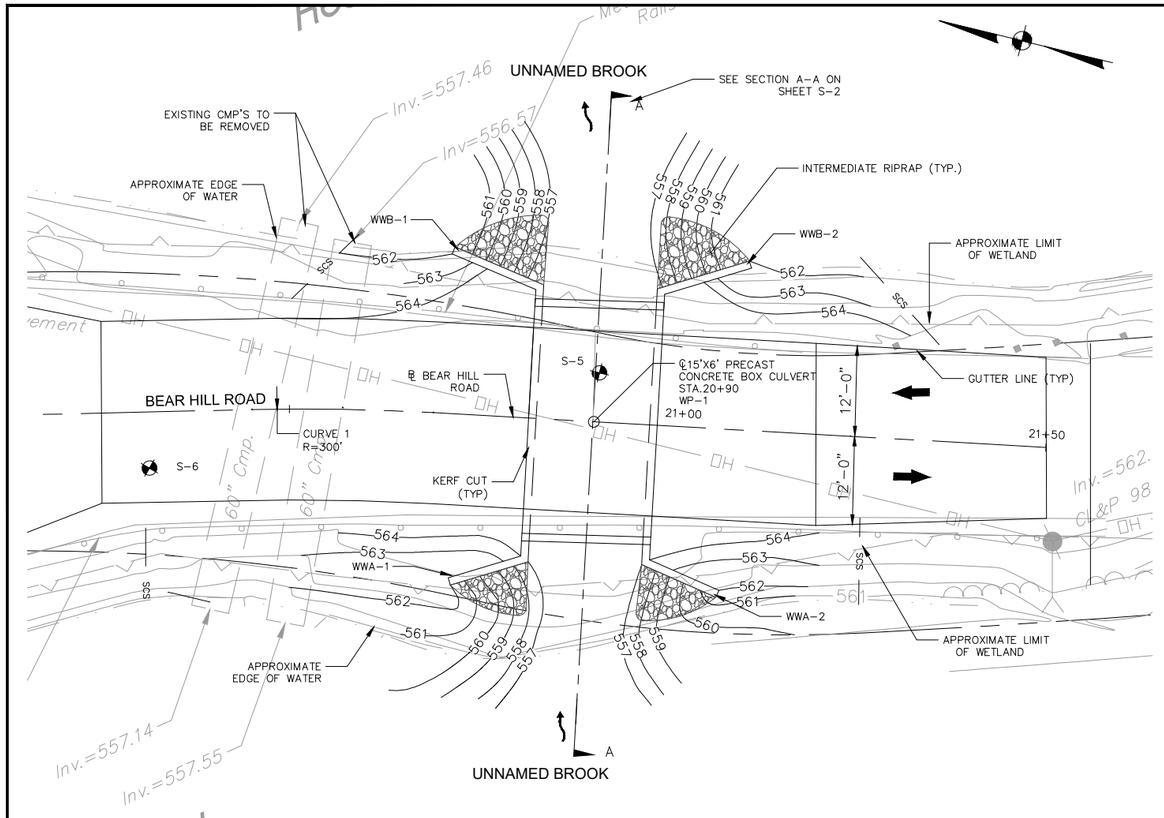
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	NOT TO SCALE
PROJECT NO.:	2017-0507
DATE:	06/14/2019
CAD: Location Map Bj68-009	

TITLE:

SHEET NUMBER:



PLAN

SCALE: 1" = 20'–0"

UTILITY NOTES

1. THIS PROJECT INVOLVES THE PRESENCE OF OVERHEAD UTILITY LINES WITHIN THE LIMITS AND FOOTPRINT OF THE PROJECT. WHILE NO WORK INVOLVING OR IMPACTING THESE UTILITIES ARE ANTICIPATED, THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL WORK WITH THE APPROPRIATE UTILITY COMPANY (EVER SOURCE) AND FOR PROVIDING TEMPORARY PROTECTION AND/OR SUPPORT OF THESE FACILITIES IF AND AS REQUIRED BY THE UTILITY COMPANY.
2. THE CONTRACTOR SHALL DEVELOP ITS ERECTION SCHEME IN CONFORMANCE WITH LIMITATIONS AND RESTRICTIONS ASSOCIATED WITH THE OVERHEAD UTILITY LINES AND AS REQUIRED BY THE APPROPRIATE UTILITY COMPANY.
3. THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANY WITH REGARDS TO POTENTIAL RELOCATION OR TEMPORARY SUPPORT OF THEIR FACILITIES. THE CONTRACTOR SHALL IDENTIFY POTENTIAL UTILITY IMPACTS ASSOCIATED WITH THEIR WORK, IF ANY, PRIOR TO START OF CONSTRUCTION AND NOTIFY THE APPROPRIATE UTILITY COMPANY ACCORDINGLY.

NOTICE TO BRIDGE INSPECTORS

IT IS RECOMMENDED THAT CONNDOT'S BRIDGE SAFETY PROCEDURES BE FOLLOWED WHEN INSPECTING THIS BRIDGE FOR, BUT NOT LIMITED TO, ALL APPROPRIATE COMPONENTS INDICATED IN THE GOVERNING MANUALS FOR BRIDGE INSPECTION. ATTENTION MUST BE GIVEN TO INSPECTING THE FOLLOWING SPECIAL COMPONENTS AND DETAILS. (THE LISTING OF COMPONENTS FOR SPECIFIC ATTENTION SHALL NOT BE CONSTRUED TO REDUCE THE IMPORTANCE OF INSPECTION OF ANY OTHER COMPONENT OF THE STRUCTURE.) THE FREQUENCY OF INSPECTION OF THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE GOVERNING MANUALS FOR BRIDGE INSPECTION, UNLESS OTHERWISE DIRECTED BY THE MANAGER OF BRIDGE SAFETY AND EVALUATIONS.

COMPONENT OR DETAIL	STRUCTURE SHEET REFERENCE
NONE	–
	–

GENERAL NOTES

SPECIFICATIONS: CONNECTICUT DEPARTMENT OF TRANSPORTATION INCLUDING FORM 817, SUPPLEMENTAL SPECIFICATIONS DATED JANUARY, 2018 AND SPECIAL PROVISIONS.

DESIGN SPECIFICATIONS: AASHTO LRFD SPECIFICATIONS FOR HIGHWAY BRIDGES, 7TH EDITION (2013) AS SUPPLEMENTED BY THE CONNECTICUT DEPARTMENT OF TRANSPORTATION BRIDGE MANUAL (2003) EDITION WITH REVISIONS UP TO AND INCLUDING 2011.

ALLOWABLE DESIGN STRESSES:

CLASS "A" CONCRETE:	f'c =	3,000	psi
CLASS "50" CONCRETE:	f'c =	5,000	psi
REINFORCEMENT (ASTM 615 GRADE 60)	fy =	60,000	psi

LIVE LOAD:

STANDARD DESIGN VEHICLE:	AASHTO HL–93
PERMIT (OVERLOAD) VEHICLES:	CONNDOT P204 (8–AXLE)
	CONNDOT P380 (19–AXLE)

SALVAGE: NONE

DIMENSIONS AND ELEVATIONS: WHEN DECIMAL DIMENSIONS AND ELEVATIONS ARE GIVEN TO LESS THAN THREE DECIMAL PLACES, THE OMITTED DIGITS SHALL BE ASSUMED TO BE ZERO. ALL ELEVATIONS ARE GIVEN IN DECIMAL FEET AND ARE BASED ON NAVD 88.

EXISTING DIMENSIONS: DIMENSIONS OF THE EXISTING STRUCTURE SHOWN ON THESE PLANS ARE FOR GENERAL REFERENCE ONLY AND ARE NOT GUARANTEED. THE CONTRACTOR SHALL TAKE ALL FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF THE FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY. WHEN SHOP DRAWINGS BASED ON FIELD MEASUREMENTS ARE SUBMITTED FOR APPROVAL, THE FIELD MEASUREMENTS SHALL ALSO BE SUBMITTED FOR REFERENCE BY THE REVIEWER.

UTILITIES: THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES LOCATED WITHIN THE VICINITY OF THE SITE DURING CONSTRUCTION. THE METHOD OF SUPPORTING AND PROTECTING UTILITIES SELECTED BY THE CONTRACTOR MUST BE APPROVED BY THE UTILITY COMPANY. UTILITY MODIFICATIONS SHALL BE MADE BY THE RESPECTIVE UTILITY COMPANIES EXCEPT WHERE NOTED OTHERWISE.

CONCRETE NOTES

CLASS "A" CONCRETE: CLASS "A" CONCRETE SHALL BE USED FOR THE CUT–OFF WALLS, RETURN WALLS, HEADWALLS AND WINGWALL FOOTINGS.

CLASS "50" CONCRETE: CLASS "50" CONCRETE SHALL BE USED FOR THE PRECAST CONCRETE BOX CULVERT AND PRECAST CONCRETE WINGWALL STEMS.

REINFORCEMENT: ALL REINFORCEMENT SHALL BE ASTM A615 GRADE 60.

EXPOSED EDGES: EXPOSED EDGES OF CONCRETE SHALL BE BEVELED 1" X 1", UNLESS DIMENSIONED OTHERWISE.

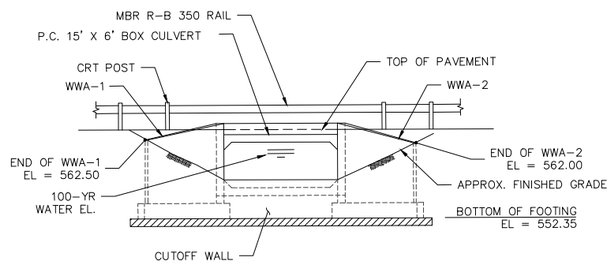
EPOXY COATED REINFORCEMENT BARS: ALL REINFORCEMENT IN THE PRECAST CONCRETE BOX CULVERT SHALL BE EPOXY COATED AND INCLUDED IN THE PAY ITEM "15'X6' PRECAST CONCRETE BOX CULVERT". ALL REINFORCEMENT IN THE PRECAST CONCRETE WINGWALLS SHALL BE EPOXY COATED AND INCLUDED IN THE PAY ITEM "PRECAST CONCRETE WINGWALLS". ALL REINFORCEMENT IN THE CUT–OFF WALLS, AND RETURN WALLS SHALL BE PAID FOR IN THE PAY ITEM "DEFORMED STEEL BARS". ALL REINFORCEMENT IN THE HEADWALLS SHALL BE EPOXY COATED AND PAID FOR UNDER THE ITEM "DEFORMED STEEL BARS (EPOXY COATED)".

CONCRETE COVER: ALL REINFORCEMENT SHALL HAVE 2" COVER UNLESS DIMENSIONED OTHERWISE.

PREFORMED EXPANSION JOINT FILLER: THE COST OF FURNISHING AND INSTALLING PREFORMED EXPANSION JOINT FILLERS SHALL BE INCLUDED IN THE ITEM "CLASS 'A' CONCRETE".

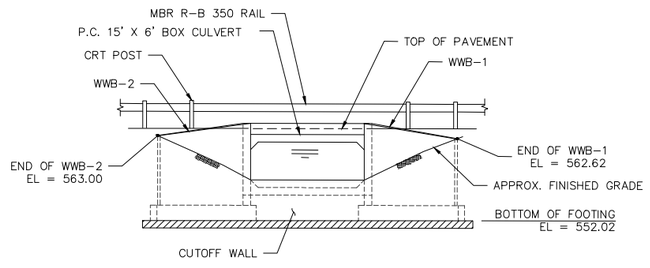
BORING LEGEND

B–1	APPROXIMATE BORING LOCATION



UPSTREAM ELEVATION

SCALE: 1" = 20'–0"



DOWNSTREAM ELEVATION

SCALE: 1" = 20'–0"

HYDRAULIC DATA	
HYDRAULIC AREA	5.0 SQ MI
DESIGN FREQUENCY	100 YEAR
DESIGN DISCHARGE	1070 CFS
AVERAGE DAILY FLOW	9.1 CFS
AVERAGE DAILY FLOW ELEVATION	558.30
UPSTREAM DESIGN WATER SURFACE ELEVATION	565.26
DOWN STREAM DESIGN WATER SURFACE ELEVATION	558.30
2 YEAR DESIGN STORM WATER ELEVATION	561.92

TRANSPORTATION DATA				
MEMBER	SHIPPING LENGTH	SHIPPING HEIGHT	SHIPPING WIDTH	SHIPPING WEIGHT
BOX CULVERT	17'–0"	8'–0"	8–0"	55,800 lbs
WINGWALL	13'–0"	8'–0"	8'–0"	16,000 lbs

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BEAR HILL ROAD
KILLINGLY,
CONNECTICUT 06239

DENNIS M.QUINT, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-009
BEAR HILL ROAD OVER UNNAMED BROOK
KILLINGLY, CONNECTICUT

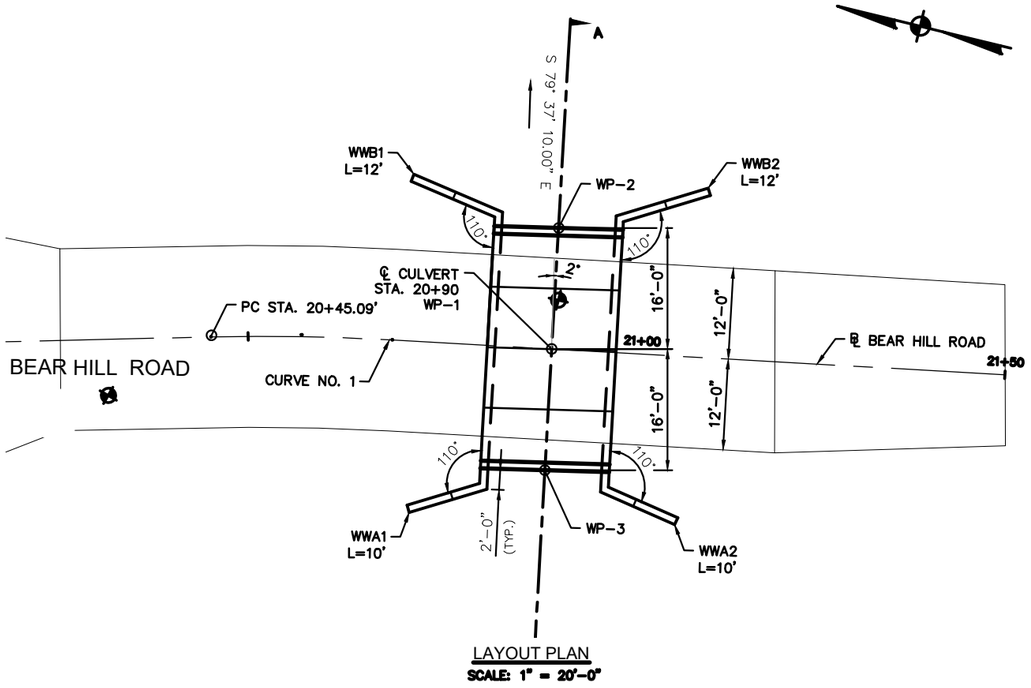
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017–0507
DATE:	02/05/2020
CAD: hw_msh_2017_0507_brg009_gen	

TITLE: GENERAL PLAN

SHEET NUMBER: S-3.1



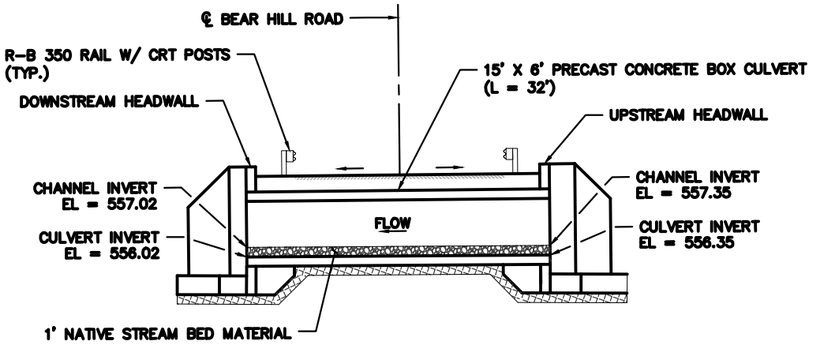
LAYOUT PLAN
SCALE: 1" = 20'-0"

WORKING POINT COORDINATES		
WP	NORTHING	EASTING
WP-1	869851.0942	1254650.6114
WP-2	869856.8715	1254682.0981
WP-3	869853.9828	1254666.3548

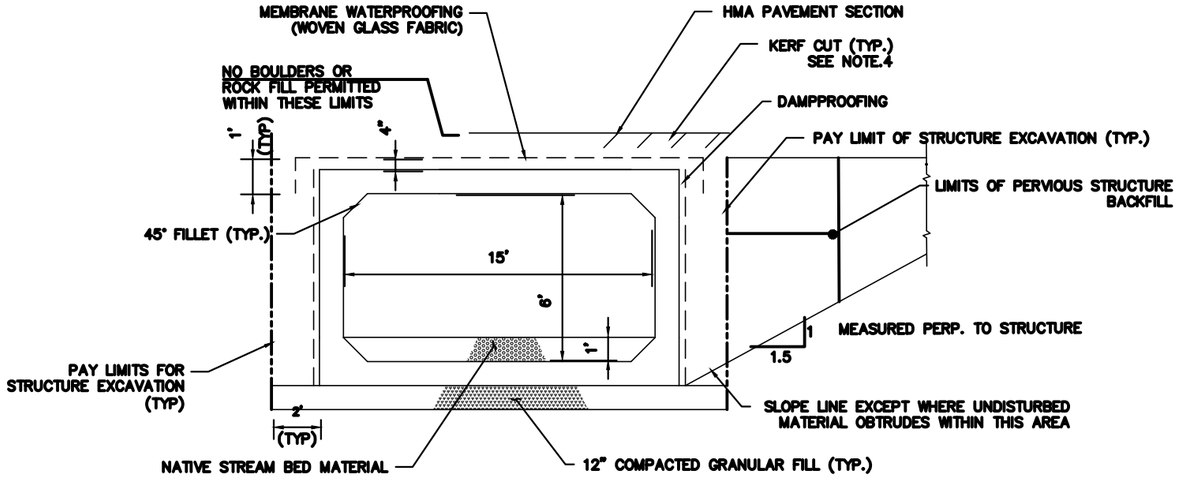
NOTES:

1. FOR COMPLETE BASELINE GEOMETRY, SEE SHEET NO. HWY-1.
2. ROADWAY PROFILE TO MATCH EXISTING.
3. FOR WINGWALL SECTION DETAILS SEE SHEET MDS-3.
4. CUT BITUMINOUS OVERLAY WITH ¼" WIDE BY 1½" DEEP KERF AND FILL WITH POURABLE SEALANT. TO BE PAID FOR UNDER THE ITEM "SAWING AND SEALING JOINTS IN BITUMINOUS PAVEMENT.

QUANTITIES		
ITEM	UNITS	TOTALS
STRUCTURE EXCAVATION – EARTH (COMPLETE)	CY	450
STRUCTURE EXCAVATION – ROCK (COMPLETE)	CY	12
HANDLING WATER	LS	1
COMPACTED GRANULAR FILL	CY	30
PERVIOUS STRUCTURE BACKFILL	CY	260
SAWING AND SEALING JOINTS IN BIT. CONC. PAVEMENT	LF	70
REMOVAL OF EXISTING CULVERT	LS	1
CLASS 'A' CONCRETE	CY	20
PRECAST CONCRETE WINGWALL	EA	4
15' X 6' PRECAST CONCRETE BOX CULVERT	LF	32
DEFORMED STEEL BARS	LB	1,800
DEFORMED STEEL BARS (EPOXY COATED)	LB	500
DRILLING HOLES AND GROUTING DOWELS	EA	30
MEMBRANE WATERPROOFING (COLD LIQUID ELASTOMERIC)	SY	75
DAMPPROOFING	SY	150



SECTION A-A
N.T.S.



TYPICAL CULVERT SECTION
N.T.S.

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CONNECTICUT 06239

DENNIS M.QUINT, PE NO. 19106

REPLACEMENT OF BRIDGE No. 68-009
BEAR HILL ROAD OVER UNNAMED BROOK
KILLINGLY, CONNECTICUT

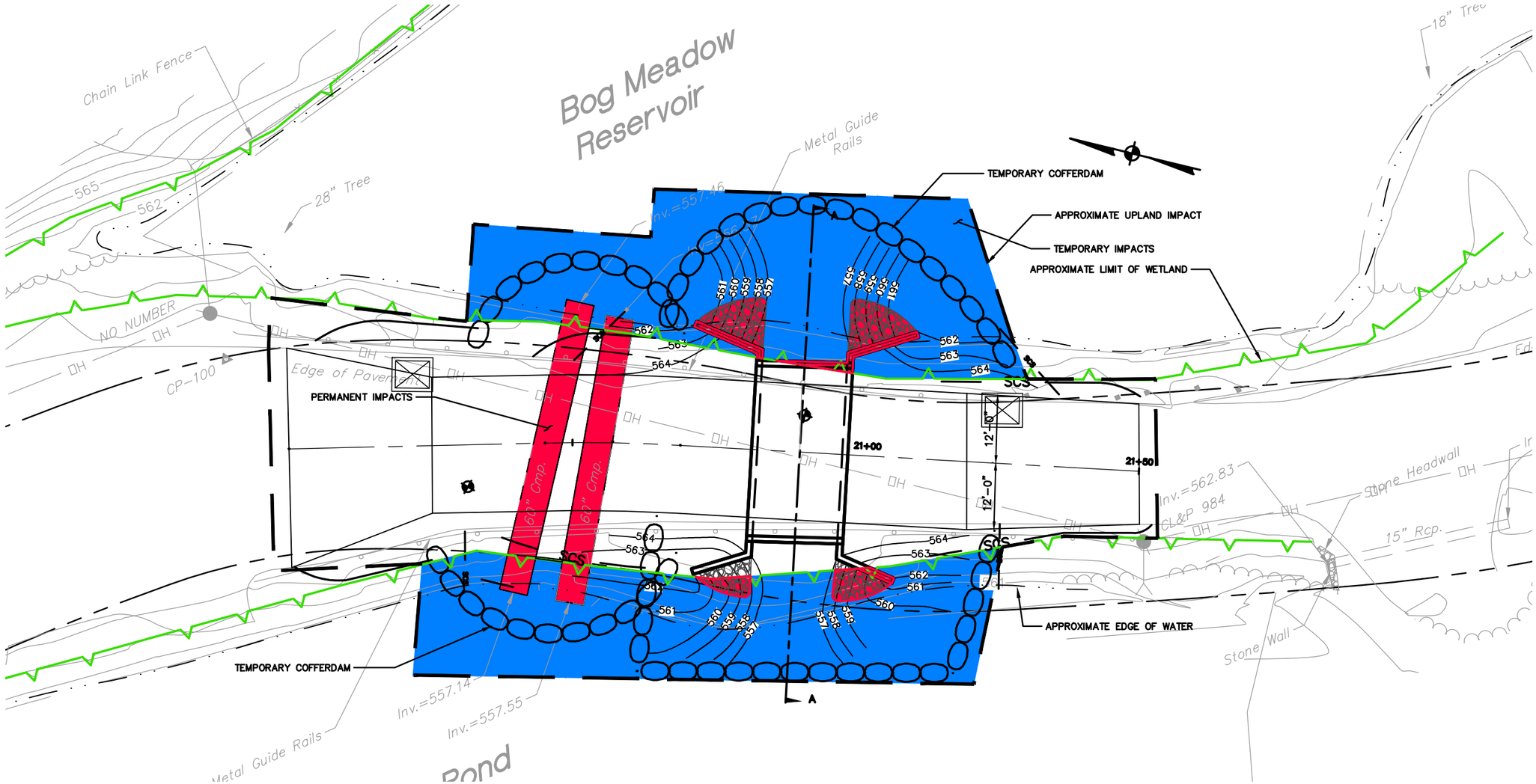
NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	02/05/2020
CAD:	HW_MSH_2017_0507_BRG009_ALN

TITLE: LAYOUT PLAN

SHEET NUMBER: S-3.2



PERMANENT IMPACTS	
RIPRAP	200 S.F.
EXISTING CULVERT FOOTPRINT	525 S.F.
PROPOSED CULVERT FOOTPRINT	50 S.F.
TOTAL:	750 S.F.

TEMPORARY IMPACTS	
TOTAL:	4050 S.F.

UPLANDS IMPACTS	
TOTAL:	5450 S.F.

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OWNER FOR
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KILLINGLY,
CONNECTICUT 06239

DENNIS M. LOUMET, PE NO. 19928

REPLACEMENT OF BRIDGE No. 68-009
BEAR HILL ROAD OVER UNNAMED BROOK
KILLINGLY, CONNECTICUT

NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

DESIGNED:	YL
DRAFTED:	PT
CHECKED:	DQ
APPROVED:	PAR
SCALE:	AS NOTED
PROJECT NO.:	2017-0507
DATE:	02/05/2020
CAD: hw_mah_2017_0507_brg009_gen (impacts)	

TITLE: GENERAL PLAN

SHEET NUMBER:

US Army Corps of Engineers ®
New England District

WORK-START NOTIFICATION FORM

(Minimum Notice: Two weeks before work begins)

****

EMAIL TO: michael.s.wierbonics@usace.army.mil and cenae-r@usace.army.mil; or

MAIL TO: Mike Wierbonics
Regulatory Division
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

****

Corps of Engineers Permit No. NAE-2021-00306 was issued to David Capacchione, Director of Engineering & Facilities, Town of Killingly, Connecticut on August 10, 2022. The permit authorizes the replacement of a deficient bridge (No. 68-009) carrying Bear Hill Road over an unnamed brook in Killingly, Connecticut. The project will result in the discharge of approximately 775 square-feet of permanent fill and approximately 4,050 square-feet of temporary fill below the Ordinary High Water (OHW) line of the unnamed brook associated with Bog Meadow Reservoir.

The people (e.g., contractor) listed below will do the work, and they understand the permit's conditions and limitations.

PLEASE PRINT OR TYPE

Name of Person/Firm: _____

Business Address: _____

_____

_____

Phone & email: (___) _____ (___) _____ _____

Proposed Work Dates: **Start:** _____ **Finish:** _____

Permittee/Agent Signature: _____ **Date:** _____

Printed Name: _____ **Title:** _____

Date Permit Issued: _____ **Date Permit Expires:** _____

****

FOR USE BY THE CORPS OF ENGINEERS

PM: Mike Wierbonics **Submittals Required:** _____

Inspection Recommendation: _____

US Army Corps of Engineers ®
New England District

COMPLIANCE CERTIFICATION FORM

(Minimum Notice: Permittee must sign and return notification within one month of the completion of work.)

Permit Number: NAE-2021-00306

Project Manager: Mike Wierbonics

Name of Permittee: David Capacchione, Director of Engineering & Facilities, Town of Killingly, Connecticut

Permit Issuance Date: August 10, 2022

Please sign this certification and return it to our office upon completion of the activity.

E-MAIL TO:	cenae-r@usace.army.mil; or
MAIL TO:	Permits and Enforcement Branch B
	U.S. Army Corps of Engineers, New England District
	Regulatory Division
	696 Virginia Road
	Concord, Massachusetts 01742-2751

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit was completed in accordance with the terms and conditions of the above referenced permit, and any required mitigation was completed in accordance with the permit conditions.

Signature of Permittee	Date
Printed Name	Date of Work Completion
( ) Telephone Number	( ) Telephone Number

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

January 22, 2020

Mr. Dennis Quinit
Freeman Companies
36 John Street
Hartford, Connecticut 06106
dquinit@freemancos.com

Project: Replacement of Bridge no. 68-009, Bear Hill Road, Killingly, CT
NDDB determination No.: 202000471

Dear Mr. Quinit:
I have reviewed Natural Diversity Database (NDDB) maps and files regarding the area of work provided for the proposed replacement of a twin pipe culvert with a box culvert on Bear Hill Road in Killingly, Connecticut. According to our information, the State Species of Special Concern attenuated bluet damselfly occurs in the ponds west of this site. This damselfly prefers well-vegetated ponds, lakes and stream backwaters. This species is active in its adult from early June through early August; its larvae is aquatic and present year-round in ponds. Threats to this species include alterations to hydrology and water quality, herbicide/pesticide application, trampling or removal of pond shore vegetation and invasive species.

Protection for the attenuated bluet damselfly:

- Minimize the amount of shoreline that is covered with riprap. Riprap suppresses plant growth and changes the sediment composition of the waterbody, both of which could have a negative impact on this species.
- Minimize the amount of sediment and run-off released into the waterbody from project activities. This species is very sensitive to the degradation of its aquatic environment. It was noted in your application that work within the watercourse is proposed to be performed within coffer dammed areas and that multiple S&E measures will be used to protect the watercourse; we concur with these practices.
- Materials used for sediment and erosion control should NOT contain plastic netting/mesh. Products that have plastic mesh embedded in them have been documented to entangle reptiles, amphibians and even birds. Entanglements such as this lead to mortality. Additionally, plastic products that claim to be “degradable” or “biodegradable” have varying decomposition rates and continue to present entanglement hazards for many years after degrading. A better alternative would be erosion control products composed of 100% biodegradable plant-based netting material, such as jute (vegetable fibers), sisal (stiff agave fibers) or coir fiber (coconut husk fibers). Not only are these products truly biodegradable, but because the weave in these natural fiber nets is not fixed, as is the case in synthetic netting, it is easier for wildlife to freely move through the weave without getting entangled.
- Silt fencing and other erosion controls used for this project should be removed as soon as soils have stabilized to avoid impeding amphibian and reptile movements between wetlands and uplands.
- Any replanting should be with plants that are native to the northeastern Unites States.

The result of this review does not preclude the possibility that state-listed species (RCSA Sec. 26- 306) may be encountered on site and that additional action may be necessary to remain in compliance with certain state permits. This determination is good for two years. **Please re-submit a new NDDB Request for Review if the scope of work changes or if work has not begun on this project by January 22, 2022.**

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection’s Natural History Survey, cooperating units of DEEP,

landowners, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the NDDB should not be substitutes for on-site surveys necessary for a thorough environmental impact assessment. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the database as it becomes available. Please be aware that a more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEEP for the proposed site.

Please contact me if you have further questions at (860) 424-3101, or laura.saucier@ct.gov . Thank you for consulting the Natural Diversity Database.

Sincerely,

Laura Saucier
Wildlife Biologist

FREEMAN
COMPANIES
LAND DEVELOPMENT | ENGINEERING DESIGN | CONSTRUCTION SERVICES

Geotechnical Engineering Report – Bridge 68-002
Valley Road Over Mashentuck Brook
Killingly, Connecticut

October 24, 2022

Freeman Project No.: 2017-0507

Prepared for:

Town of Killingly
172 Main Street
Killingly, Connecticut 06239

Prepared by:

Freeman Companies, LLC
36 John Street
Hartford, CT 06106

Allison M. McCauliffe, P.E.
Senior Geotechnical Engineer/Project Manager

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1.0 INTRODUCTION

1.1 Summary

This report presents our evaluation of the subsurface conditions and geotechnical engineering recommendations for the proposed improvements to Bridge 68-002, Valley Road over Mashentuck Brook, located in Killingly, Connecticut. This evaluation is based on our recent subsurface explorations and laboratory test data.

Subsurface conditions generally consist of fill over alluvium. The existing culvert will be replaced with a new precast box culvert and new wingwalls and headwalls supported on spread footings. Channel improvements will consist of riprap and slope protection, and reconstruction of the stream bed to prevent scouring.

1.2 Scope of Work

Freeman Companies, LLC performed the following tasks:

- Engaged a subsurface exploration contractor to conduct test borings at the site;
- Provided technical monitoring of the explorations;
- Arranged for a testing laboratory to conduct laboratory soil tests; and
- Evaluated the subsurface conditions and prepared this report containing geotechnical design recommendations and construction considerations.

1.3 Authorization

The work was completed in accordance with our agreement dated July 20, 2017.

1.4 Project Vertical Datum

Elevations in this report refer to the NAVD 88 datum.

2.0 SITE AND PROJECT DESCRIPTION

2.1 Site Description

Bridge No. 68-002 is located on Valley Road in Killingly, Connecticut as shown on Figure 1, Site Location Map. The bridge is a 16-foot long by 21-foot wide, single span bridge supported on masonry abutments and carries one lane of traffic in each direction over Mashentuck Brook. The bridge is approximately 1-mile east of the intersection of Valley Road and Cook Hill Road. The structure was built in 1940. As-built plans were not available as of this writing.

2.2 Project Description

The existing single-span bridge will be replaced with a precast box culvert. The wingwalls and headwalls will be supported on spread footings. The bottom of culvert will be at Elevation (El.) 337.5 feet on the south side and El. 337.3 feet on the north side.

3.0 EXPLORATIONS

3.1 Recent Subsurface Explorations

Two test borings (S-1 and S-2) were drilled by New England Borings of Glastonbury, Connecticut, on August 14, 2017. The borings were advanced using 4-inch diameter flush-joint casing to depths ranging from 13 feet to 31.6 feet. Standard Penetration Tests were conducted and soil samples were recovered at maximum 5-foot intervals in the borings.

Boring S-1 terminated at a depth of 31.6 feet in soil; and boring S-2 met roller bit refusal at a depth of 13 feet.

Exploration locations are shown on Figure 2, Subsurface Exploration Location Plan. As-drilled locations were surveyed by Freeman Companies. A Freeman Companies senior geologist monitored the drilling, classified the soil samples, and prepared the test boring logs included in Appendix A.

3.2 Laboratory Testing

Grain size analyses (ASTM D422) were performed on three representative soil samples to aid in determining engineering properties; two from the borings to confirm visual classification and one from the upstream bed for scour analysis,.

Grain size analyses were conducted by Geotesting Express, Inc., of Acton, Massachusetts. Results of laboratory testing are provided in Appendix B.

4.0 SUBSURFACE CONDITIONS

4.1 Subsurface Conditions

Subsurface conditions encountered in the explorations consist of Fill overlying Alluvium, as described below. A subsurface profile is shown in Figure 3. Subsurface data are summarized on Table I included at the end of the report.

Based on our review of the test borings, generalized subsurface conditions are as follows:

THICKNESS (FT)	GENERALIZED DESCRIPTION
7 to 8	**Fill** – Asphalt (6 inches) and gravel base (12 inches) overlying mostly brown to tan coarse to fine SAND, little coarse to fine gravel, little to trace silt. Standard Penetration Test (SPT) N-Values ranged from 5 (loose) to 35 (dense) blows per foot (bpf).
Greater Than 31.6	**Alluvium** – Brown to gray, coarse to fine SAND and coarse to fine GRAVEL, trace silt, frequent cobbles and boulders, quartz and mica. SPT N-values ranged from greater than 50 to greater than 100 (very dense) bpf.

Groundwater – Ground water was encountered approximately 8.5 feet below the existing ground surface. Water levels are expected to be influenced primarily by water levels within the adjacent streambed, but will vary with season, precipitation, temperature, and other factors.

5.0 GEOTECHNICAL ENGINEERING RECOMMENDATIONS

5.1 Design Recommendations for Bridge 68-002

Geotechnical Recommendations

- **Footing Depth:** Minimum of 4 feet below the lowest adjacent ground surface required by the CTDOT Bridge Design Manual. Both the wingwalls, headwall, and culvert should bear in the naturally deposited Aluvium.
- **Subgrade Preparation:** Place a minimum 12-inch thick layer of crushed stone overlying geotextile separation fabric over the naturally deposited Alluvium to protect the bearing surface from disturbance during foundation construction.
- **Seismic Design:** Soils are not susceptible to liquefaction. Soil conditions at the site are defined as AASHTO Site Class C.
- **Backfill Material:** Place Pervious Structure Backfill (CTDOT Form 817 M.02.05) behind the headwall and wingwalls above a line defined by a 1V:1.5H slope extending up from the heel of the footing to grade, where applicable.
- **Service Limit Bearing:** Nominal Bearing Resistance = Assume 4,000 psf; Resistance Factor = 1.0 (per AASHTO 10.5.5.1).
- **Strength Limit Bearing:** Assume 15,000 psf; Resistance Factor = 0.55 (AASHTO Table 11.5.7-1).
- **Settlement at Recommended Bearing Pressure:** Estimated total settlement less than 1 inch; differential less than ¼- inch.
- **Weep Holes:** 4-inch dia. weep holes at maximum 10-foot spacing, installed according to CTDOT specifications.
- **Lateral Earth Pressures Unrestrained Walls (Active) -** Design retaining walls that are free to rotate at the top for the following lateral earth pressures:

  Static: 35 psf/f (equivalent hydrostatic pressure)

  Surcharge: 0.3 times the vertical surcharge load distributed uniformly over the height of the wall. The minimum vertical surcharge should be equivalent to an H-20 vehicular load, if vehicles (including construction equipment) will be allowed above the wall within a distance of 1.5 times the wall height. The wall design should account for sloping ground surface above the wall.

  The lateral earth pressures provided above do not include hydrostatic forces and assume that backfill behind the walls will be drained.
- **Coefficient of Friction (tan δ) Along Bottom:** 0.40 (AASHTO Table 3.11.5.3-1); Resistance factor 0.8 (AASHTO Table 10.5.5.2.2-1).
- **Slope Stability:** Global Stability will be evaluated when grading has been finalized.

6.0 CONSTRUCTION CONSIDERATIONS

6.1 Excavation

Conventional heavy excavation equipment should be suitable for excavation in existing soil materials. Excavation should conform to OSHA excavation regulations contained in 29 CFR Part 1926, latest edition.

6.2 Bearing Surface Preparation

Excavated subgrades should be proof compacted six passes of a large vibratory plate compactor capable of exerting a minimum force of 2,000 lbs. in trench excavations. Soft, yielding or otherwise unacceptable soils should be over-excavated and replaced with either compacted structural fill or crushed stone wrapped in a geotextile separation fabric. If vibratory proof compaction of the subgrade will be detrimental due to the presence of groundwater, static rolling with a double drum walk behind roller may be allowed at the discretion of the engineer.

Soil bearing surfaces should be protected against freezing both before and after concrete placement. If construction takes place during winter months, foundations should be backfilled as soon as possible following construction. Alternatively, insulating blankets or other methods may be used to protect against freezing.

6.3 Cofferdam and Dewatering

We estimate that excavations up to about 4 feet below the adjacent water level will be required, depending on water levels in Mashentuck Brook. Construction should be performed in-the-dry, and cofferdam and dewatering will be required. Steel sheeting may not be feasible due to the density and presence of cobbles and boulders in the subgrade soils. Soldier piles and lagging may be feasible, but will not be water tight. A drilled cofferdam system such as tangent or secant piles may be capable of penetrating the boulders, could provide a groundwater cutoff, and may be feasible. Other means may also be feasible. This is expected to be a difficult and time consuming process.

Surface water should be diverted away from excavations. Staged construction and temporary lateral support of excavations will be required to maintain traffic flow and protect nearby utilities where present.

6.4 Reuse of Existing Soils

The existing soils to be excavated will consist of Fill and Alluvium. These soils are not expected to be suitable for reuse as Pervious Structure Backfill or Granular Fill. Excavated soils may be suitable for reuse as embankment fill. However, the siltier soils may be difficult to properly compact when wet, and may need to be dried to achieve compaction. Drying the soils can be difficult and at times impractical, particularly during periods of cold and wet weather.

7.0 FUTURE SERVICES AND LIMITATIONS

We recommend that Freeman Companies be engaged during construction to observe:

- Verify that soil conditions exposed in excavations are in general conformance with design assumption, and that the geotechnical aspects of construction are consistent with the project specifications.

This report was prepared for the exclusive use of The Town of Killingly and the project design team. The recommendations provided herein are based on the project information provided at the time of this report and may require modification if there are any changes in the nature, design, or location of the facility.

The recommendations in this report are based in part on the data obtained from the subsurface explorations. The nature and extent of variations between explorations may not become evident until construction. If variations from the anticipated conditions are encountered, it may be necessary to revise the recommendations in this report.

Our professional services for this project have been performed in accordance with generally accepted engineering practices; no warranty, express or implied, is made.

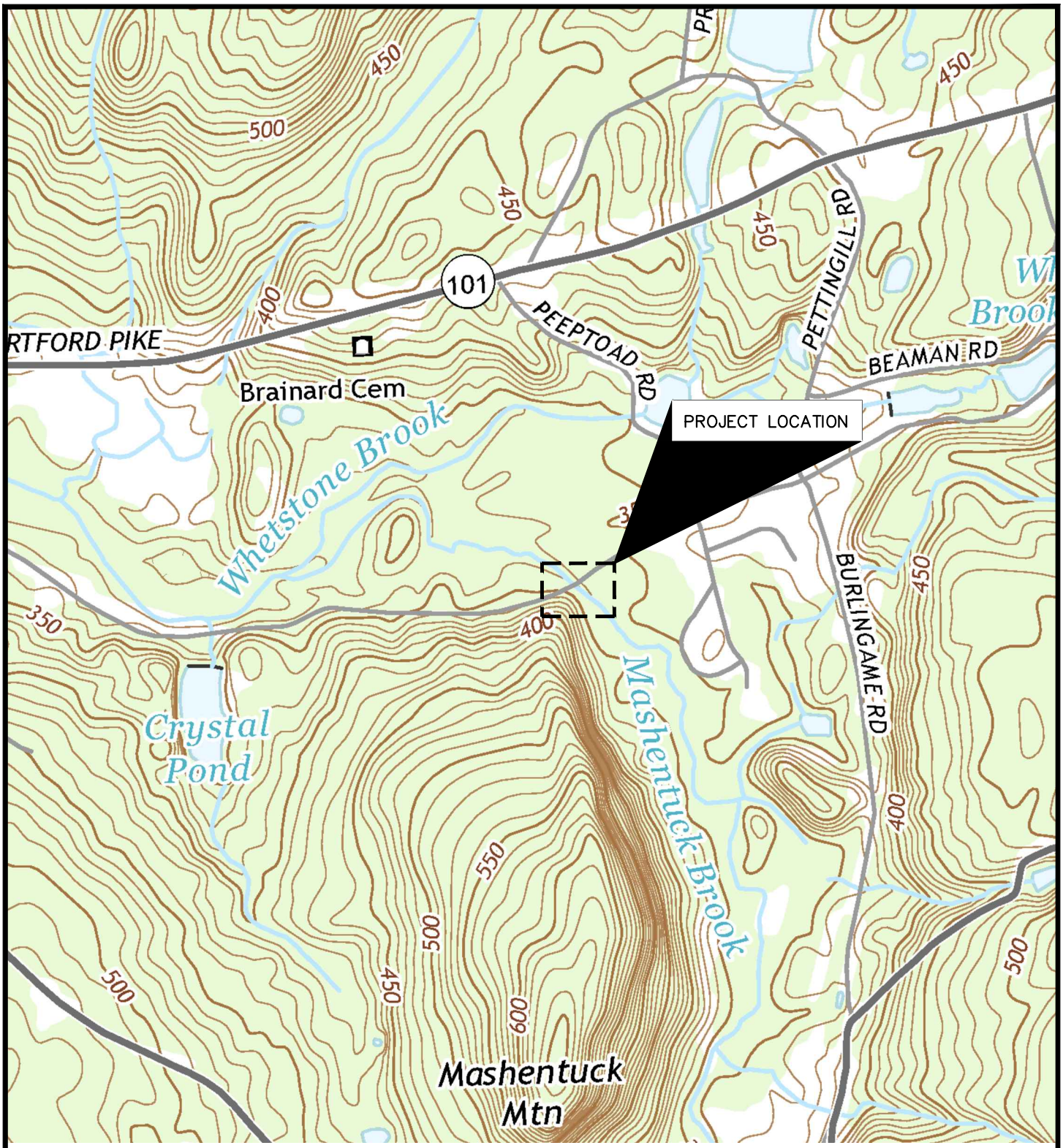
Table 1
Summary of Subsurface Explorations
Killingly Bridge 68-002
Killingly, CT

Boring No.	Ground Surface El.	Depth (ft.)			Groundwater		Bedrock	
			Fill	Alluvium	Depth (ft.)	Elevation	Depth (ft.)	Elevation
Bridge 68-002								
S-1	349.6	31.6	8.0	>23.6	8.5	341.1	--	--
S-2	349.2	13	7.0	6.0	8.5	340.7	--	--

Notes:

1. Ground surface elevations are based on the topographic information included on Figure 1.
2. Groundwater levels are approximate
3. ">" - Greater Than "--" - Not Encountered or Recorded

FIGURES



USGS QUADRANGLE MAP
EAST KILLINGLY, CONNECTICUT
DATE 2015

FREEMAN COMPANIES
LAND DEVELOPMENT | ENGINEERING DESIGN | CONSTRUCTION SERVICES
36 JOHN STREET
HARTFORD, CT 06106
WWW.FREEMANCOS.COM
TEL:(860)251-9550
FAX:(860)986-7161
ELEVATE YOUR EXPECTATIONS

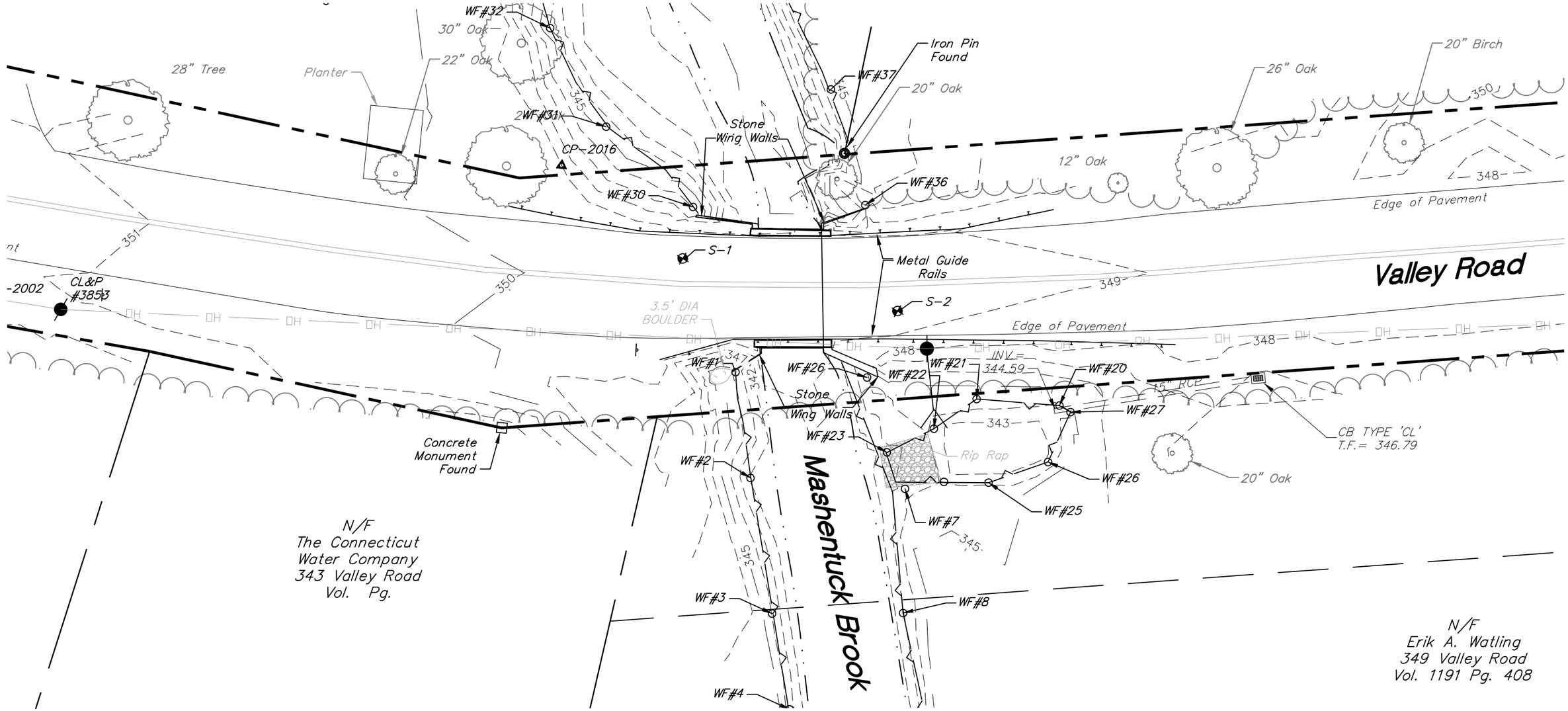
SITE LOCATION MAP

VALLEY ROAD OVER MASHENTUCK BROOK
BRIDGE NO. 68-002
KILLINGLY, CONNECTICUT

DRAFTED:	T.T.
CHECKED:	A.M.
APPROVED:	A.M.
SCALED:	1"=1000'
PROJECT NO.:	2017-0507
DATE:	08/21/2017

SHEET NO.

FIGURE 1



LEGEND:

S-1 TEST BORINGS

NOTES:

1. BASE PLAN PREPARED BY FREEMAN COMPANIES
2. EXPLORATION LOCATIONS WERE TAPED FROM EXISTING SITE FEATURES AND ARE APPROXIMATE
3. REFER TO THE TEXT AND APPENDICES FOR ADDITIONAL INFORMATION

GRAPHIC SCALE
20 10 0 20
SCALE IN FEET

SUBSURFACE EXPLORATION LOCATION PLAN

VALLEY ROAD OVER MASHENTUCK BROOK
BRIDGE No. 68-002
KILLINGLY, CONNECTICUT

FREEMAN COMPANIES
LAND DEVELOPMENT | ENGINEERING DESIGN | CONSTRUCTION SERVICES
FREEMAN COMPANIES, LLC
36 JOHN STREET
HARTFORD, CT 06106
WWW.FREEMANCOS.COM
TEL:(860)251-9550
TOLL FREE:(800)604-5141
FAX:(860)986-7161
ELEVATE YOUR EXPECTATIONS

No.	Date	Description
–	–	–

REVISIONS

DRAWN:	T.T.
CHECKED:	A.M.
APPROVED:	A.M.
SCALE:	1"=20'
PROJECT NO.:	2017-0507
DATE:	10/04/2017

SHEET NO.

FIGURE 2

Freeman Companies, LLC
36 John Street
Hartford, CT 06109

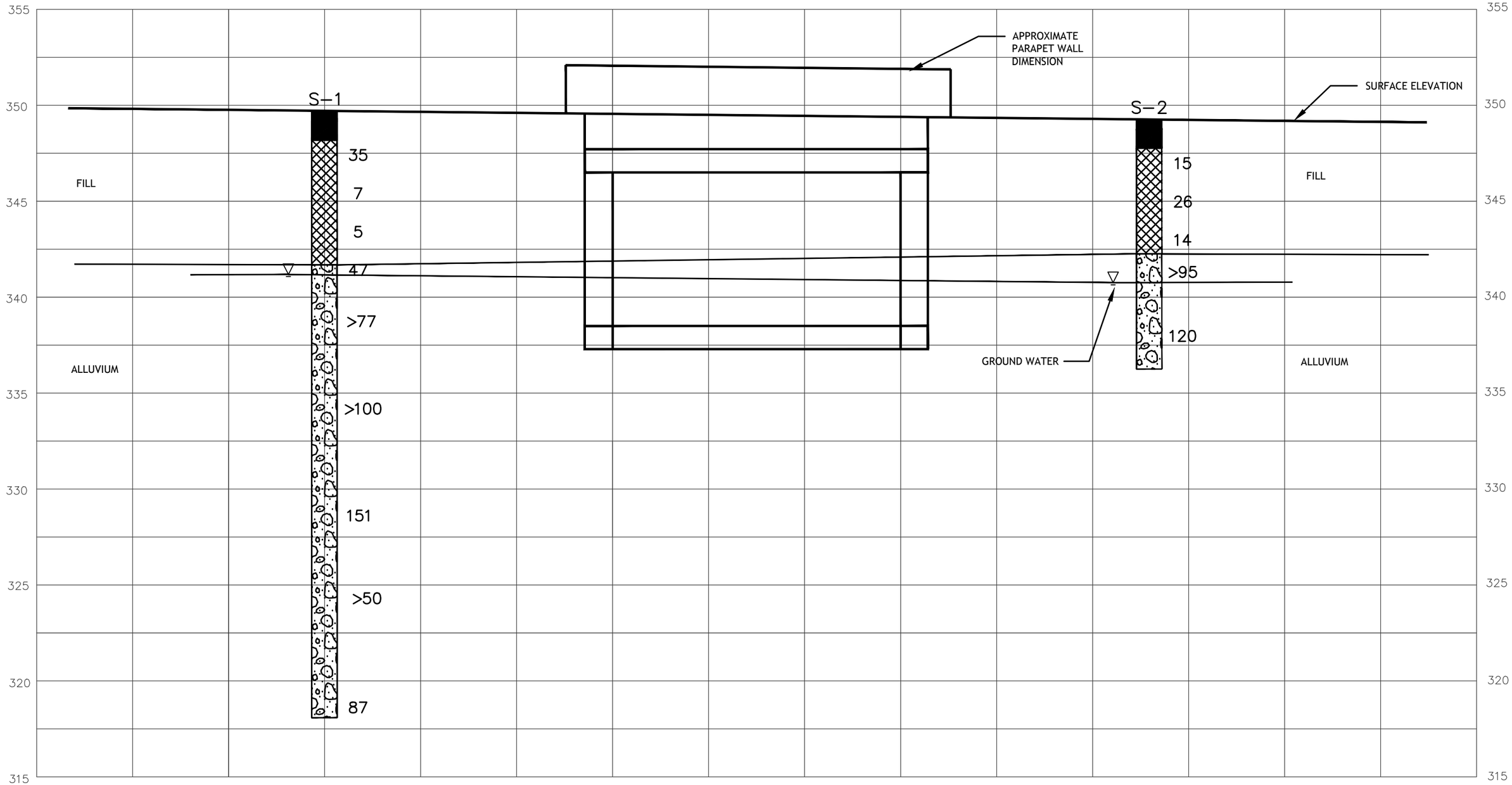
BRIDGE No. 68-002 SUBSURFACE DIAGRAM

PRIME DESIGNER Town of Killingly Eningeering

PROJECT NUMBER 2017-0507

PROJECT NAME Valley Road over Mashentuck Brook Bridge No. 68-002

PROJECT LOCATION Killingly, Connecticut



LEGEND
13 SPT N–VALUE
60%/0% RECOVERY/RQD

NOTE:
1) THE STRATA BOUNDARIES INDICATED ARE KNOWN ONLY AT THE BORING LOCATIONS AND WILL VARY BETWEEN LOCATIONS

HORIZONTAL SCALE: 1" = 5'
VERTICAL SCALE: 1" = 5'

FIGURE-3

APPENDIX B

RECENT TEST BORING LOGS

Driller:	T. Roe	**Connecticut DOT Boring Report**		Hole No.:	S-1
Inspector:	Thiet Ta	Town:	Killingly	Stat./Offset:	
Engineer:	A. McCauliffe	Project No.:	2017-0507	Northing:	866600.73
Start Date:	8-14-17	Route No.:	Valley Road over Mashentuck Brook	Easting:	1247078.12
Finish Date:	8-14-17	Bridge No.:	68-002	Surface Elevation:	349.6
Project Description:	Valley Road and Bear Hill Road Over Brooks				
Casing Size/Type:	4-in. Casing	Sampler Type/Size:	1-3/8 inch ID	Core Barrel Type:	
Hammer Wt.:	140lb Fall: 30in.	Hammer Wt.:	140lb Fall: 30in.		
Groundwater Observations:	@8.5 ATD				

Depth (ft)	SAMPLES: Sample Type/No.	Blows on Sampler per 6 inches	Pen. (in.)	Rec. (in.)	RQD %	Generalized Strata Description	Material Description and Notes	Elevation (ft)
0						Asphalt	PAVEMENT (6")	
						Base	Dark brown to black c-f SAND, little c-f gravel, trace silt, (BASE)	
	S-1	23 21 14 17	24	12		Fill	Brown to tan c-f SAND, little c-f gravel, trace silt	
	S-2	6 3 4 3	24	8			Brown to black c-f SAND, little silt, trace m-f gravel	
5								345
	S-3	WOR 2 3 3	24	2			Brown to dark brown f SAND, little c-f gravel, little silt	
	S-4	8 8 39 62	24	8			Brown c-f SAND, little c-f gravel, trace silt	
						Alluvium	Brown to tan c-f SAND, some c-f gravel, trace silt	
10								340
	S-5	24 27 50/4"	16	14			Brown c SAND and c-f GRAVEL, trace silt	
							Augered throught frequent cobbles and boulders to 15ft	
15	S-6	100/3"	4	3			Gray c SAND and c GRAVEL, trace silt	335
20								330
	S-7	55 74 77 50/1"	19	14			Gray c-m GRAVEL, little f sand, (quartz and mica)	
25	S-8	50/0"	0	0			No Recovery : pulverized quartz and mica from wash	325
30								320
	S-9	55 29 58 50/1"	19	14			Gray c-m GRAVEL, little f sand, (quartz and mica)	

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test

Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 31ft Rock: ft No. of Soil Samples: 9 No. of Core Runs: 0	NOTES: After 15ft drilling action did not suggest cobbles and boulders but possibly extremely weathered bedrock.	Sheet 1 of 2 SM-001-M REV. 1/02

Driller: T. Roe	**Connecticut DOT Boring Report**	Hole No.: S-1
Inspector: Thiet Ta	Town: Killingly	Stat./Offset:
Engineer: A. McCauliffe	Project No.: 2017-0507	Northing: 866600.73
Start Date: 8-14-17	Route No.: Valley Road over Mashentuck Brook	Easting: 1247078.12
Finish Date: 8-14-17	Bridge No.: 68-002	Surface Elevation: 349.6
Project Description: Valley Road and Bear Hill Road Over Brooks		
Casing Size/Type: 4-in. Casing	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: 140lb Fall: 30in.	Hammer Wt.: 140lb Fall: 30in.	
Groundwater Observations: @8.5 ATD		

Depth (ft)	SAMPLES: Sample Type/No.	SAMPLES: Blows on Sampler per 6 inches	SAMPLES: Pen. (in.)	SAMPLES: Rec. (in.)	SAMPLES: RQD %	Generalized Strata Description	Material Description and Notes	Elevation (ft)
							END OF BORING 31.6ft	
35								315
40								310
45								305
50								300
55								295
60								290

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test

Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 31ft Rock: ft	NOTES: After 15ft drilling action did not suggest cobbles and boulders but possibly extremely weathered bedrock.	Sheet 2 of 2
No. of Soil Samples: 9 No. of Core Runs: 0		SM-001-M REV. 1/02

Driller:	T. Roe	**Connecticut DOT Boring Report**		Hole No.:	S-2
Inspector:	Thiet Ta	Town:	Killingly	Stat./Offset:	
Engineer:	A. McCauliffe	Project No.:	2017-0507	Northing:	866613.07
Start Date:	8-14-17	Route No.:	Valley Road over Mashentuck Brook	Easting:	1247120.48
Finish Date:	8-14-17	Bridge No.:	68-002	Surface Elevation:	349.2

Project Description: Valley Road and Bear Hill Road Over Brooks

Casing Size/Type: 4-in. Casing	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: 140lb Fall: 30in.	Hammer Wt.: 140lb Fall: 30in.	

Groundwater Observations: @8.5 ATD

Depth (ft)	SAMPLES: Sample Type/No.	Blows on Sampler per 6 inches	Pen. (in.)	Rec. (in.)	RQD %	Generalized Strata Description	Material Description and Notes	Elevation (ft)
0						Asphalt	PAVEMENT (6")	
						Base	Brown c-f SAND, little c-f gravel, trace silt, (BASE)	
	S-1	12 8 7 10	24	12		Fill	Brown c-f SAND, little silt, trace f gravel	
	S-2	9 18 8 8	24	4			Brown c-f SAND, little m-f gravel, trace silt, trace wood	345
5	S-3	3 6 8 24	24	6			Brown c-f SAND and m-f GRAVEL, some silt, trace cobbles	
	S-4	41 45 50/4"	16	10		Alluvium	Brown to orange c-f GRAVEL and c-f SAND, trace silt	340
10	S-5	38 60 60 36	24	14			Casing and rollerbit refusal at 13 ft. Brown c-f SAND and c-f GRAVEL, trace silt	
15							END OF BORING 13ft	335
20								330
25								325
30								320

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test

Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 12ft Rock: ft	NOTES:	Sheet 1 of 1
No. of Soil Samples: 5 No. of Core Runs: 0		SM-001-M REV. 1/02

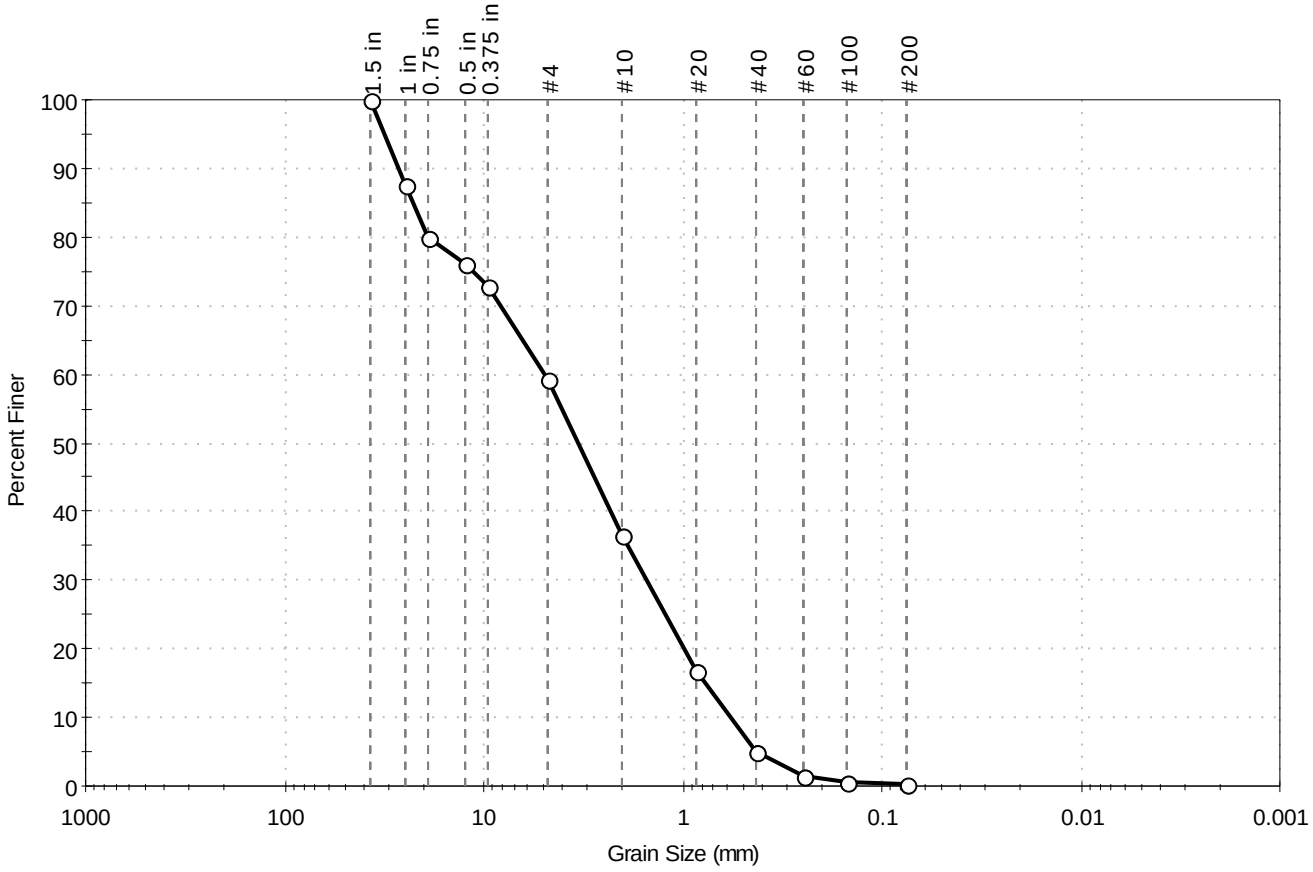
APPENDIX C

RESULTS OF LABORATORY TESTING

Client:	Freeman Companies, LLC				
Project:	Killingly Bridges				
Location:	Killingly, CT			Project No:	GTX-306915
Boring ID:	B-1	Sample Type:	jar	Tested By:	jbr
Sample ID:	Grab	Test Date:	08/31/17	Checked By:	emm
Depth :	Upstream	Test Id:	421919		

Test Comment: ---
Visual Description: Moist, very dark brown sand with gravel
Sample Comment: ---

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	40.7	59.1	0.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	88		
0.75 in	19.00	80		
0.5 in	12.50	76		
0.375 in	9.50	73		
#4	4.75	59		
#10	2.00	36		
#20	0.85	17		
#40	0.42	5		
#60	0.25	2		
#100	0.15	1		
#200	0.075	0.2		

Coefficients

D_{85} = 22.8090 mm	D_{30} = 1.5112 mm
D_{60} = 4.9161 mm	D_{15} = 0.7646 mm
D_{50} = 3.3386 mm	D_{10} = 0.5681 mm
C_u = 8.654	C_c = 0.818

Classification

ASTM: Poorly graded sand with gravel (SP)

AASHTO: Stone Fragments, Gravel and Sand (A-1-a (1))

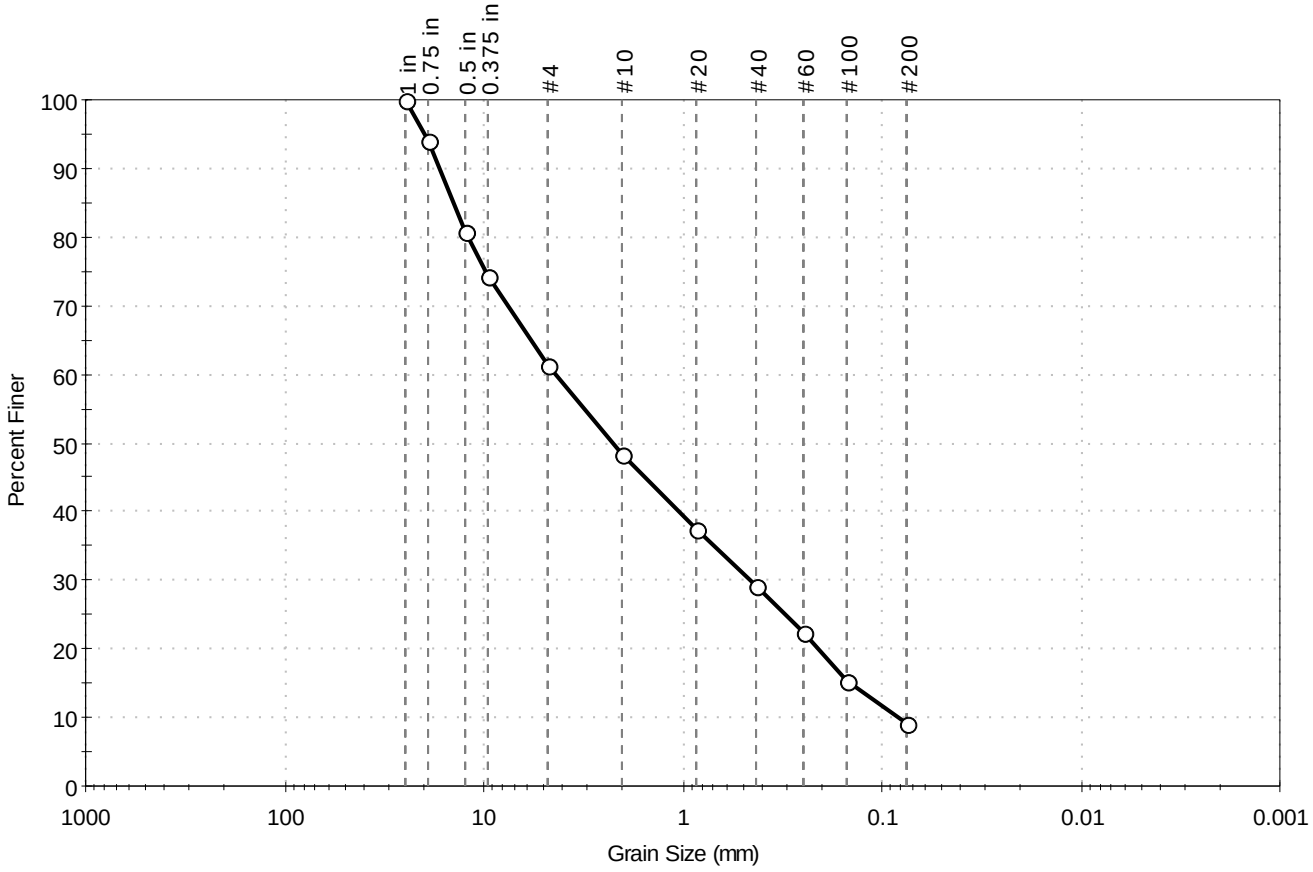
Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	Freeman Companies, LLC				
Project:	Killingly Bridges				
Location:	Killingly, CT			Project No:	GTX-306915
Boring ID:	B-1	Sample Type:	jar	Tested By:	jbr
Sample ID:	S-5	Test Date:	08/31/17	Checked By:	emm
Depth :	10-11.3 ft	Test Id:	421912		
Test Comment:	---				
Visual Description:	Moist, olive brown sand with silt and gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	38.5	52.3	9.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	94		
0.5 in	12.50	81		
0.375 in	9.50	74		
#4	4.75	61		
#10	2.00	48		
#20	0.85	37		
#40	0.42	29		
#60	0.25	22		
#100	0.15	15		
#200	0.075	9.2		

Coefficients

D_{85} = 14.3141 mm	D_{30} = 0.4582 mm
D_{60} = 4.3308 mm	D_{15} = 0.1426 mm
D_{50} = 2.2444 mm	D_{10} = 0.0823 mm
C_u = 52.622	C_c = 0.589

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-a (1))

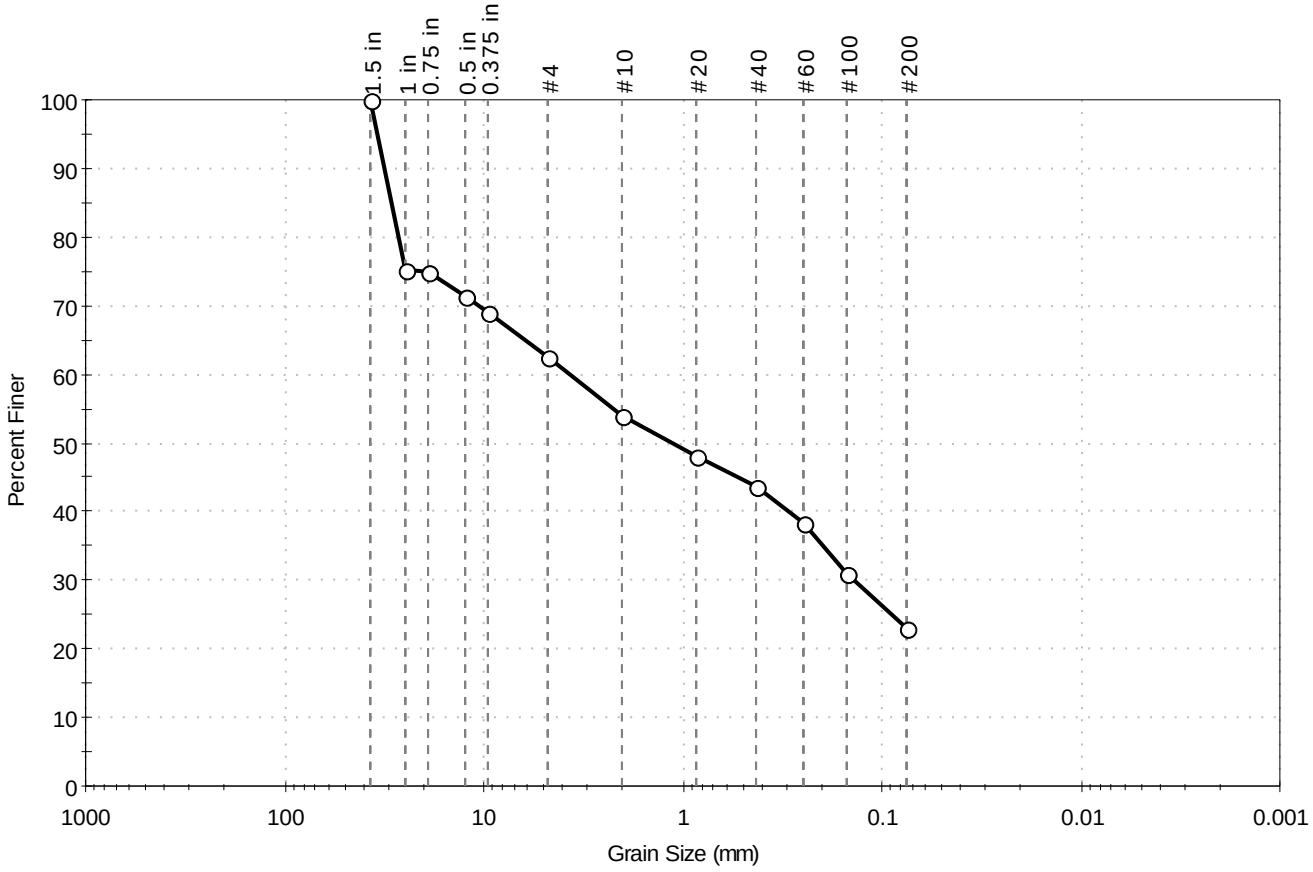
Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	Freeman Companies, LLC				
Project:	Killingly Bridges				
Location:	Killingly, CT			Project No:	GTX-306915
Boring ID:	B-2	Sample Type:	jar	Tested By:	jbr
Sample ID:	S-3	Test Date:	08/31/17	Checked By:	emm
Depth :	5-7 ft	Test Id:	421913		
Test Comment:	---				
Visual Description:	Moist, grayish brown silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	37.5	39.5	23.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	75		
0.75 in	19.00	75		
0.5 in	12.50	71		
0.375 in	9.50	69		
#4	4.75	62		
#10	2.00	54		
#20	0.85	48		
#40	0.42	44		
#60	0.25	38		
#100	0.15	31		
#200	0.075	23		

Coefficients

D_{85} = 29.2966 mm	D_{30} = 0.1378 mm
D_{60} = 3.6941 mm	D_{15} = N/A
D_{50} = 1.1212 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

FREEMAN
COMPANIES
LAND DEVELOPMENT | ENGINEERING DESIGN | CONSTRUCTION SERVICES

Geotechnical Engineering Report – Bridge 68-003
Valley Road Over Whetstone Brook
Killingly, Connecticut

October 24, 2022

Freeman Project No.: 2017-0507

Prepared for:

Town of Killingly
172 Main Street
Killingly, Connecticut 06239

Prepared by:

Freeman Companies, LLC
36 John Street
Hartford, CT 06106

Allison M. McCauliffe, P.E.
Senior Geotechnical Engineer/Project Manager

TABLE OF CONTENTS

ATTACHMENTS

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Appendices

1.0 INTRODUCTION

1.1 Summary

This report presents our evaluation of the subsurface conditions and geotechnical engineering recommendations for the proposed improvements to Bridge 68-003, Valley Road over Whetstone Brook, located in Killingly, Connecticut. This evaluation is based on our recent subsurface explorations and laboratory test data.

Subsurface conditions generally consist of Fill over Alluvium overlying bedrock. The existing culvert will be replaced with a new precast box culvert and new wingwalls and headwalls supported on spread footings. Channel improvements will consist of riprap and slope protection.

1.2 Scope of Work

Freeman Companies, LLC performed the following tasks:

- Engaged a subsurface exploration contractor to conduct test borings at the site;
- Provided technical monitoring of the explorations;
- Arranged for a testing laboratory to conduct laboratory soil tests; and
- Evaluated the subsurface conditions and prepared this report containing geotechnical design recommendations and construction considerations.

1.3 Authorization

The work was completed in accordance with our agreement dated July 20, 2017.

1.4 Project Vertical Datum

Elevations in this report refer to the NAVD 88 datum.

2.0 SITE AND PROJECT DESCRIPTION

2.1 Site Description

Bridge No. 68-003 is located on Valley Road in Killingly, Connecticut as shown on Figure 1, Site Location Map. The existing bridge is a 23-foot long by 19.8-foot wide, single span bridge supported on reinforced concrete abutments and carries one lane of traffic in each direction over Whetstone Brook. The bridge is approximately 200 feet south of the intersection of Valley Road and Beaman Road in the Town of Killingly. The structure was built in 1939. As-built bridge plans are not available as of this writing.

2.2 Project Description

The existing single span bridge will be replaced with a new precast box culvert. The wingwalls and headwall will be supported on shallow foundations. The bottom of culvert will be at Elevation (El.) 393 feet on the west side and El. 392.65 feet on the east side.

3.0 EXPLORATIONS

3.1 Recent Subsurface Explorations

Three test borings (S-3, S-3A, and S-4) were drilled by New England Borings of Glastonbury, Connecticut, on July 15 and 16, 2017. Borings S-3 and S-4 were drilled at Abutment 1 (south) of the bridge and boring S-4 was drilled at Abutment 2 (north). The borings were advanced using 4-inch diameter flush-joint casing to depths ranging from 2.5 feet to 29 feet. Standard Penetration Tests were conducted and soil samples were recovered at maximum 5-foot intervals in the borings.

Boring S-3 terminated at 2.5 feet on a large suspected flat boulder after several offset attempts refusing at similar depths. Boring S-4 terminated on inferred bedrock at a depth of 21 feet. Boring S-3A was terminated within bedrock and a five-foot-long NX-size bedrock core sample was recovered from 24 feet to 29 feet.

Exploration locations are shown on Figure 2, Subsurface Exploration Location Plan. As-drilled locations were surveyed by Freeman Companies. A Freeman Companies senior geologist monitored the drilling, classified the soil samples, and prepared the test boring logs included in Appendix A.

3.2 Laboratory Testing

Grain size analyses (ASTM D422) were performed on four representative soil samples to aid in determining engineering properties; three from the borings to confirm visual classification and one from the upstream bed for scour analysis.

Grain size analyses were conducted by Geotesting Express, Inc., of Acton, Massachusetts. Results of laboratory testing are provided in Appendix B.

4.0 SUBSURFACE CONDITIONS

4.1 Subsurface Conditions

Subsurface conditions encountered in the explorations consist of Fill and Alluvium overlying bedrock, as described below. A subsurface profile is shown in Figure 3. Subsurface data are summarized on Table I included at the end of the report.

Based on our review of the test borings, generalized subsurface conditions are as follows:

THICKNESS (FT)	GENERALIZED DESCRIPTION
8.5 to 9	**Fill** – Asphalt (6 inches) and gravel base (12 inches) overlying brown coarse to fine SAND, little to some coarse to fine gravel, trace to little silt. Standard Penetration Test (SPT) N-Values ranged from 10 (medium) to 38 (dense) blows per foot (bpf).
9 to 13	**Alluvium** – Brown to gray, coarse to fine SAND, varying to coarse to fine GRAVEL, some coarse to fine gravel, little silt, frequent cobbles and boulders. SPT N-values were >100 (very dense) bpf.

Bedrock – Bedrock was encountered in test boring S-3A at a depth of 21.5 feet below existing ground surface (El. 383.2) and S-4 at a depth of 18 feet below existing ground surface (El. 384.5). Bedrock is described as gray, coarse grained GNEISS, thinly bedded, highly fractured, medium strong, with micaceous shale and quartz. Rock Quality Designation (RQD) value was 8 to 13 percent (very poor).

Groundwater – Ground water was encountered approximately 8.5 feet below the existing ground surface. Water levels are expected to be influenced primarily by water levels within the adjacent streambed, but will vary with season, precipitation, temperature, and other factors.

5.0 GEOTECHNICAL ENGINEERING RECOMMENDATIONS

5.1 Design Recommendations for Bridge 68-003

Geotechnical Recommendations

- **Footing Depth:** Minimum of 4 feet below the lowest adjacent ground surface required by the CTDOT Bridge Design Manual. Both the wingwalls, headwalls, and culvert should bear in the naturally deposited Alluvium.
- **Subgrade Preparation:** Place a minimum 12-inch thick layer of crushed stone overlying geotextile separation fabric over the naturally deposited Alluvium to protect the bearing surface from disturbance during foundation construction.
- **Seismic Design:** Soils are not susceptible to liquefaction. Soil conditions at the site are defined as AASHTO Site Class C.
- **Backfill Material:** Place Pervious Structure Backfill (CTDOT Form 817 M.02.05) behind the headwall and wingwalls above a line defined by a 1V:1.5H slope extending up from the heel of the footing to grade, where applicable.
- **Service Limit Bearing:** Nominal Bearing Resistance = Assume 4,000 psf; Resistance Factor = 1.0 (per AASHTO 10.5.5.1).
- **Strength Limit Bearing:** Assume 15,000 psf; Resistance Factor = 0.55 (AASHTO Table 11.5.7-1).
- **Settlement at Recommended Bearing Pressure:** Estimated total settlement less than 1 inch; differential less than ¼- inch.
- **Weep Holes:** 4 inch dia. weep holes at maximum 10 foot spacing, installed according to CTDOT specifications.
- **Lateral Earth Pressures Unrestrained Walls (Active) -** Design retaining walls that are free to rotate at the top for the following lateral earth pressures:

  Static: 35 psf/f (equivalent hydrostatic pressure)

  Surcharge: 0.3 times the vertical surcharge load distributed uniformly over the height of the wall. The minimum vertical surcharge should be equivalent to an H-20 vehicular load, if vehicles (including construction equipment) will be allowed above the wall within a distance of the 1.5 times the wall height. The wall design should account for sloping ground surface above the wall.

  The lateral earth pressures provided above do not include hydrostatic forces and assume that walls will be drained.
- **Coefficient of Friction (tan δ) Along Bottom:** 0.40 (AASHTO Table 3.11.5.3-1); Resistance factor 0.8 (AASHTO Table 10.5.5.2.2-1).

- **Slope Stability:** Global Stability will be evaluated when grading has been finalized.

6.0 CONSTRUCTION CONSIDERATIONS

6.1 Excavation

Conventional heavy excavation equipment should be suitable for excavation in existing soil materials. Excavation should conform to OSHA excavation regulations contained in 29 CFR Part 1926, latest edition.

6.2 Bearing Surface Preparation

Excavated subgrades should be proof compacted with a minimum six passes of a large vibratory plate compactor capable of exerting a minimum force of 2,000 lbs. in trench excavations. Soft, yielding or otherwise unacceptable soils should be over-excavated and replaced with either compacted structural fill or crushed stone wrapped in a geotextile separation fabric. If vibratory proof compaction of the subgrade will be detrimental due to the presence of groundwater, static rolling with a self-propelled walk behind double drum roller may be allowed at the discretion of the engineer.

Soil bearing surfaces should be protected against freezing both before and after concrete placement. If construction takes place during winter months, foundations should be backfilled as soon as possible following construction. Alternatively, insulating blankets or other methods may be used to protect against freezing.

6.3 Cofferdam and Dewatering

We estimate that excavations up to about 4 feet below the adjacent water level will be required, depending on water levels in Whetstone Brook. Construction should be performed in-the-dry, and cofferdam and dewatering will be required. Steel sheeting may not be feasible due to the density and presence of cobbles and boulders in the subgrade soils. Soldier piles and lagging may be feasible, but will not be water tight. A drilled cofferdam system such as tangent or secant piles may be capable of penetrating the boulders, could provide a groundwater cutoff, and may be feasible. Other means of water control may also be possible. This is expected to be a difficult and time consuming process.

Surface water should be diverted away from excavations. Staged construction and temporary lateral support of excavations will be required to maintain traffic flow and protect nearby utilities where present.

6.4 Reuse of Existing Soils

The existing soils to be excavated are not expected to be suitable for reuse as Pervious Structure Backfill or Granular Fill. Excavated soils may be suitable for reuse as embankment fill. However, the siltier soils may be difficult to properly compact when wet, and may need to be dried to achieve compaction. Drying the soils can be difficult and at times impractical, particularly during periods of cold and wet weather.

7.0 FUTURE SERVICES AND LIMITATIONS

We recommend that Freeman Companies be engaged during construction to observe:

- Verify that soil conditions exposed in excavations are in general conformance with design assumption, and that the geotechnical aspects of construction are consistent with the project specifications.

This report was prepared for the exclusive use of The Town of Killingly and the project design team. The recommendations provided herein are based on the project information provided at the time of this report and may require modification if there are any changes in the nature, design, or location of the facility.

The recommendations in this report are based in part on the data obtained from the subsurface explorations. The nature and extent of variations between explorations may not become evident until construction. If variations from the anticipated conditions are encountered, it may be necessary to revise the recommendations in this report.

Our professional services for this project have been performed in accordance with generally accepted engineering practices; no warranty, express or implied, is made.

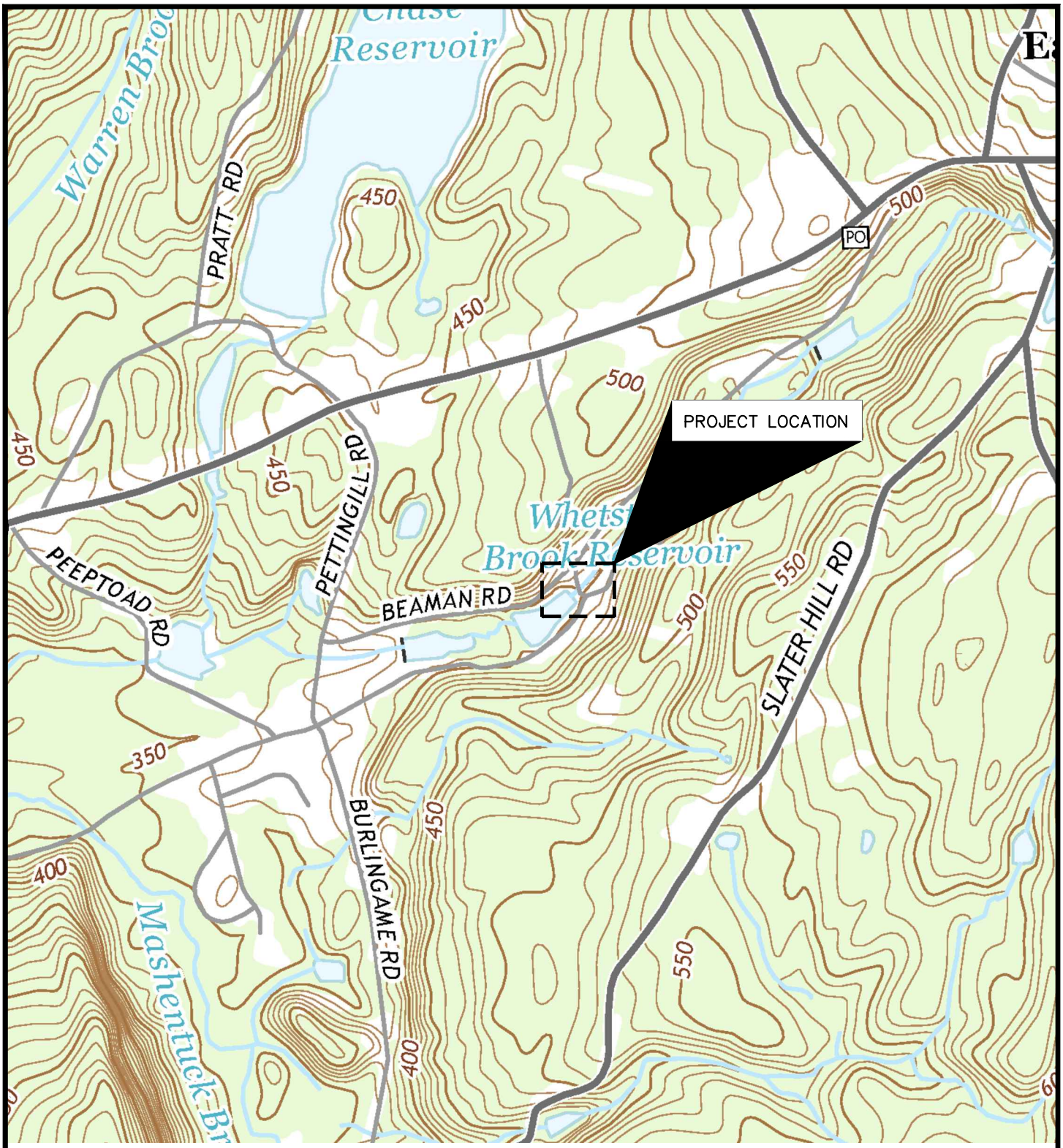
Table 1
Summary of Subsurface Explorations
Killingly Bridge 68-003
Killingly, CT

Boring No.	Ground Surface El.	Depth (ft.)	Thickness			Depth to Groundwater		Depth to Bedrock	
			Fill	Alluvium	Weathered Bedrock	Depth (ft.)	Elevation	Depth (ft.)	Elevation
Bridge 68-003									
S-3	402.7	2.5	>2.5	--	--	--	--	--	--
S-3A	404.7	29	8.5	12.5	2.5	8.5	396.2	21.5	383.2
S-4	402.5	21	9.0	8.5	>3	8.5	394	18	384.5

Notes:

1. Ground surface elevations are based on the topographic information from the survey.
2. Groundwater levels are approximate
3. Depth of bedrcok includes weathered bedrock.
3. ">" - Greater Than "--" - Not Encountered or Recorded

FIGURES



USGS QUADRANGLE MAP
EAST KILLINGLY, CONNECTICUT
DATE 2015

FREEMAN COMPANIES
LAND DEVELOPMENT | ENGINEERING DESIGN | CONSTRUCTION SERVICES
36 JOHN STREET
HARTFORD, CT 06106
WWW.FREEMANCOS.COM
TEL:(860)251-9550
FAX:(860)986-7161
ELEVATE YOUR EXPECTATIONS

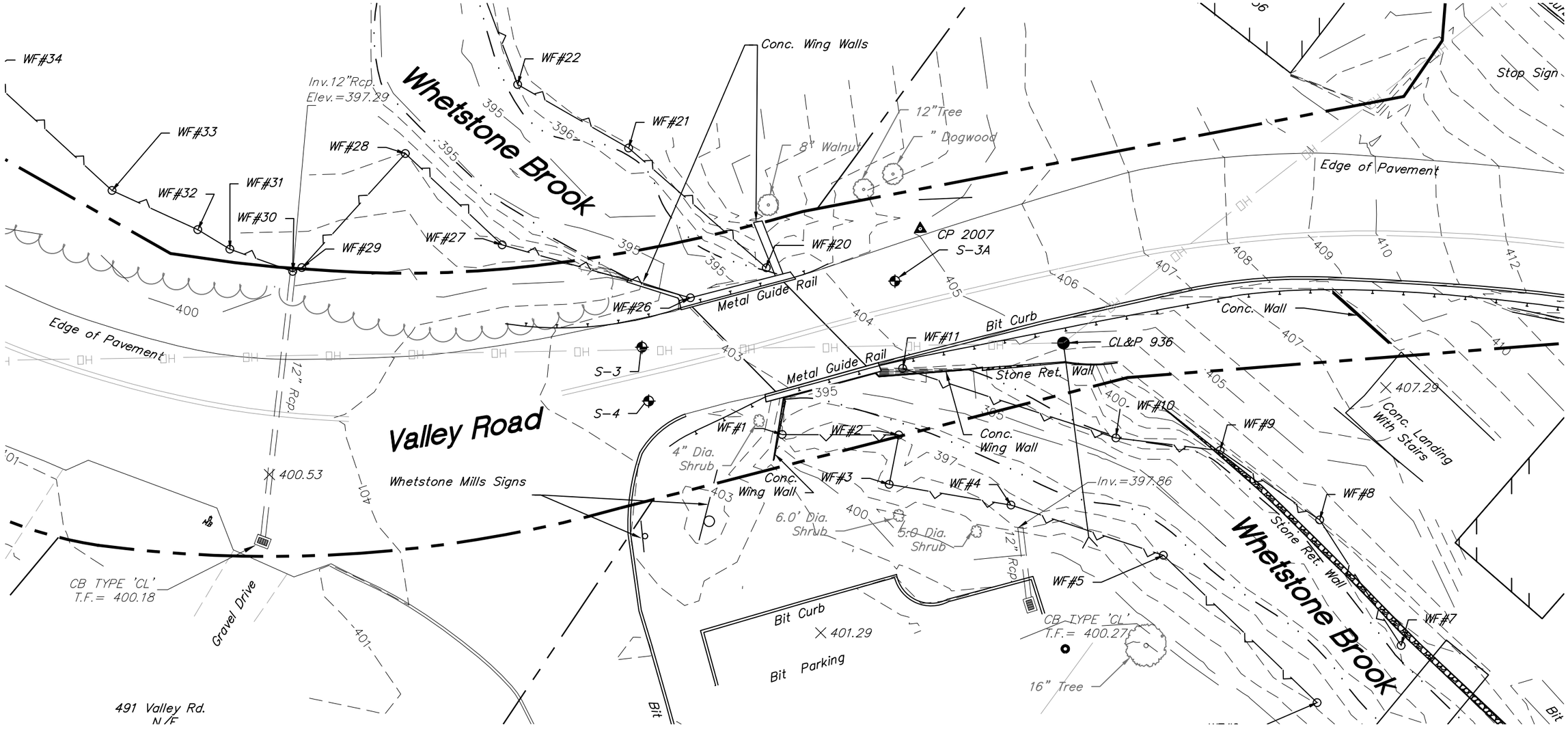
SITE LOCATION MAP

VALLEY ROAD OVER WHETSTONE BROOK
BRIDGE NO. 68-003
KILLINGLY, CONNECTICUT

DRAFTED:	T.T.
CHECKED:	A.M.
APPROVED:	A.M.
SCALED:	1"=1000'
PROJECT NO.:	2017-0507
DATE:	08/21/2017

SHEET NO.

FIGURE 1



LEGEND:

S-1 TEST BORINGS

NOTES:

1. BASE PLAN PREPARED BY FREEMAN COMPANIES
2. EXPLORATION LOCATIONS WERE LOCATED BY SURVEY
3. REFER TO THE TEXT AND APPENDICES FOR ADDITIONAL INFORMATION

GRAPHIC SCALE
20 10 0 20
SCALE IN FEET

SUBSURFACE EXPLORATION LOCATION PLAN

VALLEY ROAD OVER WHETSTONE BROOK
BRIDGE No. 68-003
KILLINGLY, CONNECTICUT

FREEMAN COMPANIES
AND DEVELOPMENT · ENGINEERING DESIGN · CONSTRUCTION SERVICES
FREEMAN COMPANIES, LLC
36 JOHN STREET
HARTFORD, CT 06106
WWW.FREEMANCOS.COM
TEL:(860)251-9550
TOLL FREE:(800)604-5141
FAX:(860)986-7161
ELEVATE YOUR EXPECTATIONS

No.	Date	Description
–	–	–

REVISIONS

DRAWN:	T.T.
CHECKED:	A.M.
APPROVED:	A.M.
SCALE:	1"=20'
PROJECT NO.:	2017-0507
DATE:	10/04/2017

SHEET NO.

FIGURE 2

Freeman Companies, LLC
36 John Street
Hartford, CT 06109

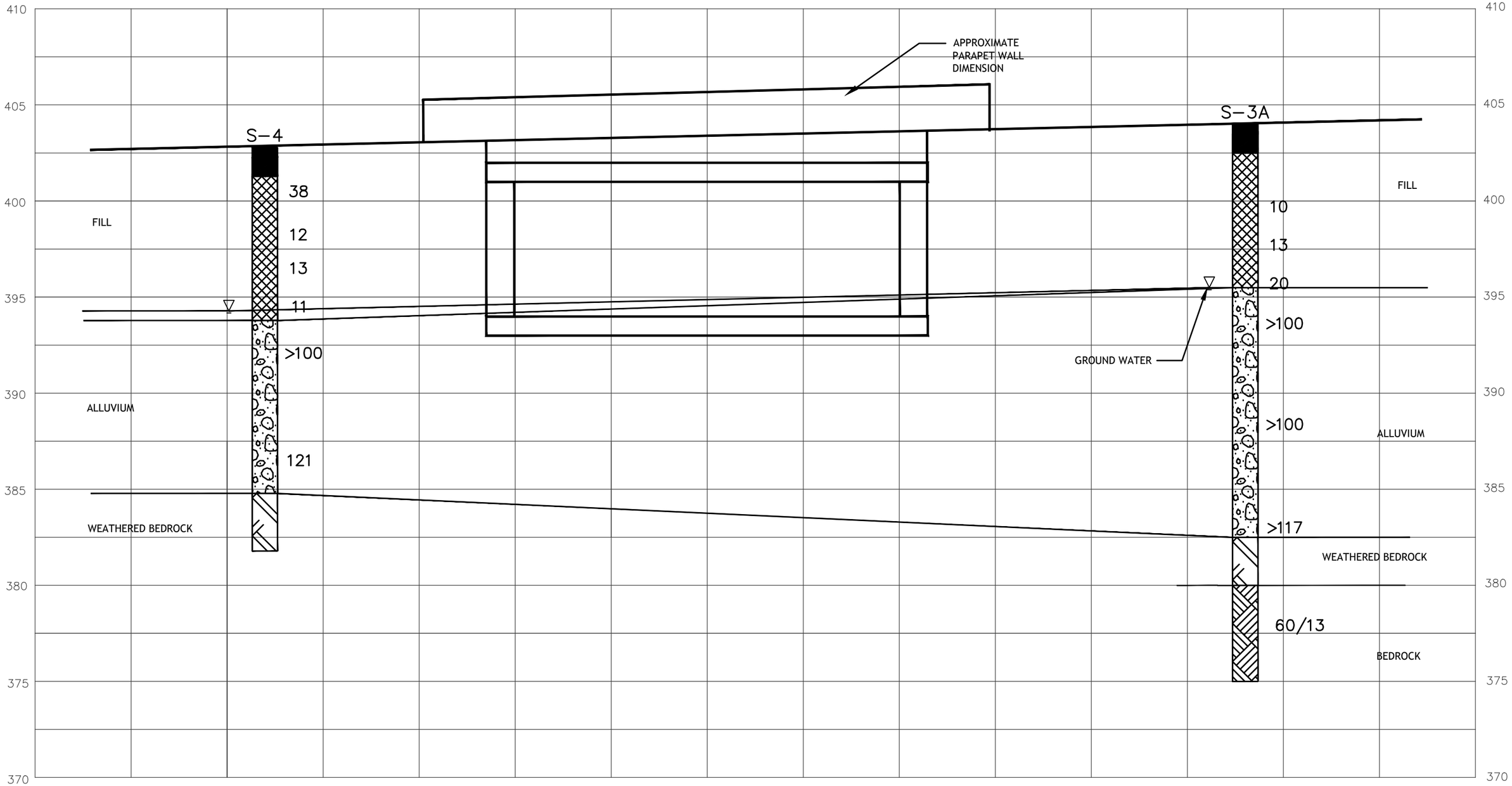
BRIDGE No. 68-003 SUBSURFACE DIAGRAM

PRIME DESIGNER Town of Killingly Eningeering

PROJECT NUMBER 2017-0507

PROJECT NAME Valley Road over Whetstone Brook Bridge No. 68-003

PROJECT LOCATION Killingly, Connecticut



LEGEND
13 SPT N–VALUE
60%/0% RECOVERY/RQD

NOTE:
1) THE STRATA BOUNDARIES INDICATED ARE KNOWN ONLY AT THE BORING LOCATIONS AND WILL VARY BETWEEN LOCATIONS

HORIZONTAL SCALE: 1" = 5'
VERTICAL SCALE: 1" = 5'

FIGURE-3

APPENDIX B

TEST BORING LOGS

Driller:	T. Roe	**Connecticut DOT Boring Report**		Hole No.:	S-3
Inspector:	Thiet Ta	Town:	Killingly	Stat./Offset:	
Engineer:	A. McCauliffe	Project No.:	2017-0507	Northing:	868354.51
Start Date:	8-15-17	Route No.:	Valley Road over Whetstone Brook	Easting:	1250602.9
Finish Date:	8-15-17	Bridge No.:	68-003	Surface Elevation:	402.7
Project Description:	Valley Road and Bear Hill Road Over Brooks				
Casing Size/Type:	4-in. Casing	Sampler Type/Size:	1-3/8 inch ID	Core Barrel Type:	
Hammer Wt.:	140lb Fall: 30in.	Hammer Wt.:	140lb Fall: 30in.		
Groundwater Observations:					

Depth (ft)	SAMPLES: Sample Type/No.	SAMPLES: Blows on Sampler per 6 inches	SAMPLES: Pen. (in.)	SAMPLES: Rec. (in.)	SAMPLES: RQD %	Generalized Strata Description	Material Description and Notes	Elevation (ft)
0						Asphalt	PAVEMENT (6")	
	S-1	19 100/4"	10	2		Base	Gray c-f SAND, little c-f gravel, trace silt, (BASE)	
						Fill	Brown to tan c-f SAND, some c-f gravel, trace silt	
							Large flat boulder at 2.5ft	400
5							END OF BORING 2.5ft	395
10								390
15								385
20								380
25								375
30								

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test

Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 2.5ft Rock: ft No. of Soil Samples: 1 No. of Core Runs: 0	NOTES: Auger refual on boulder at 2.5 and was offset 3ft north. Boring terminated on a boulder at 2.5ft again so boring was offset 3ft south of the original location. Boring terminated on a boulder at 2ft. Boring was offset to B-3A on opposite side of culvert	Sheet 1 of 1 SM-001-M REV. 1/02

Driller:	T. Roe	**Connecticut DOT Boring Report**		Hole No.:	S-3A
Inspector:	Thiet Ta	Town:	Killingly	Stat./Offset:	
Engineer:	A. McCauliffe	Project No.:	2017-0507	Northing:	868403.39
Start Date:	8-15-17	Route No.:	Valley Road over Whetstone Brook	Easting:	1250590.15
Finish Date:	8-16-17	Bridge No.:	68-003	Surface Elevation:	404.7
Project Description:	Valley Road and Bear Hill Road Over Brooks				
Casing Size/Type:	4-in. Casing	Sampler Type/Size:	1-3/8 inch ID	Core Barrel Type:	NX
Hammer Wt.:	140lb Fall: 30in.	Hammer Wt.:	140lb Fall: 30in.		
Groundwater Observations:	@8.5 ATD				

Depth (ft)	SAMPLES: Sample Type/No.	Blows on Sampler per 6 inches	Pen. (in.)	Rec. (in.)	RQD %	Generalized Strata Description	Material Description and Notes	Elevation (ft)
0						Asphalt	PAVEMENT (6")	
						Base	Brown c-f SAND, little c-f gravel, trace silt, (BASE)	
						Fill		
	S-1	7 6 4 5	24	10			Brown to tan c-f SAND, little m-f gravel, trace silt	
5								400
	S-2	4 9 4 9	24	12			Brown c-f SAND, little c-f gravel, little silt	
	S-3	12 11 9 8	24	16			Gray c-f SAND, little c-f gravel, trace silt	
						Alluvium	Gray c-f SAND, little m-f gravel, trace silt	
10	S-4	100/2"	2	0			No Recovery ; gray c-f SAND, some gravel from wash cuttings	395
							Frequent cobbles and boulders while augering to 15ft	
15	S-5	22 100/2"	8	6			Brown c-f GRAVEL and c-f SAND, little silt	390
							Frequent cobbles and boulders while augering to 20ft	
20	S-6	26 17 100/5"	17	12			Brown to gray c-f SAND, little c-f gravel, trace silt	385
						Weathered Rock	WEATHERED BEDROCK	
						Bedrock		
25	C-1		60	60	13		Gray GNEISS, thinly bedded, highly fractured, medium strong, with quartz	380
30							END OF BORING 29ft	375

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test

Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 24ft Rock: 5ft	NOTES:	Sheet 1 of 1
No. of Soil Samples: 6 No. of Core Runs: 1		SM-001-M REV. 1/02

Driller:	T. Roe	**Connecticut DOT Boring Report**		Hole No.:	S-4
Inspector:	Thiet Ta	Town:	Killingly	Stat./Offset:	
Engineer:	A. McCauliffe	Project No.:	2017-0507	Northing:	868355.82
Start Date:	8-16-17	Route No.:	Valley Road over Whetstone Brook	Easting:	1250613.31
Finish Date:	8-16-17	Bridge No.:	68-003	Surface Elevation:	402.5
Project Description:	Valley Road and Bear Hill Road Over Brooks				
Casing Size/Type:	4-in. Casing	Sampler Type/Size:	1-3/8 inch ID	Core Barrel Type:	NX
Hammer Wt.:	140lb Fall: 30in.	Hammer Wt.:	140lb Fall: 30in.		
Groundwater Observations:	@8.5 ATD				

Depth (ft)	SAMPLES: Sample Type/No.	Blows on Sampler per 6 inches	Pen. (in.)	Rec. (in.)	RQD %	Generalized Strata Description	Material Description and Notes	Elevation (ft)
0						Asphalt	PAVEMENT (6")	
						Base	Brown c-f SAND, little c-f gravel, little silt (BASE)	
	S-1	19 20 18 16	24	4		Fill	Brown to orange c-f SAND, some c-f gravel, trace silt	400
							Encountered boulder @ 3ft	
	S-2	7 7 5	18	4			Gray c-f SAND, little c-f gravel, trace silt	
5	S-3	6 8 5 2	24	10			Brown to dark brown c-f SAND, some m-f gravel	
	S-4	25 7 4 4	24	12			Brown f-m SAND, little c-f gravel, trace silt	395
							Brown f SAND and SILT	
						Alluvium	Grinding of augers , harder drilling	
10	S-5	24 100/4"	10	6			Brown c-f SAND, little c-f gravel, little silt	
								390
15	S-6	34 44 77 65	24	8			Gray c-f SAND, some c-f gravel, little silt	
								385
						Weathered Bedrock	WEATHERED BEDROCK (steady grinding drill rate)	
20								
							END OF BORING 21ft	380
25								
								375
30								

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test

Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

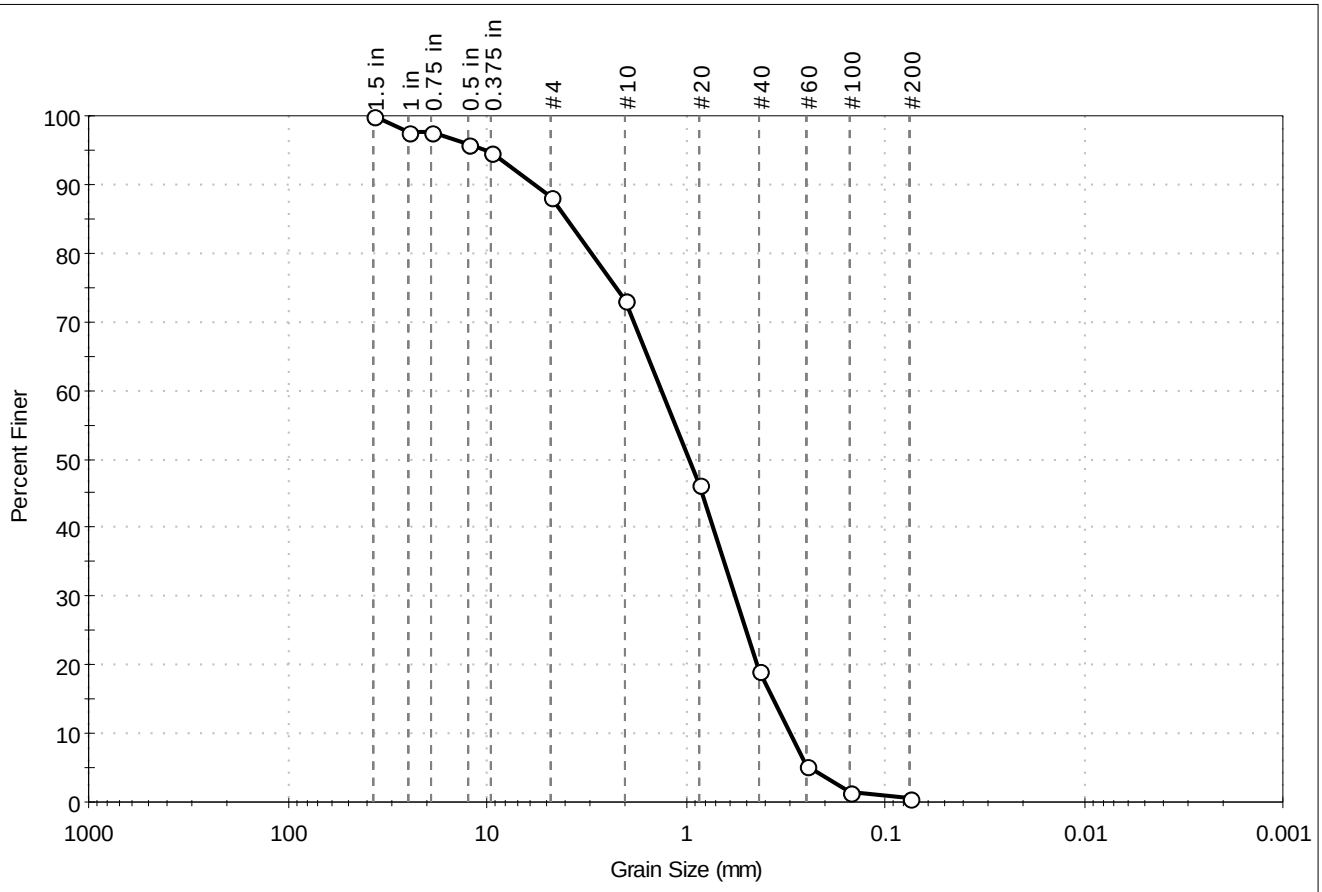
Total Penetration in Earth: 10.8ft Rock: ft	NOTES:	Sheet 1 of 1
No. of Soil Samples: 6 No. of Core Runs: 0		SM-001-M REV. 1/02

APPENDIX C

RESULTS OF LABORATORY TESTING

Client:	Freeman Companies, LLC				
Project:	Killingly Bridges				
Location:	Killingly, CT			Project No:	GTX-306915
Boring ID:	B-3A	Sample Type:	jar	Tested By:	jbr
Sample ID:	Grab	Test Date:	08/31/17	Checked By:	emm
Depth :	Upstream	Test Id:	421920		
Test Comment:	---				
Visual Description:	Moist, dark brown sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	11.9	87.5	0.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	98		
0.75 in	19.00	98		
0.5 in	12.50	96		
0.375 in	9.50	95		
#4	4.75	88		
#10	2.00	73		
#20	0.85	46		
#40	0.42	19		
#60	0.25	5		
#100	0.15	2		
#200	0.075	0.6		

Coefficients

D_{85} = 3.9749 mm	D_{30} = 0.5615 mm
D_{60} = 1.3168 mm	D_{15} = 0.3633 mm
D_{50} = 0.9564 mm	D_{10} = 0.2993 mm
C_u = 4.400	C_c = 0.800

Classification

ASTM — Poorly graded sand (SP)

AASHTO — Stone Fragments, Gravel and Sand (A-1-b (1))

Sample / Test Description

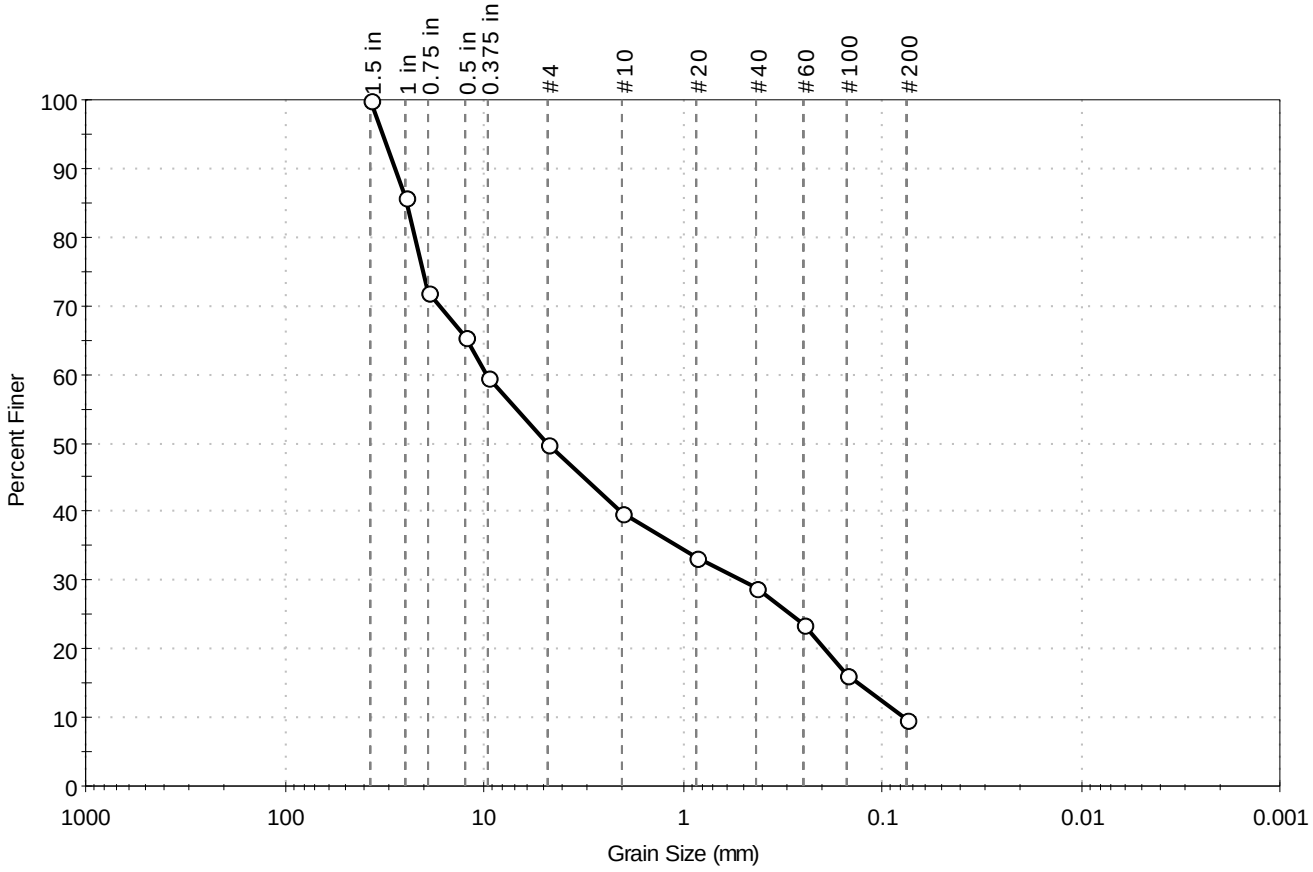
Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	Freeman Companies, LLC				
Project:	Killingly Bridges				
Location:	Killingly, CT			Project No:	GTX-306915
Boring ID:	B-3A	Sample Type:	jar	Tested By:	jbr
Sample ID:	S-5	Test Date:	08/31/17	Checked By:	emm
Depth :	15-15.8 ft	Test Id:	421914		

Test Comment: ---
Visual Description: Moist, olive brown gravel with silt and sand
Sample Comment: ---

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	50.3	40.0	9.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	86		
0.75 in	19.00	72		
0.5 in	12.50	66		
0.375 in	9.50	60		
#4	4.75	50		
#10	2.00	40		
#20	0.85	33		
#40	0.42	29		
#60	0.25	24		
#100	0.15	16		
#200	0.075	9.7		

Coefficients

D_{85} = 24.5693 mm	D_{30} = 0.5014 mm
D_{60} = 9.6277 mm	D_{15} = 0.1325 mm
D_{50} = 4.8266 mm	D_{10} = 0.0773 mm
C_u = 124.550	C_c = 0.338

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-a (1))

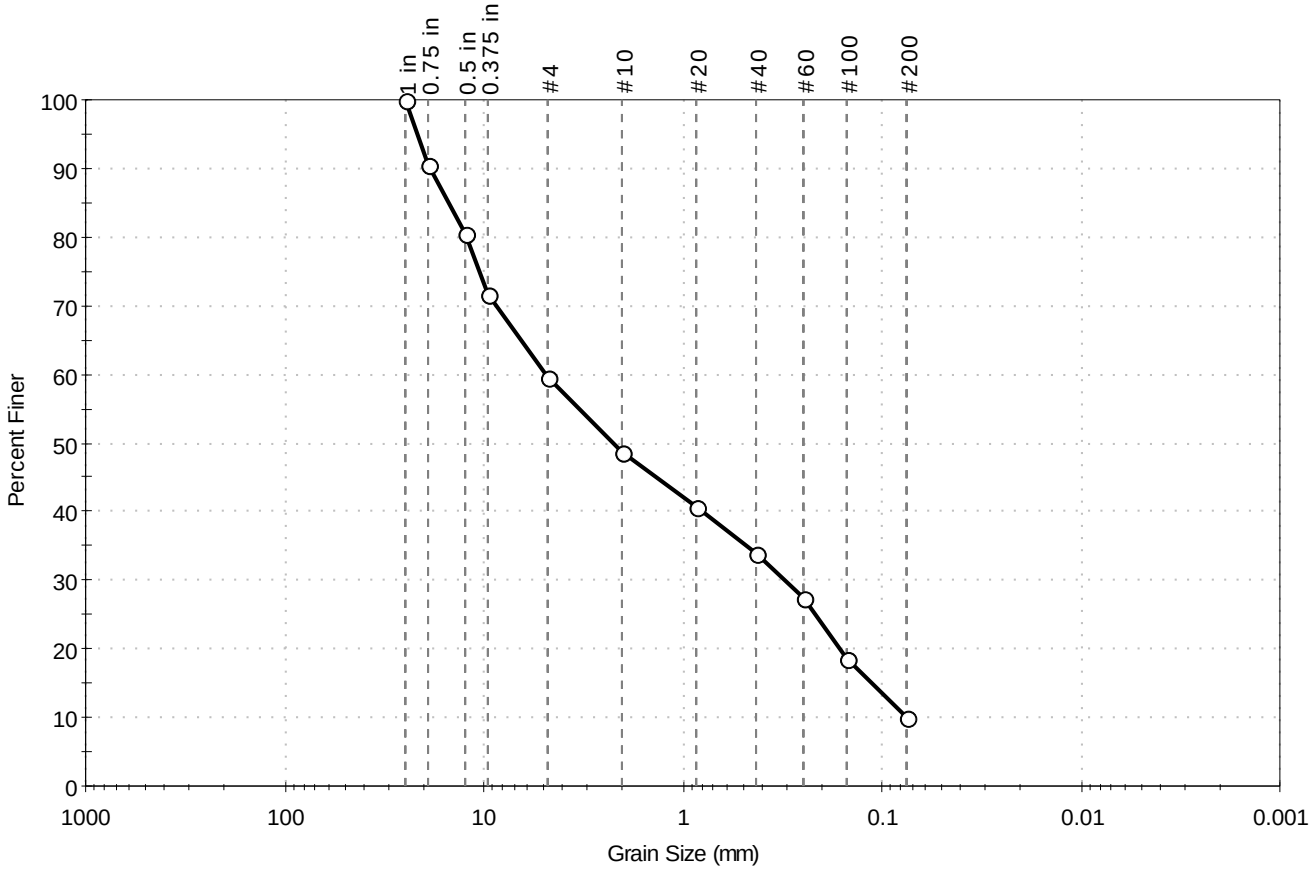
Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	Freeman Companies, LLC				
Project:	Killingly Bridges				
Location:	Killingly, CT			Project No:	GTX-306915
Boring ID:	B-4	Sample Type:	jar	Tested By:	jbr
Sample ID:	S-3	Test Date:	08/31/17	Checked By:	emm
Depth :	5-7 ft	Test Id:	421915		
Test Comment:	---				
Visual Description:	Moist, dark grayish brown sand with silt and gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
---	40.5	49.5	10.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	90		
0.5 in	12.50	81		
0.375 in	9.50	72		
#4	4.75	60		
#10	2.00	49		
#20	0.85	41		
#40	0.42	34		
#60	0.25	27		
#100	0.15	19		
#200	0.075	10		

Coefficients

D_{85} = 15.0705 mm	D_{30} = 0.3079 mm
D_{60} = 4.8808 mm	D_{15} = 0.1120 mm
D_{50} = 2.2300 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

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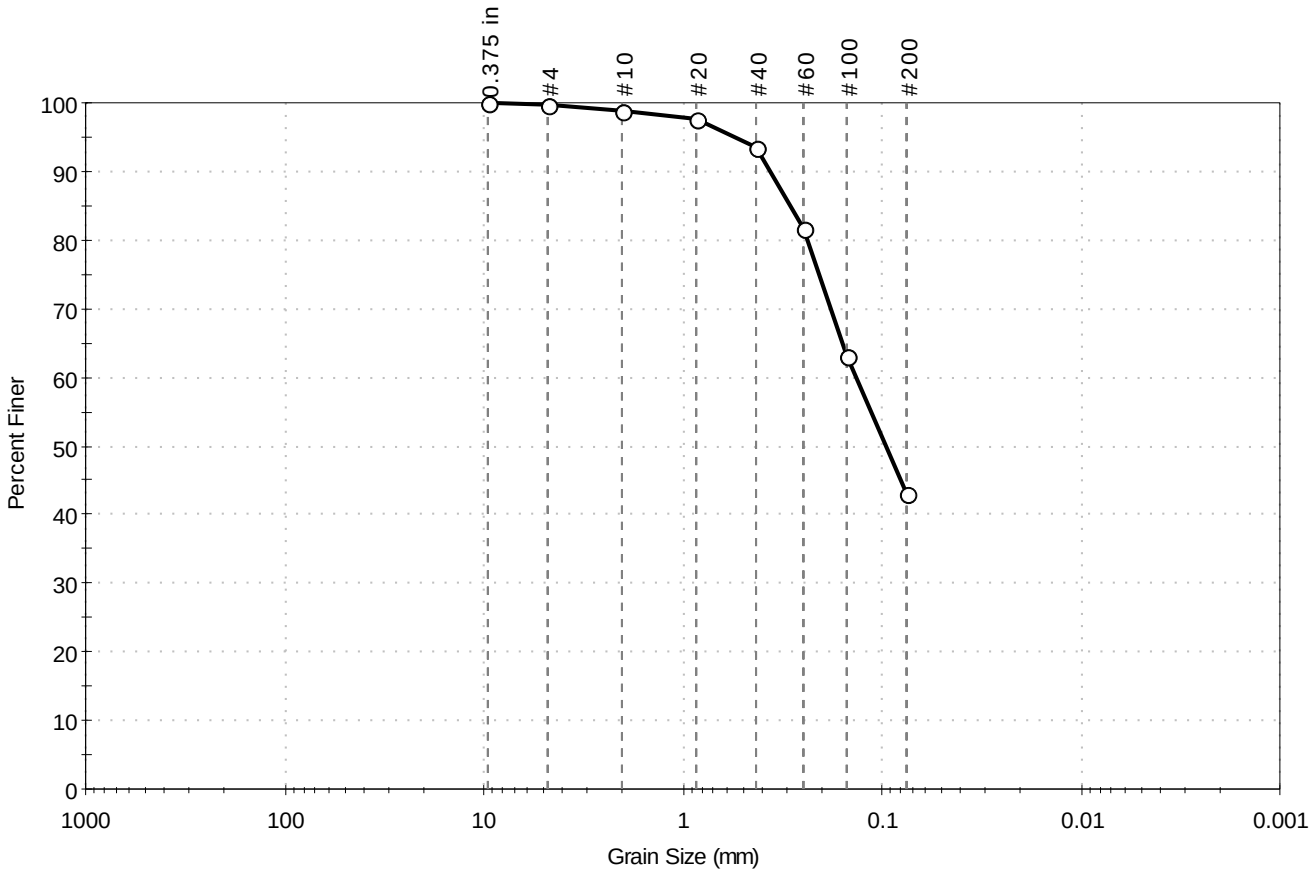
Client:	Freeman Companies, LLC				
Project:	Killingly Bridges				
Location:	Killingly, CT			Project No:	GTX-306915
Boring ID:	B-4	Sample Type:	jar	Tested By:	jbr
Sample ID:	S-4	Test Date:	08/31/17	Checked By:	emm
Depth :	7-9 ft	Test Id:	421916		
Test Comment:	---				
Visual Description:	Moist, olive brown clayey sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
---	0.2	56.8	43.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	100		
#10	2.00	99		
#20	0.85	98		
#40	0.42	93		
#60	0.25	82		
#100	0.15	63		
#200	0.075	43		

Coefficients

D_{85} = 0.2913 mm D_{30} = N/A

D_{60} = 0.1347 mm D_{15} = N/A

D_{50} = 0.0955 mm D_{10} = N/A

C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample / Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

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FREEMAN
COMPANIES
LAND DEVELOPMENT | ENGINEERING DESIGN | CONSTRUCTION SERVICES

Geotechnical Engineering Report – Bridge 68-009
Bear Hill Road Over Unnamed Brook
Killingly, Connecticut

October 24, 2022

Freeman Project No.: 2017-0507

Prepared for:

Town of Killingly
172 Main Street
Killingly, Connecticut 06239

Prepared by:

Freeman Companies, LLC
36 John Street
Hartford, CT 06106

Allison M. McCauliffe, P.E.
Senior Geotechnical Engineer/Project Manager

TABLE OF CONTENTS

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Appendices

1.0 INTRODUCTION

1.1 Summary

This report presents our evaluation of the subsurface conditions and geotechnical engineering recommendations for the proposed improvements to Bridge 68-009, Bear Hill Road over Unnamed Brook, located in Killingly, Connecticut. This evaluation is based on our recent subsurface explorations and laboratory test data.

Subsurface conditions generally consist of Fill, an Organic layer, and Alluvium overlying bedrock. The existing culvert will be replaced with a new precast three sided box culvert and new wingwalls and headwalls supported on spread footings. Channel improvements will consist of riprap and slope protection.

1.2 Scope of Work

Freeman Companies, LLC performed the following tasks:

- Engaged a subsurface exploration contractor to conduct test borings at the site;
- Provided technical monitoring of the explorations;
- Arranged for a testing laboratory to conduct laboratory soil tests; and
- Evaluated the subsurface conditions and prepared this report containing geotechnical design recommendations and construction considerations.

1.3 Authorization

The work was completed in accordance with our agreement dated July 20, 2017.

1.4 Project Vertical Datum

Elevations in this report refer to the NAVD 88 datum.

2.0 SITE AND PROJECT DESCRIPTION

2.1 Site Description

Bridge No. 68-009 is located on Bear Hill Road in Killingly, Connecticut as shown on Figure 1, Site Location Map. The existing bridge structure is a twin corrugated pipe culvert 5 foot in diameter and carries one lane of traffic in each direction over an unnamed brook. The bridge is approximately 1,300 feet southeast of the intersection of Bear Hill Road and Bailey Hill Road in the Town of Killingly. The structure was built in 1970. As-built plans are not available at this writing.

2.2 Project Description

The existing structure will be replaced with a new three sided precast box culvert. The wingwalls and headwall will be supported on spread footings. The bottom of culvert will be at Elevation (El.) 556.06 feet on the west side and El. 554.86 feet on the east side.

3.0 EXPLORATIONS

3.1 Recent Subsurface Explorations

Two test borings (S-5 and S-6) were drilled by New England Borings of Glastonbury, Connecticut, on August 16 and 17, 2017. The borings were advanced using 4-inch diameter flush-joint casing to depths of 14 feet and 19 feet. Standard Penetration Tests were conducted and soil samples were recovered at maximum 5-foot intervals in the borings.

Boring S-5 was terminated in bedrock following a five-foot-long NX-size bedrock core from 14 feet to 19 feet. Boring S-6 terminated at 14 feet on bedrock.

Exploration locations are shown Figure 2, Subsurface Exploration Location Plan. A Freeman Companies senior geologist monitored the drilling, classified the soil samples, and prepared the test boring logs are included in Appendix A.

3.2 Laboratory Testing

Two grain size analyses (ASTM D422) were performed on representative soil samples from the borings to confirm visual classification to aid in determining engineering properties.

Grain size analyses were conducted by Geotesting Express, Inc., of Acton, Massachusetts. Results of laboratory testing are attached.

4.0 SUBSURFACE CONDITIONS

4.1 Subsurface Conditions

Subsurface conditions encountered in the explorations consist of fill, organics, and alluvium overlying bedrock, as described below. Subsurface data are summarized on Table I included at the end of the report.

Based on our review of the test borings, generalized subsurface conditions are as follows:

THICKNESS (FT)	GENERALIZED DESCRIPTION
7.8 to 10.4	**Fill** – Asphalt (6 inches) and gravel base (12 inches) overlying brown to tan to gray coarse to fine SAND, little to and coarse to fine gravel, trace to little silt; varying to dark brown coarse to fine GRAVEL. Standard Penetration Test (SPT) N-Values ranged from 15 (medium dense) to 58 (very dense) blows per foot (bpf).
1	**Organics** – Dark brown, coarse to fine SAND, trace to little gravel, little silt, with wood and roots. SPT N-values ranged from 2 to 9 (loose) bpf.
1.5 to 2	**Alluvium** – Gray, coarse to fine SAND and SILT, trace GRAVEL, frequent cobbles and boulders. SPT N-values were greater than 50 to greater than 100 (very dense) bpf.

Bedrock – Bedrock was encountered in test boring S-5 at a depth of 13 feet below existing ground surface (EL. 551.9) and at a depth of 11 feet below existing ground surface (EL. 553.5) at boring S-6. Bedrock is described as gray, coarse grained GNEISS, thinly banded, moderately fractured, medium strong, with micaceous shale and quartz. Rock Quality Designation (RQD) value was 51 percent (fair).

Groundwater – Ground water was encountered at approximately 3.5 feet below the existing ground surface. Water levels are expected to be influenced primarily by water levels within the adjacent streambed, but will vary with season, precipitation, temperature, and other factors.

5.0 GEOTECHNICAL ENGINEERING RECOMMENDATIONS

5.1 Design Recommendations for Bridge 68-009

Geotechnical Recommendations

- **Footing Depth:** Minimum of 4 feet below the lowest adjacent ground surface or on weathered bedrock, which is found under the thin Alluvium deposit, required by the CTDOT Bridge Design Manual. Both the wingwalls, headwall, and culvert should bear in the naturally deposited Alluvium. However, the Alluvium is a thin stratum. The designer may wish to bear the foundations on the weathered bedrock beneath the Alluvium.
- **Subgrade Preparation:** Place a minimum 12-inch thick layer of crushed stone overlying geotextile separation fabric over the naturally deposited Alluvium to protect the bearing surface from disturbance during foundation construction. Some over-excavation of the Fill and Organics may be required followed by replacement with Crushed Stone wrapped in a geotextile separation fabric. If the foundations will bear on the weathered bedrock, Crushed Stone should still be used to provide a level surface for the foundation.
- **Seismic Design:** Soils are not susceptible to liquefaction. Soil conditions at the site are defined as AASHTO Site Class C.
- **Backfill Material:** Place Pervious Structure Backfill (CTDOT Form 817 M.02.05) behind the headwall and wingwalls above a line defined by a 1V:1.5H slope extending up from the heel of the footing to grade, where applicable.
- **Service Limit Bearing:** Nominal Bearing Resistance = Assume 4,000 psf; Resistance Factor = 1.0 (per AASHTO 10.5.5.1).
- **Strength Limit Bearing:** Assume 15,000 psf; Resistance Factor = 0.55 (AASHTO Table 11.5.7-1).
- **Settlement at Recommended Bearing Pressure:** Estimated total settlement less than 1 inch; differential less than ¼- inch.
- **Weep Holes:** 4-inch dia. weep holes at maximum 10-foot spacing, installed according to CTDOT specifications.
- **Lateral Earth Pressures Unrestrained Walls (Active) -** Design retaining walls that are free to rotate at the top for the following lateral earth pressures:

  Static: 35 psf/f (equivalent hydrostatic pressure)

  Surcharge: 0.3 times the vertical surcharge load distributed uniformly over the height of the wall. The minimum vertical surcharge should be equivalent to an H-20 vehicular load, if vehicles (including construction equipment) will be allowed above the wall within a distance of 1.5 times the wall height. The wall design should account for sloping ground surface above the wall.

The lateral earth pressures provided above do not include hydrostatic forces and assume that backfill behind the walls will be drained.

- **Coefficient of Friction (tan δ) Along Bottom:** 0.40 (AASHTO Table 3.11.5.3-1); Resistance factor 0.8 (AASHTO Table 10.5.5.2.2-1).
- **Slope Stability:** Global Stability will be evaluated when grading has been finalized.

6.0 CONSTRUCTION CONSIDERATIONS

6.1 Excavation

Conventional heavy excavation equipment should be suitable for excavation in existing soil materials. Excavation should conform to OSHA excavation regulations contained in 29 CFR Part 1926, latest edition.

6.2 Bearing Surface Preparation

Excavated subgrades should be proof compacted with at least six passes of a large vibratory plate compactor capable of exerting a minimum force of 2,000 lbs. in trench excavations. Soft, yielding or otherwise unacceptable soils should be over-excavated and replaced with either compacted structural fill or crushed stone wrapped in a geotextile separation fabric. If vibratory proof compaction of the subgrade will be detrimental due to the presence of groundwater, static rolling with a self-propelled walk behind double drum roller may be allowed at the discretion of the engineer.

Soil bearing surfaces should be protected against freezing both before and after concrete placement. If construction takes place during winter months, foundations should be backfilled as soon as possible following construction. Alternatively, insulating blankets or other methods may be used to protect against freezing.

6.3 Cofferdam and Dewatering

We estimate that excavations up to about 4 feet below the adjacent water level will be required, depending on water levels in the unnamed brook. Construction should be performed in-the-dry, and cofferdam and dewatering will be required. Steel sheeting may not be feasible due to the density and presence of cobbles and boulders in the subgrade soils. Soldier piles and lagging may be feasible, but will not be water tight. A drilled cofferdam system such as tangent or secant piles may be capable of penetrating the boulders, could provide a groundwater cutoff, and may be feasible. Other means of dewatering may be possible. This is expected to be a difficult and time consuming process.

Surface water should be diverted away from excavations. Staged construction and temporary lateral support of excavations will be required to maintain traffic flow and protect nearby utilities where present.

6.4 Reuse of Existing Soils

The existing soils to be excavated will consist of Fill, Organics and Alluvium. These soils are not expected to be suitable for reuse as Pervious Structure Backfill or Granular Fill. Excavated Fill and Alluvium may be suitable for reuse as embankment fill. However, the siltier soils may be difficult to properly compact when wet, and may need to be dried to achieve compaction. Drying the soils can be difficult and at times impractical, particularly during periods of cold and wet weather.

7.0 FUTURE SERVICES AND LIMITATIONS

We recommend that Freeman Companies be engaged during construction to observe:

- Verify that soil conditions exposed in excavations are in general conformance with design assumption, and that the geotechnical aspects of construction are consistent with the project specifications.

This report was prepared for the exclusive use of The Town of Killingly and the project design team. The recommendations provided herein are based on the project information provided at the time of this report and may require modification if there are any changes in the nature, design, or location of the facility.

The recommendations in this report are based in part on the data obtained from the subsurface explorations. The nature and extent of variations between explorations may not become evident until construction. If variations from the anticipated conditions are encountered, it may be necessary to revise the recommendations in this report.

Our professional services for this project have been performed in accordance with generally accepted engineering practices; no warranty, express or implied, is made.

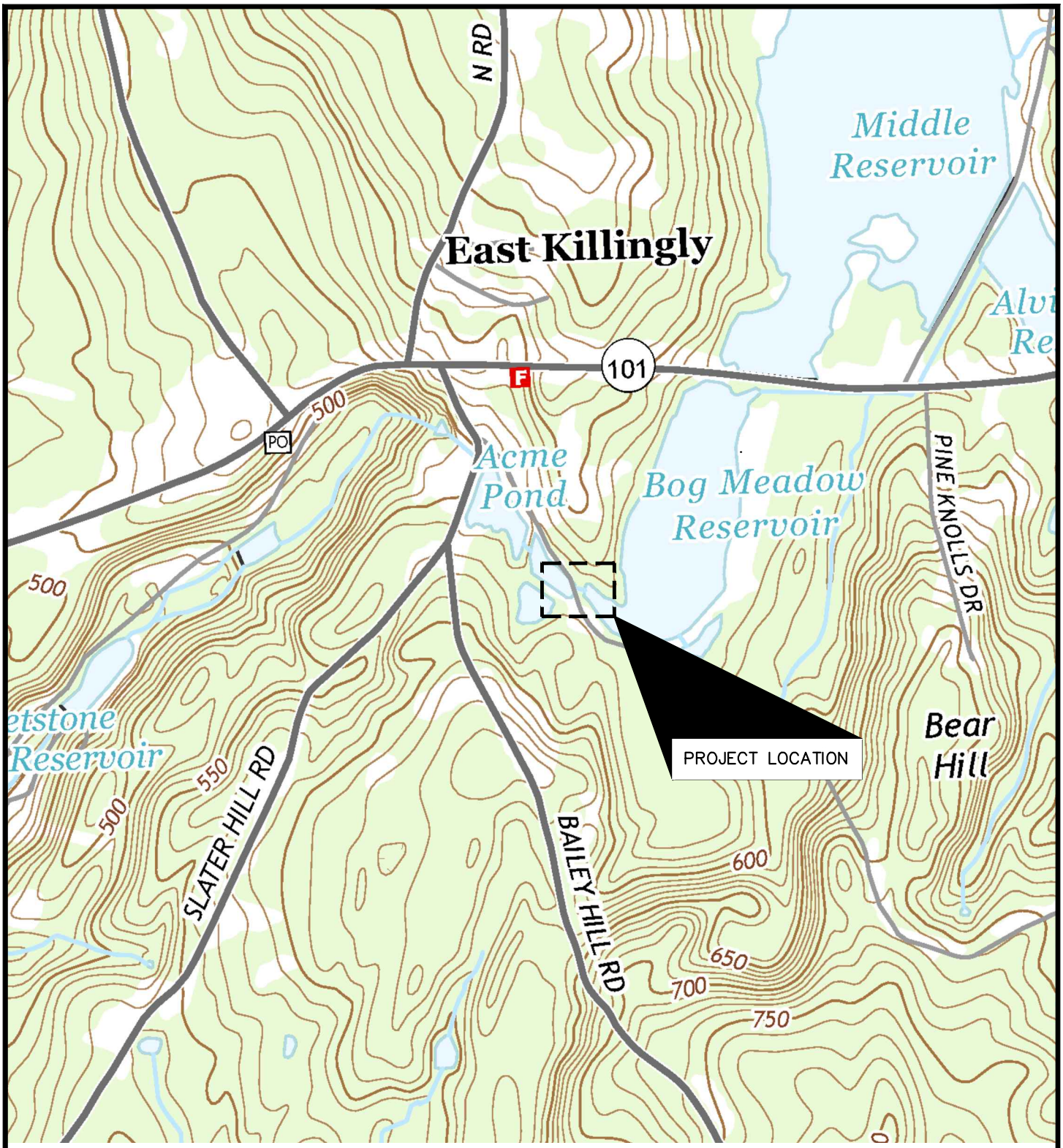
Table 1
Summary of Subsurface Explorations
Killingly Bridge 68-009
Killingly, CT

Boring No.	Ground Surface El.	Depth (ft.)	Thickness (ft)			Groundwater		Bedrock	
			Fill	Organics	Alluvium	Depth (ft.)	Elevation	Depth (ft.)	Elevation
Bridge 68-009									
S-5	564.9	19	10.4	1.0	1.5	3.5	561.4	13	551.9
S-6	564.5	14	8.0	1.0	2.0	3.5	561.0	11	553.5

Notes:

1. Ground surface elevations are based on the topographic information gathered in the survey.
2. Groundwater levels are approximate and based on observations at the time of drilling.
3. ">" - Greater Than "--" - Not Encountered or Recorded

FIGURES



USGS QUADRANGLE MAP
EAST KILLINGLY, CONNECTICUT
DATE 2015

FREEMAN COMPANIES
LAND DEVELOPMENT | ENGINEERING DESIGN | CONSTRUCTION SERVICES
36 JOHN STREET
HARTFORD, CT 06106
WWW.FREEMANCOS.COM
TEL:(860)251-9550
FAX:(860)986-7161
ELEVATE YOUR EXPECTATIONS

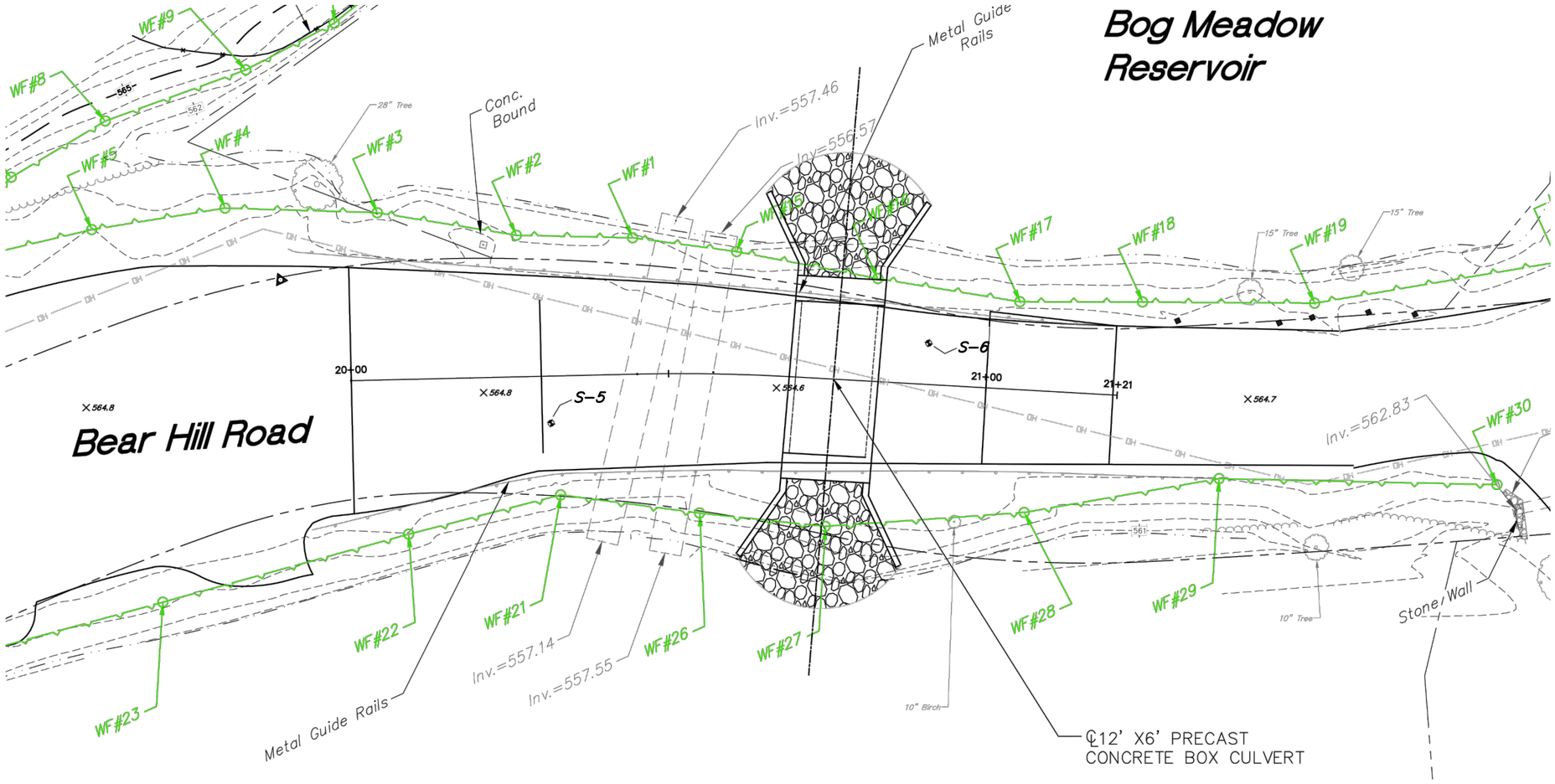
SITE LOCATION MAP

BEAR HILL ROAD OVER UNNAMED BROOK
BRIDGE NO. 68-009
KILLINGLY, CONNECTICUT

DRAFTED:	T.T.
CHECKED:	A.M.
APPROVED:	A.M.
SCALED:	1"=1000'
PROJECT NO.:	2017-0507
DATE:	08/21/2017

SHEET NO.

FIGURE 1



LEGEND:

S-1 TEST BORINGS

NOTES:

1. BASE PLAN PREPARED BY FREEMAN COMPANIES
2. EXPLORATION LOCATIONS WERE LOCATED BY SURVEY
3. REFER TO THE TEXT AND APPENDICES FOR ADDITIONAL INFORMATION

GRAPHIC SCALE
20 10 0 20
SCALE IN FEET

SUBSURFACE EXPLORATION LOCATION PLAN

BEAR HILL ROAD OVER UNNAMED BROOK
BRIDGE No. 68-009
KILLINGLY, CONNECTICUT

FREEMAN COMPANIES
LAND DEVELOPMENT | ENGINEERING DESIGN | CONSTRUCTION SERVICES
FREEMAN COMPANIES, LLC
36 JOHN STREET
HARTFORD, CT 06106
WWW.FREEMANCOS.COM
TEL:(860)251-9550
TOLL FREE:(800)604-5141
FAX:(860)986-7161
ELEVATE YOUR EXPECTATIONS

No.	Date	Description
–	–	–

REVISIONS

DRAWN:	T.T.
CHECKED:	A.M.
APPROVED:	A.M.
SCALE:	1"=30'
PROJECT NO.:	2017-0507
DATE:	10/12/2017

SHEET NO.

FIGURE 2

Freeman Companies, LLC
36 John Street
Hartford, CT 06109

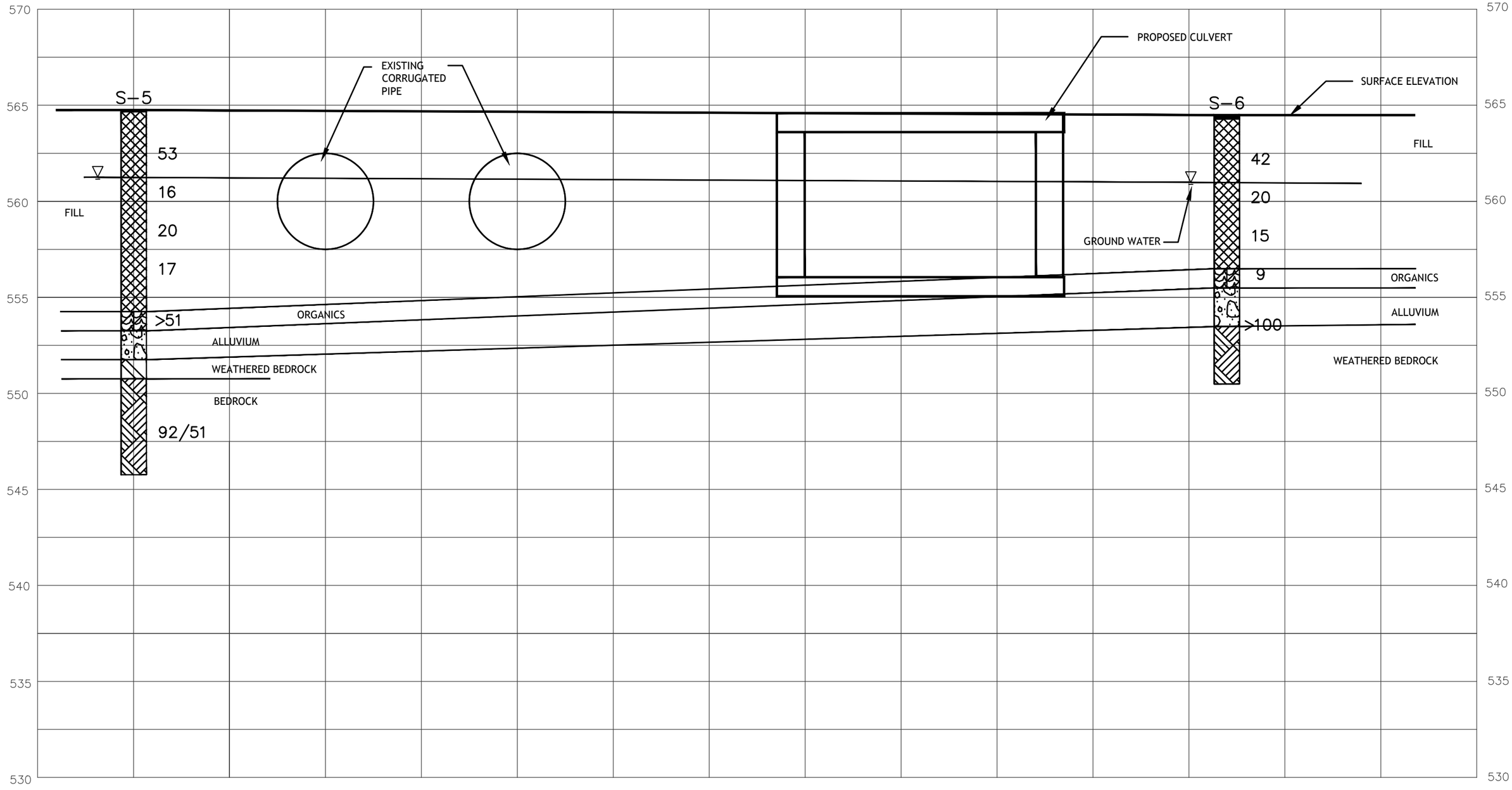
BRIDGE No. 68-009 SUBSURFACE DIAGRAM

PRIME DESIGNER Town of Killingly Eningeering

PROJECT NUMBER 2017-0507

PROJECT NAME Bear Hill Road over Unnamed Brook Bridge No. 68-009

PROJECT LOCATION Killingly, Connecticut



LEGEND
13 SPT N-VALUE
60%/0% RECOVERY/RQD

NOTE:
1) THE STRATA BOUNDARIES INDICATED ARE KNOWN ONLY AT THE BORING LOCATIONS AND WILL VARY BETWEEN LOCATIONS

HORIZONTAL SCALE: 1" = 5'
VERTICAL SCALE: 1" = 5'

FIGURE-3

APPENDIX B

TEST BORING LOGS

Driller: T. Roe	**Connecticut DOT Boring Report**	Hole No.: S-5
Inspector: Thiet Ta	Town: Killingly	Stat./Offset:
Engineer: A. McCauliffe	Project No.: 2017-0507	Northing:
Start Date: 8-16-17	Route No.: Bear Hill Road Over Culvert	Easting:
Finish Date: 8-16-17	Bridge No.: 68-000	Surface Elevation: 564.87
Project Description: Valley Road and Bear Hill Road Over Brooks		
Casing Size/Type: 4-in. Casing	Sampler Type/Size: 1-3/8 inch ID	Core Barrel Type:
Hammer Wt.: 140lb Fall: 30in.	Hammer Wt.: 140lb Fall: 30in.	
Groundwater Observations: @3.5 ATD		

Depth (ft)	SAMPLES: Sample Type/No.	Blows on Sampler per 6 inches	Pen. (in.)	Rec. (in.)	RQD %	Generalized Strata Description	Material Description and Notes	Elevation (ft)
0						Asphalt	PAVEMENT (1")	
						Fill		
	S-1	21 28 25 25	24	12			Brown to tan c-f SAND, some m-f gravel, trace silt	
	S-2	35 8 8 6	24	4			Brown to gray c-f SAND and c-f GRAVEL, little silt	
5								560
	S-3	5 9 11 6	24	12			Gray c-f SAND, little c-f gravel, trace silt	
	S-4	7 9 8 6	24	8			Dark brown c-f GRAVEL, some c-f sand, trace silt	
10								555
	S-5	1 1 50/4"	16	4			Dark brown c-f SAND, little c-f gravel, little silt, trace wood	
						Organics		
						Alluvium	Drilling action similar to grinding through cobbles and boulders	
						Weathered Rock	WEATHERED BEDROCK	
15						Bedrock		550
	C-1	6-7-8-10-10	60	55	51		Gray, fresh, GNEISS, thinly banded, moderately fractured, medium strong to strong, with quartz	
20							END OF BORING 19ft	545
25								540
30								535

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test

Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 14ft Rock: 5ft	NOTES:	Sheet 1 of 1
No. of Soil Samples: 5 No. of Core Runs: 1		SM-001-M REV. 1/02

Driller:	T. Roe	**Connecticut DOT Boring Report**		Hole No.:	S-6
Inspector:	Thiet Ta	Town:	Killingly	Stat./Offset:	
Engineer:	A. McCauliffe	Project No.:	2017-0507	Northing:	
Start Date:	8-16-17	Route No.:	Bear Hill Road Over Culvert	Easting:	
Finish Date:	8-17-17	Bridge No.:	68-000	Surface Elevation:	564.52
Project Description:	Valley Road and Bear Hill Road Over Brooks				
Casing Size/Type:	4-in. Casing	Sampler Type/Size:	1-3/8 inch ID	Core Barrel Type:	
Hammer Wt.:	140lb Fall: 30in.	Hammer Wt.:	140lb Fall: 30in.		
Groundwater Observations:	@3.5 ATD				

Depth (ft)	SAMPLES: Sample Type/No.	Blows on Sampler per 6 inches	Pen. (in.)	Rec. (in.)	RQD %	Generalized Strata Description	Material Description and Notes	Elevation (ft)
0						Asphalt		
	S-1	15 23 19 17	24	14		Fill	Brown to tan c-f SAND, some c-f gravel, trace silt	
	S-2	12 8 12 34	24	6			Brown c-f SAND, little c-f gravel, trace silt	
5								560
	S-3	10 7 8 11	24	12			Gray c-m SAND, little c-f gravel, little silt	
	S-4	1 2 7 18	24	12			Dark brown c-f SAND, little c-f gravel, little silt Brown to gray c-f SAND, some m-f gravel, trace silt	
						Oranics		
						Alluvium	Dark brown c-f SAND, little silt, trace f gravel, trace root	
10								555
	S-5	100/5"	5	4			Gray c-f SAND and SILT, trace c-f gravel	
						Weathered Rock	WEATHERED BEDROCK (steady constant grinding drill action)	
15							END OF BORING 14ft	550
20								545
25								540
30								535

Sample Type: S = Split Spoon C = Core UP = Undisturbed Piston V = Vane Shear Test

Proportions Used: Trace = 1 - 10%, Little = 10 - 20%, Some = 20 - 35%, And = 35 - 50%

Total Penetration in Earth: 14ft Rock: ft	NOTES:	Sheet 1 of 1
No. of Soil Samples: 5 No. of Core Runs: 0		SM-001-M REV. 1/02

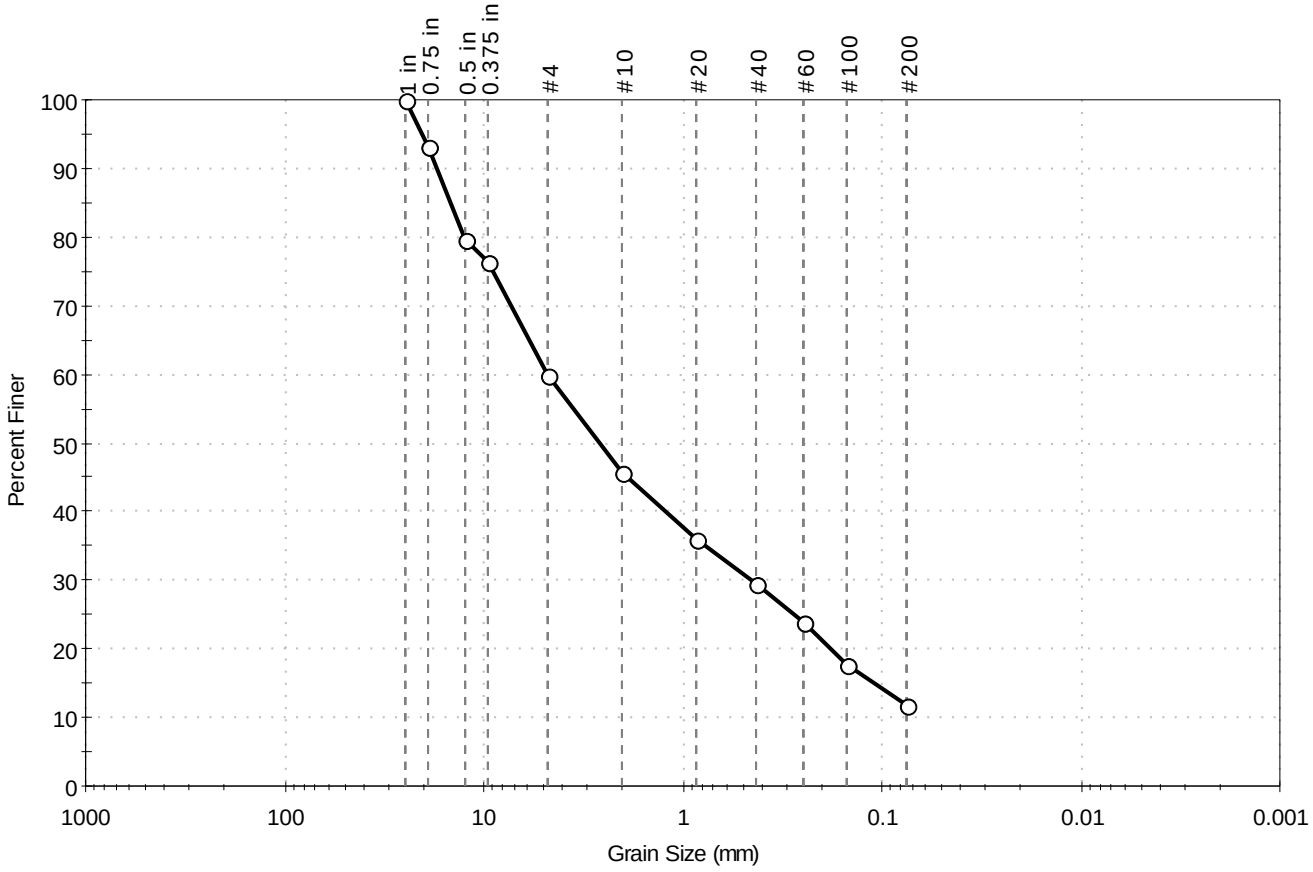
APPENDIX C

RESULTS OF LABORATORY TESTING

GeoTesting EXPRESS

Client:	Freeman Companies, LLC				
Project:	Killingly Bridges				
Location:	Killingly, CT			Project No:	GTX-306915
Boring ID:	B-5	Sample Type:	jar	Tested By:	jbr
Sample ID:	S-2	Test Date:	08/31/17	Checked By:	emm
Depth :	3-7 ft	Test Id:	421917		
Test Comment:	---				
Visual Description:	Moist, grayish brown sand with silt and gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



% Cobble	% Gravel	% Sand	% Silt & Clay Size
---	40.3	48.0	11.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	93		
0.5 in	12.50	80		
0.375 in	9.50	77		
#4	4.75	60		
#10	2.00	46		
#20	0.85	36		
#40	0.42	29		
#60	0.25	24		
#100	0.15	18		
#200	0.075	12		

Coefficients

D_{85} = 14.7473 mm	D_{30} = 0.4548 mm
D_{60} = 4.7984 mm	D_{15} = 0.1091 mm
D_{50} = 2.6104 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-a (0))

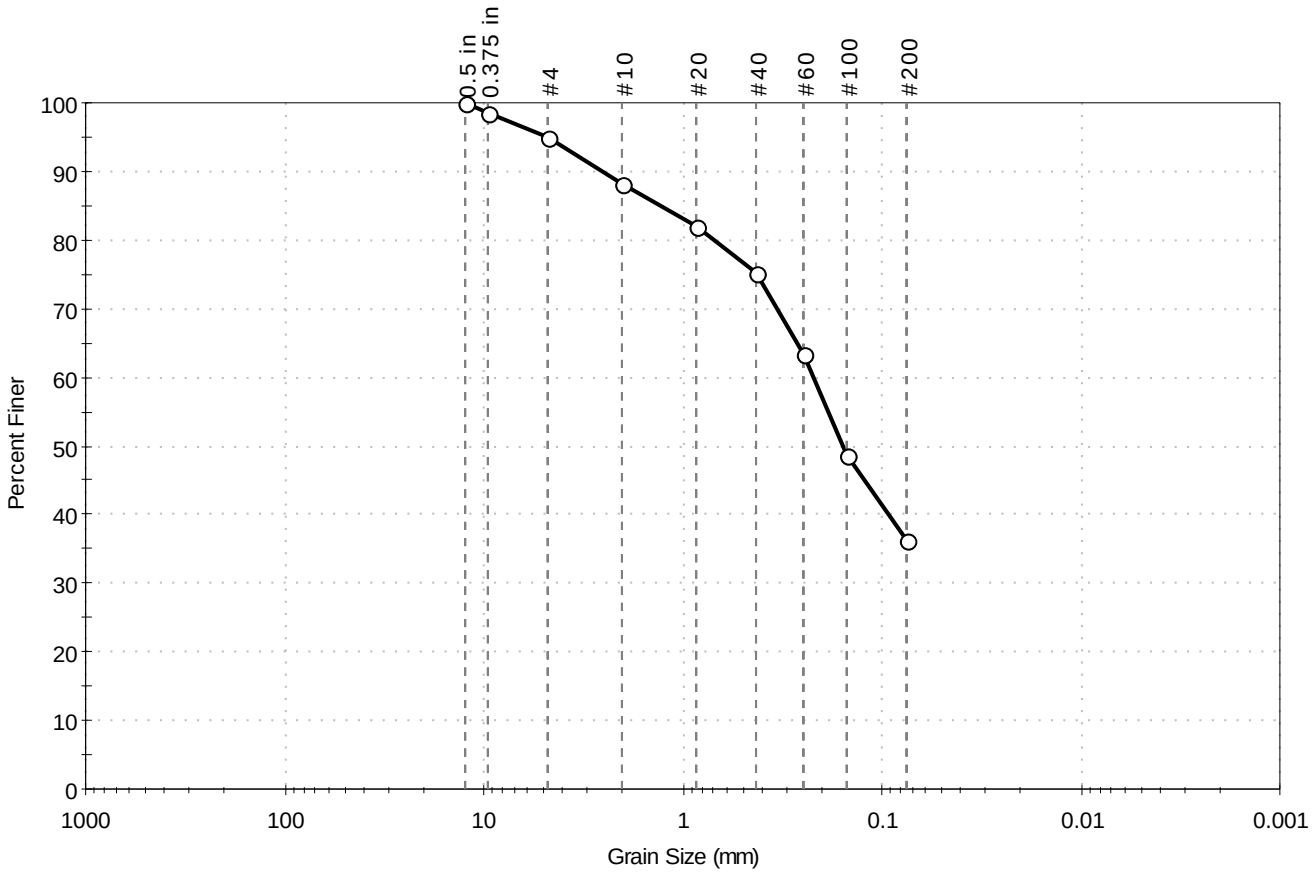
Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	Freeman Companies, LLC				
Project:	Killingly Bridges				
Location:	Killingly, CT			Project No:	GTX-306915
Boring ID:	B-6	Sample Type:	jar	Tested By:	jbr
Sample ID:	S-5	Test Date:	08/31/17	Checked By:	emm
Depth :	10.5-10.9 ft	Test Id:	421918		
Test Comment:	---				
Visual Description:	Moist, olive clayey sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D422



%Cobble	%Gravel	%Sand	%Silt & Clay Size
---	5.2	58.7	36.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	98		
#4	4.75	95		
#10	2.00	88		
#20	0.85	82		
#40	0.42	75		
#60	0.25	63		
#100	0.15	49		
#200	0.075	36		

Coefficients

D_{85} = 1.2673 mm D_{30} = N/A

D_{60} = 0.2230 mm D_{15} = N/A

D_{50} = 0.1576 mm D_{10} = N/A

C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample / Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD